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Performance of Mobile Homes - A Field Inspection Study

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Interim Report

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U.S. DEPARTMENT OF COMMERCE, Rogers C.B. Morton, Secretary
NATIONAL BUREAU OF STANDARDS, Richard W. Roberts, Director

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Abstract

A field inspection study of mobile homes was conducted for the Department of Housing and Urban Development. The objective of the study was to evaluate the causes of mobile home problems by physically inspecting available units at various locations in the United States. A total of 257 units were inspected consisting mostly of mobile homes purchased by HUD and used as temporary housing for victims of the 1972 Hurricane Agnes disaster. The total number of problems found was 3,528 for the 257 units inspected. Of these problems, 2120 were directly related to inadequacies in the ANSI A119.1 Standard for Mobile Homes or the mobile home enforcement process (plan review, certification of designs, plant inspection), 934 were routine maintenance problems, and 374 were attributed to mechanical/electrical appliances and equipment. This report presents a computer listing of all problems plus photographic examples of observed problems.

The number of mobile homes included in this study is small when compared to the total number of mobile homes now in use in the United States. Additionally, this was a problem oriented study and did not attempt to document the many areas of satisfactory mobile home performance.

Key Words: Enforcement process; field inspection; house trailers; housing; Hurricane Agnes; mobile homes; performance data; standards.

SI Conversion Units

In view of the present accepted practice in this country for building technology, common U.S. units of measurement have been used throughout this publication. In recognition of the position of the United States as a signatory to the General Conference on Weights and Measures, which gave official status to the metric SI system of units in 1960, appropriate conversion factors have been provided in the table below. The reader interested in making further use of the coherent system of SI units is referred to:

NBS SP330, 1972 Edition, "The International System of Units"

E380-72 ASTM Metric Practice Guide (American National Standard Z210.1)

Table of Conversion Factors to Metric (S.I.) Units

Physical Quantity	To convert from	to	multiply by
Length	inch	meter	$2.54^{*} \times 10^{-2}$
	foot	m	$3.048^{*} \times 10^{-1}$
Area	$inch^2$	m^2	$6.4516^{*} \times 10^{-4}$
	$foot^2$	m^2	9.290×10^{-2}
Volume	$inch^3$	m^3	1.639×10^{-5}
	$foot^3$	m^3	2.832×10^{-2}
Temperature	Fahrenheit	Celsius	$t_c = (^tF-32)/1.8$
Temperature difference	Fahrenheit	Kelvin	$K = (\Delta^tF)/1.8$
Pressure	inch Hg (60F)	$newton/m^2$	3.377×10^3
Mass	lbm	kg	4.536×10^{-1}
Mass/unit area	lbm/ft^2	kg/m^2	4.882
Moisture content rate	lbm/ft^2week	kg/m^2s	8.073×10^{-6}
Density	lbm/ft^3	kg/m^3	1.602×10^1
Thermal conductivity	Btu/hr ft^2 (F/inch)	$\frac{W}{mK}$	1.442×10^{-1}
U-value	Btu/hr ft^2 F	$\frac{W}{m^2K}$	5.678
Thermal resistance	$F/(Btu/hr\ ft^2)$	$K/(W/m^2)$	1.761×10^{-1}
Heat Flow	Btu/hr ft^2	W/m^2	3.155

*Exact value; others are rounded to fourth place.

1.0 Introduction

1.1 MOBILE HOME INDUSTRY. One of the solutions to the lower-cost housing shortage in the United States today is the use of mobile homes as permanent dwellings. Mobile homes represent one-fifth of all housing units produced in each of the last five years (1970 through 1974) and included 96% of houses under $20,000 produced in 1973. The production of mobile homes increased dramatically from 100,000 units in 1960 to around 600,000 units in 1973. This growth has resulted primarily from the mobile home industry's ability to produce adequate housing at lower initial cost as compared to conventional housing. The production of mobile homes is regulated at the state and local level. An existing standard, ANSI A119.1 Standard for Mobile Homes [1]1/, has been adopted in total, or with slight modifications, by 45 states for use in mobile home enforcement programs.

1.2 PROJECT OBJECTIVES AND APPROACH. Recently, many individuals and groups have questioned the effectiveness of mobile homes in providing safe, adequate and low-cost shelter. Although life-safety aspects such as questionable fire safety and susceptibility to wind damage receive the most publicity, functional characteristics appear to be of broader concern to mobile home owners. It is recognized that the mobile home supply process (manufacturing, transportation, siting2/) differs greatly from conventional housing and is partly responsible for some of their unique performance problems. Unfortuanately, there is a limited amount of organized documentation of these problems making it difficult to pinpoint which aspect of the mobile home supply process may be deficient.

In response to this recognized problem of lack of information, a project funded by the Department of Housing and Urban Developments' Office of Policy Development and Research, was structured around the following objectives:

A. Identification and documentation of the significant mobile home performance problems.

B. Determine the relationship of these identified problems to provisions of the ANSI A119.1 Standard for Mobile Homes, the mobile home enforcement process (plan review, certification of designs, plant inspection), and durability of materials (mortgage insurance concern).

C. Identification of needed areas of research relative to the mobile home supply process.

To achieve these objectives the project was divided into three principal tasks. Task I was organized to collect and analyze problem data in the structural, electrical, heating, plumbing and transportation areas. The object of Task II was to evaluate the cause of mobile home problems by physically inspecting mobile homes. Task III will summarize the data obtained in Tasks I and II and determine if a relationship exists between the identified problems, the Standard, and/or the enforcement process. Reference [2] outlines the data acquisition and analysis methodology developed for these tasks.

1.3 FIELD INSPECTION TASK. Since the degree of problem detail obtained in Task I varied considerably, the field inspecion of mobile homes was necessary to determine specific causes and consequences of the performance problems. Units inspected included those used by HUD for temporary housing following the Hurricane Agnes disaster and mobile homes from the private sector.

This report provides a description and documentation of the field inspection effort entailed in the completion of Task II. The number of mobile homes included in this study is small when compared to the total number of mobile homes now in use in the United States. Additionally, this was a problem oriented study and did not attempt to document the many areas of satisfactory mobile home performance.

1/ References are listed at end of report.

2/ Siting encompasses placement and leveling the mobile home on its foundation, installing steps, skirting and connecting utilities.

2.0 Summary of Field Inspection Procedures

2.1 INTERDISCIPLINARY TEAM APPROACH. The personnel capabilities available at the National Bureau of Standards made it possible to assemble a field inspection team that was interdisciplinary in nature and capable of providing expertise in many phases of the building process. The team consisted of a project manager - structural engineer and five other members with engineering background in the fields of building materials, plumbing, heating, electrical and fire technology.

Prior to initiation of the field inspection task, the inspection team members visited several manufacturing plants in order to become more familiar with the mobile home construction process. Also, facilities established by HUD in Wilkes-Barre, Pennsylvania for training of repair crews that were responsible for maintenance of mobile home heating, plumbing and electrical systems were visited by the field inspection team.

2.2 FIELD INSPECTION TECHNIQUES. Field inspection techniques were developed in Wilkes-Barre for use in both HUD and private mobile home inspections. Mobile homes in various states of disrepair at several locations around the Wilkes-Barre area were used to develop field inspection techniques. The condition of the units varied from those which were damaged beyond repair to units in good shape that were being kept by HUD for possible use in future disasters. Inspection of severely damaged units made it possible to observe structural framing techniques, plumbing trees, wiring techniques, heat duct assemblies and insulation. Both destructive and non-destructive inspection procedures were developed by the inspection team utilizing these units.

The "non-destructive" inspection procedures used for the vast majority of mobile homes consisted of a visual inspection with no permanent construction removed. Partition construction could be observed in unfinished closets, water heater compartments and furnace enclosures. Plumbing inspections were confined to the hot water heater compartment, under kitchen and bathroom sinks and at washer hookups. Heating system evaluation was confined to the furnace compartment and by removal of floor registers. The electrical system could be evaluated at the load center and by removal of switch plates and duplex outlet covers.

"Destructive" inspection procedures included the selective removal of ceiling panels, wall paneling (interior and exterior), floor decking and underside weather barrier material so that structural framing, insulation, vapor barriers, electrical wiring methods, and plumbing trees could be inspected and overall workmanship evaluated. It was possible to use the "destructive" inspection procedure on eighteen mobile homes set aside for NBS use by HUD at Wilkes-Barre. While some of these units were damaged, most were in good condition and NBS was granted permission to perform any type of destructive evaluation down to and including complete dismantling of the unit. Samples of materials such as cabinet doors, wall paneling, ceiling material, electrical and plumbing parts and fixtures were removed and returned to NBS for study.

2.3 DATA RECORDING TECHNIQUES. The data recording techniques used in the field inspection effort were both written and photographic. Inspection forms and photographs along with available maintenance data (173 of the 257 mobile homes) formed the basis for evaluation of the individual mobile homes examined during the field inspection task.

2.3.1 Inspection Forms. Appendix A contains examples of the inspection forms used in the field inspection effort. A set of these forms were filled out on each mobile home inspected and included unit identification, structural, plumbing, heating and electrical data. These "check list" type forms were designed to obtain as much information as possible without destroying or damaging components of the mobile home. Applicable paragraphs of the ANSI A119.1 Standard are included adjacent to each item on the electrical, plumbing and heating forms whenever possible for reference.

2.3.2 Photographic Documentation. To augment the inspection data and to provide a tool for future evaluation, a photographic record of each mobile home inspection was made. In addition to a photograph to identify the mobile home, photographs were taken of ANSI A119.1 Standard violations, component or system failures and any other unusual conditions related to performance that existed on the interior and exterior of the unit.

2.4 MOBILE HOMES INSPECTED. A total of 257 mobile homes were field inspected, of which, 237 were HUD Hurricane Agnes units located at Wilkes-Barre. Since these units had been manufactured at approximately the same time and many were transported over unusually long distances and had been sited under emergency conditions, the field study was planned to include units from the private sector. Sources were sought which would allow access to a large number of units at a single location because of the difficulty of locating and arranging inspections of individually owned mobile homes. Also, it was desirable to have access to purchase specifications and maintenance records of any homes inspected.

A privately owned mobile home park was visited in Lexington Park, Maryland consisting of 25 new single wide units which had just been installed and occupied. These duplex rental units had been built to a specification established by the park owner and had unique construction characteristics. Each unit was divided into two living areas with separate bath, kitchen and sleeping facilities. Discussions with the owner and the park maintenance staff and the inspection of the only unoccupied unit revealed no special problems other than those of a routine maintenance nature.

Warren Air Force Base in Cheyenne, Wyoming was visited to obtain data which could be related to durability of mobile homes constructed in 1962 and 1965. The maximum number of units deployed at Cheyenne was 246. The Air Force was in the process of moving these units to other sites. Four of the 94 mobile homes remaining at Cheyenne were given detailed inspections. Maintenance records for these 4 units, kept since purchase, were also obtained. These units which are being used as housing for families of construction personnel have each been moved 11 times over an average distance of 650 miles per move. The mobile homes were purchased under an Air Force specification and had been maintained for the Government by a private company. Construction characteristics appeared to be significantly better than present mobile home construction, possibly as a result of the unique Air Force procurement and manufacturing requirements.

A private mobile home park containing 200 mobile homes manufactured in 1971 and 1972 was visited in Montgomery, Alabama, and 11 units were physically inspected. These units were owned by the Alabama Farm Bureau (not state affiliated) and rented to Air Force personnel attending 12 week courses at Maxwell Air Force Base. In addition to inspection of these 11 units, maintenance records for one 12 week occupancy period were obtained for all 200 units.

Five mobile homes being modified under a HUD Grant for use by handicapped students were inspected at St. Andrews College in Laurinburg, North Carolina. These units were obtained by the College from the HUD Agnes stockpile and purchase, maintenance, and refurbishment data for the units were available.

3.0 Characteristics of Field Inspected Mobile Homes

3.1 MANUFACTURING CHARACTERISTICS. Table 1 identifies the twenty-two states where 188 of the 257 field inspected units were manufactured. The state of manufacture for the remaining 69 units could not be determined. Tables 2 and 3 indicate the year of manufacture and the width of all units in the field inspection study for which this data is available.

Figure 1 describes the distribution of mobile homes by manufacturer for those units in the field study. The manufacturer was known for 232 units of the 257 units inspected. These 232 units were built by 80 different manufacturers with only 8 manufacturers supplying more than 6 units each.

3.2 ANSI A119.1 STANDARD COMPLIANCE DATA. Certification seals are attached to mobile homes by enforcement officials to indicate that construction of the unit complies with a prescribed code or standard. Seals were found on 173 of the 257 units in the sample. In this report, it is assumed that mobile homes with certification seals were constructed according to the ANSI A119.1 Standard for Mobile Homes or a modified version of that Standard in effect during the year of manufacture. Table 4 presents the seal data for the field inspected mobile homes.

4.0 Data Analysis Methodology

4.1 PROBLEM CATALOG DEVELOPMENT. Because of the large quantity of data being collected, it was necessary to develop a data handling system using computer techniques. The system devised consisted of a listing of performance problems, a coding technique to record the problems and computer programs to organize and present the data.

The Performance Problem List is organized around three major subsections and a miscellaneous subsection. The mobile home performance problems significant to the project are categorized under one of the three major subsections listed below and indicated in figure 2.

A. Problems Related to ANSI A119.1 Standard for Mobile Homes and Enforcement Process
B. Routine Maintenance Problems
C. Appliance and Equipment Problems

This categorization of problems allows documentation of all mobile home performance problems encountered during the inspections.

The ANSI Standard A119.1/Enforcement Process Subsection represents virtually the entire 1974 edition of the Standard [1], with coding symbols being assigned for appropriate paragraphs. In the case of the Plumbing (Part C), Heating (Part D) and Electrical (Part E), sections of the Standard, the paragraph numbers and key words appear just as they do in the Standard. Construction (Part B) differs in that it is organized around major construction components, such as roof, walls, doors, etc. Therefore, some Standard paragraph numbers which pertain to several components are repeated, i.e., weather resistance. It should be noted that the problems reported under the ANSI Standard A119.1/Enforcement Process Subsection are related either to inadequacies or omissions in the Standard itself or to deficiencies in the Standard enforcement process. No attempt is made in this report to segregate the problems into these two areas. Such an evaluation will be made in a later report of this series where the significant problems will be examined in greater detail by considering all data accumulated in the project.

The Routine Maintenance Subsection is organized under the same general headings as the ANSI A119.1/Enforcement Process Subsection; i.e., construction, plumbing, heating and electrical. The Appliance and Equipment Subsection is grouped by appliance; i.e., furnace, range, hot water heater, refrigerator, exhause fan and smoke detector. Since components of each appliance are listed, it was possible to pinpoint the component problem where the detail of the data permitted.

A problem level concept is employed in the Performance Problem List to organize and assist in the evaluation of the data. Figure 2 illustrates problem levels 1, 2, and 3 and figure 3 isolates ANSI A119.1 (Construction) to illustrate levels 2 through 7. The problem summation lists in Appendix B show the problem level for each item in the last column and in some cases the problem list has been extended to an 8th level. It must be remembered, however, that the problem level concept was established as a tool to order the existing data and does not impart any degree of importance or significance to the individual problems as they relate to one another.

A coding system was developed which facilitated the rapid tabulation of mobile home performance problems. Each problem in the list was represented by an alphanumeric code with which problems were entered by a reviewer on a computer coding sheet along with available identification information (manufacturer, size, year of manufacture, etc.) for each mobile home.

4.2 COMPUTER TECHNIQUES. Data processing programs were developed to process the data and to delineate problem areas. The most important of these was a program which printed out summation tables of the problems relative to the levels within the problem list (Appendix B). In addition, the program rank ordered the problems by "frequency-of-occurrence" within each level.

5.0 Problem Summation Tables

5.1 ORGANIZATION AND USE OF SUMMATION TABLES. Figures 4, 5 and 6 indicate the organization of the problem summation tables.

Figure 4 - 1st through 3rd level grouping of problems
Figure 5 - 2nd through 4th level grouping of problems
Figure 6 - 2nd through 8th level grouping of problems

Each grouping deals with the same problems but progressively more detail is shown in going from the first through the third grouping.

Columns labeled (A), (B), (C), (D), (Homes), (% Homes), and (Level) in figures 4, 5 and 6 are defined below.

Column (A) - The code assigned to identify a particular problem.

Column (B) - A brief description of the problem or area of concern including the appropriate part or paragraph number in the ANSI A119.1 Standard.

Column (C) - The number of problems that have been coded with the code identified on that line in Column A. Reported information on the problem has not allowed coding below the level of detail of the particular line. For example, in figure 4, consider problem code NPLM (Plumbing - Routine Maintenance); 17 of the 216 problems were recorded under the general plumbing category, while problem description allowed the remaining 199 problems to be recorded with greater detail (See page 53 of Appendix B).

Column (D) - The summation of all problems at a discrete level. For example, Figure 4 shows that the total number of problems associated with Routine Maintenance is 934 which is made up of the following:

Construction	550
Plumbing	216
Electrical	124
Heating	44
Total	934

The number of problems at a given level is the summation of problems at the next lower level. As an example, the number of level 1 problems (3528) consists of the following level 2 problems: 2120 ANSI A119.1/ Enforcement Process problems, 934 Routine Maintenance problems, 374 Mechanical/Electrical Appliance problems, and 100 Miscellaneous problems.

Column (Homes) - The values in this column indicate the number of mobile homes in the sample that had one or more of the problems identified on each line (235 mobile homes for Construction, ANSI A119.1/Enforcement Process, in fig.4).

Column (% Homes) - The entries in this column indicate the percentage of the total number of mobile homes reviewed in the sample which had the problem identified on each line. For example, under Construction, ANSI A119.1/Enforcement Process, in figure 4:

$$\frac{\text{235 homes with problems}}{\text{257 homes in sample}} \times 100 = 91.4\%$$

Column (Level) - These entries define the level of detail of the problem for each line.

Columns labeled (% 2nd) and (% 1st) in figure 4 are defined below:

In figure 4 consider the example of "Construction (CONS) - ANSI Standard A119.1/Enforcement Process."

Column (% 2nd) - The entries in this column are the percentages of 2nd level problems that are contained at the third level of detail.

$$\frac{\text{Level 3 Problems}}{\text{Level 2 Problems}} = \frac{730}{2120} \times 100 = 34.4\%$$

Column (% 1st) - The entries in this column are the percentages of 1st level problems that are contained at each lower level of detail.

$$\frac{\text{Level 3 Problems}}{\text{Level 1 Problems}} = \frac{730}{3528} \times 100 = 20.7\%$$

Columns labeled (% 3rd), (% 2nd), and (% 1st) in figure 5 are defined below:

In figure 5 consider the example of "Exterior Walls (EXTW) - Construction - ANSI Standard A119.1/Enforcement Process."

Column (% 3rd) - The entries in this column are the percentages of 3rd level problems which are contained at each 4th level of detail.

$$\frac{\text{Level 4 Problems}}{\text{Level 3 Problems}} = \frac{237}{730} \times 100 = 32.5\%$$

Column (% 2nd) - Percentages relating 3rd and 4th levels to the 2nd level of detail.

$$\frac{\text{Level 4 Problems}}{\text{Level 2 Problems}} = \frac{237}{2120} \times 100 = 11.2\%$$

Column (% 1st) - Percentages relating 2nd, 3rd, and 4th levels to the first level.

$$\frac{\text{Level 4 Problems}}{\text{Level 1 Problems}} = \frac{237}{3528} \times 100 = 6.7\%$$

Columns labeled (% 7th), (% 6th), (% 5th), (% 4th), and (% 3rd) on figure 6 are defined below.

In figure 6 consider the example of "Rain Leak at Membrane Joint (RLMP1.) - Roof System - Construction, ANSI Standard A119.1/Enforcement Process."

Column (% 7th) - Entries in this column are percentages denoting the portions of 7th level problems for each 8th level problem. This column is blank in figure 6 since there are no 8th level problems shown on this sample table.

Columns (% 6th), (% 5th), (% 4th), (% 3rd) - Entries in these columns relate the number of problems at a given level to preceeding levels (6, 5, 4 and 3).

$$\frac{\text{Level 7 Problems}}{\text{Level 6 Problems}} = \frac{2}{7} \times 100 = 28.6\% \text{ (Column \% 6th)}$$

$$\frac{\text{Level 7 Problems}}{\text{Level 5 Problems}} = \frac{2}{162} \times 100 = 1.2\% \text{ (Column \% 5th)}$$

$$\frac{\text{Level 7 Problems}}{\text{Level 4 Problems}} = \frac{2}{184} \times 100 = 1.1\% \text{ (Column \% 4th)}$$

$$\frac{\text{Level 7 Problems}}{\text{Level 3 Problems}} = \frac{2}{730} \times 100 = 0.3\% \text{ (Column \% 3rd)}$$

5.2 DISTRIBUTION OF PROBLEMS. The summation of all 3528 problems attributed to the 257 mobile homes inspected in the field survey is presented in Appendix B. These data are rank ordered at level 2 with 60.1% of the problems being ANSI A119.1/Enforcement Process connected, 26.5% related to Routine Maintenance, 10.6% included under Mechanical/Electrical Appliances and Equipment and 2.8% classified as Miscellaneous problems. These data are summarized in table 5 and the problems under these main headings are discussed below. The referenced photographs in Appendix C show construction details along with problems encountered.

5.2.1 ANSI A119.1/ENFORCEMENT PROCESS RELATED PROBLEMS. Those problems that could be related to the ANSI A119.1 Standard/Enforcement Process category comprised 60.1% of the total problems. Of these 2120 problems, the rank ordered distribution as summarized in table 6 is 730 construction, 701 plumbing system, 409 heating system and 280 electrical system.

5.2.1.1 Construction. A rank ordering of construction problems through level 4 can be seen on page 39 with expansions to all levels tabulated on pages 42 through 44. Table 7 shows the distribution of construction problems by building component. Of the 730 construction problems found, 32.5% were attributed to "Exterior Walls" with a distribution as shown on table 8. Corrosion of exterior fasteners (durability) was the largest problem area (figures C-1, C-2 and C-3) while weather resistance-rain leaks (figures C-5 and C-6) was second and wall cladding attachment (figures C-4 and C-7) was third. Other exterior wall problems are shown in figure C-8.

The second most troublesome component was the "Roof System" which encompassed 25.2% of the construction problems. Of the roof problems, 88% were attributed to rain leaks, i.e., penetration of the water resistant membrane (see figures C-9 through C-18). In this context, the membrane is considered to be the metallic roof material and sealants that forms the covering for the roof truss structural system. Figures C-19 through C-28 are examples of roof construction and some of the problems encountered.

"Partition Walls" at 16.4% (fig. C-29 through C-33), "Transit Considerations" 11.4% (fig.C-34 through C-38) and "Floor Systems" 10.3% (fig. C-39 through C-52) form the bulk of the remaining construction problems. The remaining 4.2% of the construction problems were attributed to "Exterior Doors," "Windows" and "Tiedowns" and are illustrated in figures C-53 through C-60.

5.2.1.2 Plumbing. The next category in order of frequency-of-occurrence was plumbing. Of the 2120 ANSI A119.1/Enforcement Process related problems, 33.1% or 701 were attributed to the plumbing system (see table 6). A rank ordering of plumbing problems through level 4 can be seen on page 39 with expansions to all levels tabulated on pages 44 through 48. Table 9 summarizes the problem order. Of the 701 plumbing problems found, 31.0% were attributed to the "Water Distribution System" with the greatest single problem area being the water outlets and supply connections. These problems were concerned with the absence of adequate marking of the fresh water connection and the lack of a cap for sealing the water inlet. Other "Water Distribution System" problems had to do with water heater relief valves and outlets, figures C-62 through C-64, corrosion of piping, figures C-65 and C-66 and poor workmanship illustrated in figures C-61, C-67 through C-72.

The second most prevalent plumbing problem area was with the "Drainage System", which encompassed 21.7% of the problems. The most frequent problem encountered was the absence of quick disconnect couplings for the drainage system. This violation should not be considered serious due to the emergency conditions in Wilkes-Barre that necessitated "hook-up" expedience. Other drainage system violations can be seen in figures C-73 and C-74 where negative slopes of drain pipes are pictured.

In the "Plumbing Fixtures" section (20.4% of problems), the most frequent violation was the inadequate floor connection of toilets, figure C-79. A submerged ball cock flushing device that could possibly allow flush tank water to back flow into the potable water supply is shown in figure C-78. Other problems were lack of watertightness of shower stall enclosures, figure C-32; and poor access to hot water heaters, figures C-80 and C-81.

"Protective Requirements" were next in order with 7.1% of the plumbing problems. These were attributed to inadequate rodent resistance, figures C-47, C-48, C-50, C-51 and some freezing of pipes, figure C-75.

"Vents and Venting" related problems comprise 3.9% of the plumbing problems. Vent pipe penetrations of the roofing membrane which do not extend above the roof by 2 inches as required by the ANSI A119.1 Standard can be seen in figures C-14 and C-15. The Standard requires vent caps to be removable without requiring removal of flashing from the roof. Figures C-76 and C-77 are photographs of a vent cap which violates this requirement.

5.2.1.3 Heating. The next category in frequency of problem occurrence was "Heating Systems." Of the 2120 ANSI A119.1/Enforcement Process related problems, 19.3% or 409 problems were placed in this category. A rank ordering of heating problems through level 4 can be seen on page 39 with expansions to all levels tabulated on pages 48 through 50. The "Heating System" category had only two main divisions, i.e. "Piping Systems" with 51.3% of the problems and "Appliances" with 48.4% of the problems as shown in table 10. Piping systems could only be inspected at the furnace connection and under the mobile home. Piping system problems are illustrated in figures C-82 through C-85. The misuse of flexible piping and inadequate rodent resistance of floor penentrations were the most prevalent problems.

The "Appliance" section included the air distribution portion of the heating system. Deficiencies are shown in figures C-86 through C-89 where a variety of problems concerning registers and risers are illustrated. Inadequate accessibility to heat producing appliances constituted 50 problems that were mainly attributed to hot water heaters as shown in figures C-80 and C-81.

The remaining problems are shown in figures C-90 through C-94. The venting problems are violations of the ANSI A119.1 Standard (figures C-90 and C-91) but the location of the furnace thermostat (figure C-92) and the location of furnace registers (figures C-93 and C-94) are not violations in the strict sense but were prevalent enough to be considered omissions in the Standard or poor construction practice.

5.2.1.4 Electrical. Only 13.2% of the total ANSI A119.1/Enforcement Process problems were electrical. Of these 280 electrical problems, 179 were categorized as "Wiring Methods," 36 were "Receptacle Outlets Required" and 19 were listed under "Materials and Equipment." The remaining problems were attributed to Outdoor Outlets, Branch Circuits, Power Supply, Grounding and Bonding, and Lighting Fixtures. The rank ordering of electrical problems through the 4th level can be seen on page 39 with a further breakdown to succeeding levels on pages 50 through 52. Table 11 summarizes these problem areas.

"Wiring Methods" deficiencies are illustrated in figure C-8 and figures C-95 through C-104. The greatest single problem was loose outlet boxes, fixtures and switch boxes. The most prevalent problem under "Receptacle Outlets Required" was simply the lack of, or improper placement of, receptacle outlets. The "Materials and Equipment" violations were all attributed to the use of aluminum wire with switches and receptacles not approved for such use (figure D-107).

An example of properly grounded and improperly grounded pendant type light fixtures are illustrated in figures C-105 and C-106. Figure C-107 shows a load center of a 12' x 60' mobile home with an insufficient number of branch circuits which constitutes an ANSI A119.1 Standard violation.

5.2.2 ROUTINE MAINTENANCE PROBLEMS. The 934 problems classified as Routine Maintenance are grouped as follows: 550 Construction, 216 Plumbing, 124 Electrical and 44 Heating. A rank ordering of Routine Maintenance problems through level 4 can be seen on page 40 with expansion to all levels tabulated on pages 52 through 54.

Problems in the construction area included exterior doors (244 or 44.4% of construction problems), windows (122 or 22.2%), exterior stairs (41 or 7.5%), partition doors (40 or 7.3%), skirting (32 or 5.8%), hot water heater compartment (27 or 4.9%) and blocking (20 or 3.6%). Predominate problems with exterior doors included hardware, improper fit, and glass breakage. Partition door problems were all related to hardware and improper fit. Window problems included reglazing, hardware, and improper fit causing water and air leakage. Hot water heater compartment problems included the lack of proper thermal insulation and repairs to exterior access doors.

The majority of plumbing problems were involved with water supply piping (79 or 36.6% of Routine Maintenance plumbing problems), fixtures (69 or 31.9%) and drainage piping (30 or 18.1%). Water supply piping problems were ranked as follows; general exterior piping (64) and exterior frozen piping (18). Other problem areas included leaking, clogged or frozen drains, faucet assembly and flushing device malfunctions, and the site water supply.

The 124 electrical problems were distributed as follows; distribution panel board (55 or 44.4%), receptacle outlets (33 or 26.6%), power pole/lifeline (18 or 14.5%), switches (7 or 5.6%) and exterior light fixtures (3 or 2.4%).

The 44 heating problems consisted mainly of gas and oil supply piping concerns.

5.2.3 MECHANICAL/ELECTRICAL APPLIANCE PROBLEMS. The 374 problems in this area were separated by appliance type; furnace (181 or 48.4% of all Appliance problems), hot water heater (82 or 21.9%), range (72 or 19.3%), exhaust fan (25 or 6.7%), refrigerator (10 or 2.7%), and smoke detector (2 or 0.8%). A rank ordering of these problems through level 4 can be seen on pages 40 and 41 with expansion to all levels tabulated on pages 54 through 56. The major malfunctioning components of the furnace were the pilot (40), burner and blower controls (35), fuel gun (32),thermostat (21), and blower motor (4). Hot water heater problems were mainly with heating elements (electric), pilots (gas), and pressure relief valves. Pilot light, temperature control and gas leak problems were the major complaints attributed to ranges.

6.0 Summary Comments

A field inspection data collection effort has been described which had as its objective the identification of mobile home performance problems. These data will compliment the Task I performance data and allow a determination of the cause and consequence of the problems which will then be related to Standards, Enforcement and Durability aspects of mobile home construction. A unique interdisciplinary field inspection procedure was developed to efficiently accumulate problem data. Computer techniques were used to organize and assist in the evaluation of these data. The extensive photographic documentation presented in Appendix C is valuable in this evaluative process.

It is important to keep in mind that the number of units included in the field survey is small when compared to the total number of mobile homes now being occupied in the U. S. This study concentrated on problems with mobile homes that owners may not have even realized existed and does not reflect the many cases where mobile home occupants have been satisfied with the performance of their units.

References

1. Standard for Mobile Homes (NFPA 501B, 1973 and ANSI A119.1, 1974) are available from National Fire Protection Association, 470 Atlantic Avenue, Boston, Massachusetts 02210; Mobile Home Manufacturers Association, 14650 Lee Road, Chantilly, Virginia 22021; and the Trailer Coach Association, 3855 E. LaPolma Avenue, Anaheim, California 92806.

2. Pielert, J.H., Greene, W.E., Skoda, L.F., Street, W.G.; Performance of Mobile Homes - Data Acquisition and Analysis Methodology; NBSIR 75-641, National Bureau of Standards, Washington, D.C. 20234, February 1975.

Acknowledgement

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A special thanks is due to those private and governmental organizations which provided mobile homes for field inspection at various locations around the country.

TABLE 1

Number of Units vs. State of Manufacture

Field Data

State	No. of Units
Alabama	37
Arkansas	12
Florida	6
Georgia	20
Illinois	2
Indiana	25
Kentucky	3
Maryland	2
Michigan	7
Minnesota	2
Mississippi	9
Missouri	1
North Carolina	13
North Dakota	2
Ohio	3
Pennsylvania	23
South Carolina	5
Tennessee	10
Texas	1
Utah	2
Virginia	1
Wisconsin	2
Unknown	69
TOTAL	257

Table 2

Year of Manufacture vs. Number of Units

Year	No. of Units
1962	2
1965	2
1971	7
1972	154
1973	1
Unknown	91
Total	257

Table 3

Width vs. Number of Units

Width	No. of Units
10 foot	2
12 foot	255
Total	257

TABLE 4

Seals of Certifying Agencies

Field Data (257 Units)

Agency	Type of Agency	Number of Seals
Alabama	State	40
Florida	State	2
Georgia	State	5
Mississippi	State	3
Tennessee	State	7
	TOTAL STATE	57
Nationwide Consumer Testing Lab	Third Party	3
Underwriters Lab	Third Party	10
	TOTAL THIRD PARTY	13
MHMA/TCA[1/]	Trade Association	137
	TOTAL TRADE ASSOCIATION	137
	OVERALL TOTALS	207 (173 units)
	Units With No Seals Attached[2/]	84
	TOTAL SEALS[3/]	291

1/ Trade Association - Mobile Home Manufacturers Association and Trailer Coach Association.

2/ Field Inspection revealed no attached seals.

3/ Exceeds 257 field inspected units because some units had more than one seal.

TABLE 5

SUMMARY OF REPORTED MOBILE HOME PROBLEMS - FIELD DATA (257 UNITS)

ALL CATEGORIES

CATEGORY OF PROBLEM	LEVEL	REPORTED PROBLEMS		MOBILE HOMES WITH PROBLEMS		AVERAGE NUMBER OF PROBLEMS PER UNIT IN SAMPLE
		NUMBER	% OF TOTAL IN SAMPLE	NUMBER	% OF TOTAL IN SAMPLE	
ANSI Standard A119.1/ Enforcement Process	2	2120	60.1	246	95.7	8.24
Routine Maintenance	2	934	26.5	169	65.8	3.63
Mechanical/Electrical Appliances & Equipment	2	374	10.6	106	41.2	1.46
Miscellaneous	2	100	2.8	53	20.6	.39
TOTAL		3528	100%			13.72

NOTE: See Appendix B (Page 38) for additional detail.

TABLE 6

REPORTED ANSI A119.1/ENFORCEMENT PROCESSES

RELATED MOBILE HOME PROBLEMS - FIELD DATA (257 UNITS)

ANSI STANDARD A119.1 REFERENCE	LEVEL	ANSI A119.1/ENFORCEMENT PROCESSES RELATED PROBLEMS		MOBILE HOMES WITH PROBLEMS		AVERAGE NUMBER OF PROBLEMS PER UNIT IN SAMPLE
		NUMBER	% OF TOTAL IN SAMPLE	NUMBER	% OF TOTAL IN SAMPLE	
Part B - Construction	3	730	34.4	235	91.4	2.84
Part C - Plumbing	3	701	33.1	208	80.9	2.72
Part D - Heating	3	409	19.3	168	65.4	1.59
Part E - Electrical	3	280	13.2	142	55.3	1.09
TOTAL		2120	100%			8.24

NOTE: See Appendix B (Page 38) for additional detail.

TABLE 7

REPORTED ANSI A119.1/ENFORCEMENT PROCESSES RELATED MOBILE HOME PROBLEMS - FIELD DATA (257 UNITS)

PART B - CONSTRUCTION

ANSI STANDARD A119.1 PARAGRAPH REFERENCE PART B - CONSTRUCTION	LEVEL	ANSI A119.1/ENFORCEMENT PROCESS PROBLEMS		MOBILE HOMES WITH PROBLEMS		AVERAGE NUMBER OF PROBLEMS PER UNIT IN SAMPLE
		NUMBER	% OF TOTAL	NUMBER	% OF TOTAL	
B6/B7 Exterior Walls	4	237	32.5	173	67.3	.92
B6/B7 Roof System	4	184	25.2	112	43.6	.72
B6/B7 Partition Walls	4	120	16.4	100	38.9	.47
B-App. Transit Considerations	4	83	11.4	53	20.6	.32
B6/B7 Floor Systems	4	75	10.3	60	23.3	.29
B6/B7/B8 Doors Exterior	4	16	2.2	15	5.8	.06
B6/B7/B8 Windows	4	12	1.6	10	3.9	.05
B6.5.1 Tiedowns	4	3	.4	3	1.2	.01
TOTAL		730	100%			2.84

NOTE: See Appendix B (Page 39) for additional detail.

TABLE 8

REPORTED ANSI A119.1/ENFORCEMENT PROCESSES RELATED MOBILE HOME PROBLEMS - FIELD DATA (257 UNITS)

RANK ORDERED BY NUMBER OF PROBLEMS - B6 & B7 - EXTERIOR WALLS

ANSI STANDARD A119.1 PARAGRAPH REFERENCE	LEVEL	ANSI A119.1/ENFORCEMENT PROCESSES RELATED PROBLEMS		MOBILE HOMES WITH PROBLEMS		AVERAGE NUMBER OF PROBLEMS PER UNIT IN SAMPLE
		NUMBER	% OF TOTAL	NUMBER	% OF TOTAL	
B7.1 Durability	5	132	55.7	127	49.4	.51
B7.1 Weather Resistance	5	57	24.1	37	14.4	.22
B6.5/6.6 Fastening of Structural Systems	5	45	19.0	44	17.1	.18
B6.6 Load Carrying Capacity	5	1	.4	1	.4	.003
B7.5 Heat Loss	5	1	.4	1	.4	.003
B7.2 Condensation Resistance	5	1	.4	1	.4	.003
TOTAL		237	100%			.92

NOTE: See Appendix B (Page 42) for additional detail.

TABLE 9

REPORTED ANSI A119.1/ENFORCEMENT PROCESSES RELATED MOBILE HOME PROBLEMS - FIELD DATA (257 units)

PART C- PLUMBING

ANSI STANDARD A119.1 PARAGRAPH REFERENCE PART C - PLUMBING	LEVEL	PART C - PLUMBING PROBLEMS		MOBILE HOMES WITH PROBLEMS		AVERAGE NUMBER OF PROBLEMS PER UNIT IN SAMPLE
		NUMBER	% OF TOTAL	NUMBER	% OF TOTAL	
C11 - Water Distribution System	4	218	31.1	156	60.7	0.85
C12 - Drainage System	4	152	21.7	84	32.7	0.60
C9 - Plumbing Fixtures	4	143	20.4	76	29.6	0.55
C7.1 - Joints and Connections	4	105	15.0	58	22.6	0.41
C5.2 - Protective Requirements	4	50	7.1	45	17.5	0.20
C13 - Vents and Venting	4	27	3.9	23	8.9	0.10
C5.1.4 - Prohibited Fitting and Practices	4	3	0.4	3	1.2	0.01
C10 - Hangers and Supports	4	2	0.3	2	0.8	0.01
C8 - Traps and Cleanouts	4	1	0.1	1	0.4	0.01
TOTAL		701	100.0			2.74

NOTE: See Appendix B (Pages 44,45,46 and 47) for additional detail.

TABLE 10

REPORTED ANSI A119.1/ENFORCEMENT PROCESS RELATED MOBILE HOME PROBLEMS - FIELD DATA (257 units)

PART D - HEATING

ANSI STANDARD A119.1 PARAGRAPH REFERENCE PART C - PLUMBING	LEVEL	PART D - HEATING PROBLEMS		MOBILE HOMES WITH PROBLEMS		AVERAGE NUMBER OF PROBLEMS PER UNIT IN SAMPLE
		NUMBER	% OF TOTAL	NUMBER	% OF TOTAL	
D5 Piping System	4	210	51.3	117	45.5	0.82
D6 Appliances	4	198	48.4	133	51.8	0.77
D4.2.5 LP Gas Safety Device	4	1	0.3	1	0.4	0.01
TOTAL		409	100.0			1.60

NOTE: See Appendix B (Pages 48, 49, and 50) for additional detail.

TABLE 11

REPORTED ANSI A119.1/ENFORCEMENT PROCESS RELATED MOBILE HOME PROBLEMS - FIELD DATA (257 units)

PART E - ELECTRICAL

ANSI STANDARD A119.1 PARAGRAPH REFERENCE PART E - ELECTRICAL	LEVEL	PART E - ELECTRICAL PROBLEMS		MOBILE HOMES WITH PROBLEMS		AVERAGE NUMBER OF PROBLEMS PER UNIT IN SAMPLE
		NUMBER	% OF TOTAL	NUMBER	% OF TOTAL	
E11 Wiring Methods	4	179	63.9	108	42.0	0.70
E6 Receptacle Outlets (Location)	4	36	12.9	28	10.9	0.14
E5 Materials and Equipment	4	19	6.8	19	7.4	0.07
E20 Lighting Fixtures	4	15	5.4	12	4.7	0.06
E22 Outdoor Outlets	4	12	4.2	12	4.7	0.05
E23 Grounding and Bonding	4	5	1.8	5	1.9	0.03
E9 Disconnecting Means	4	4	1.4	4	1.6	0.01
E10 Power Supply	4	4	1.4	4	1.6	0.01
E18 Wall Switches	4	3	1.1	2	0.8	0.01
E19 Receptacles	4	3	1.1	3	1.2	0.01
TOTAL		280	100.0			1.09

NOTE: See Appendix B (Pages 50 and 51) for additional detail.

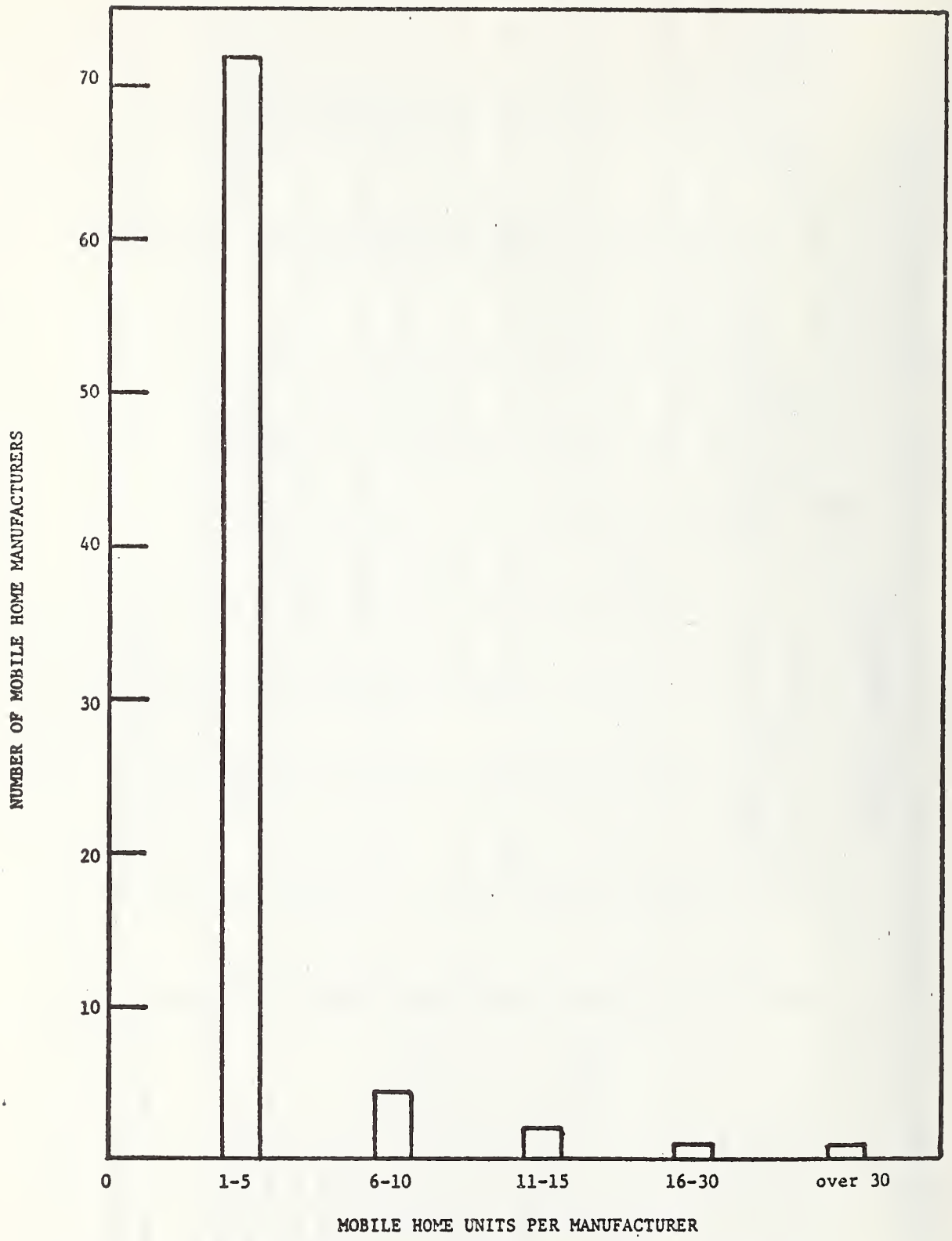


Figure 1 - Distribution of Mobile Homes by Manufacturer in Field Study

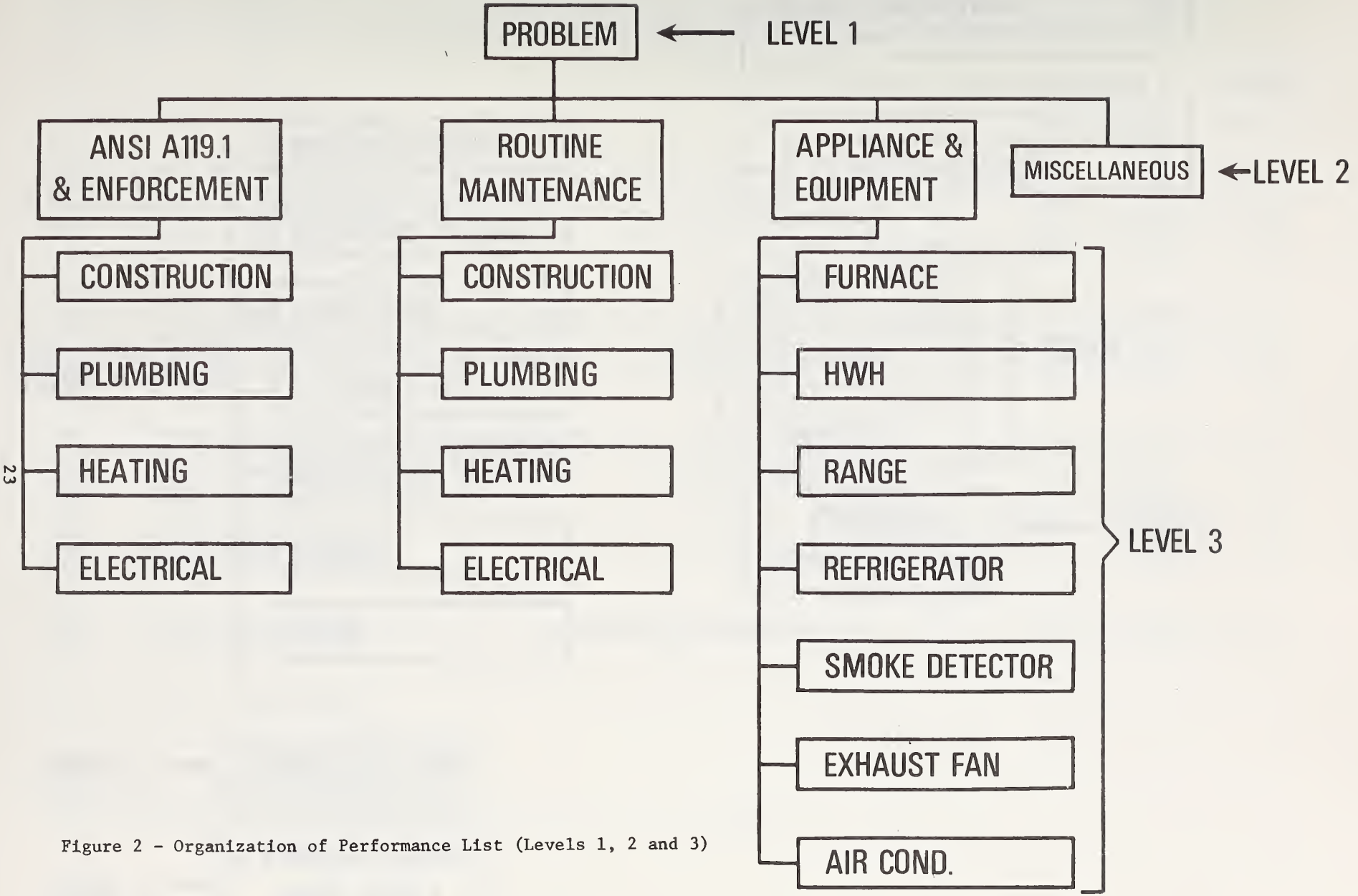


Figure 2 - Organization of Performance List (Levels 1, 2 and 3)

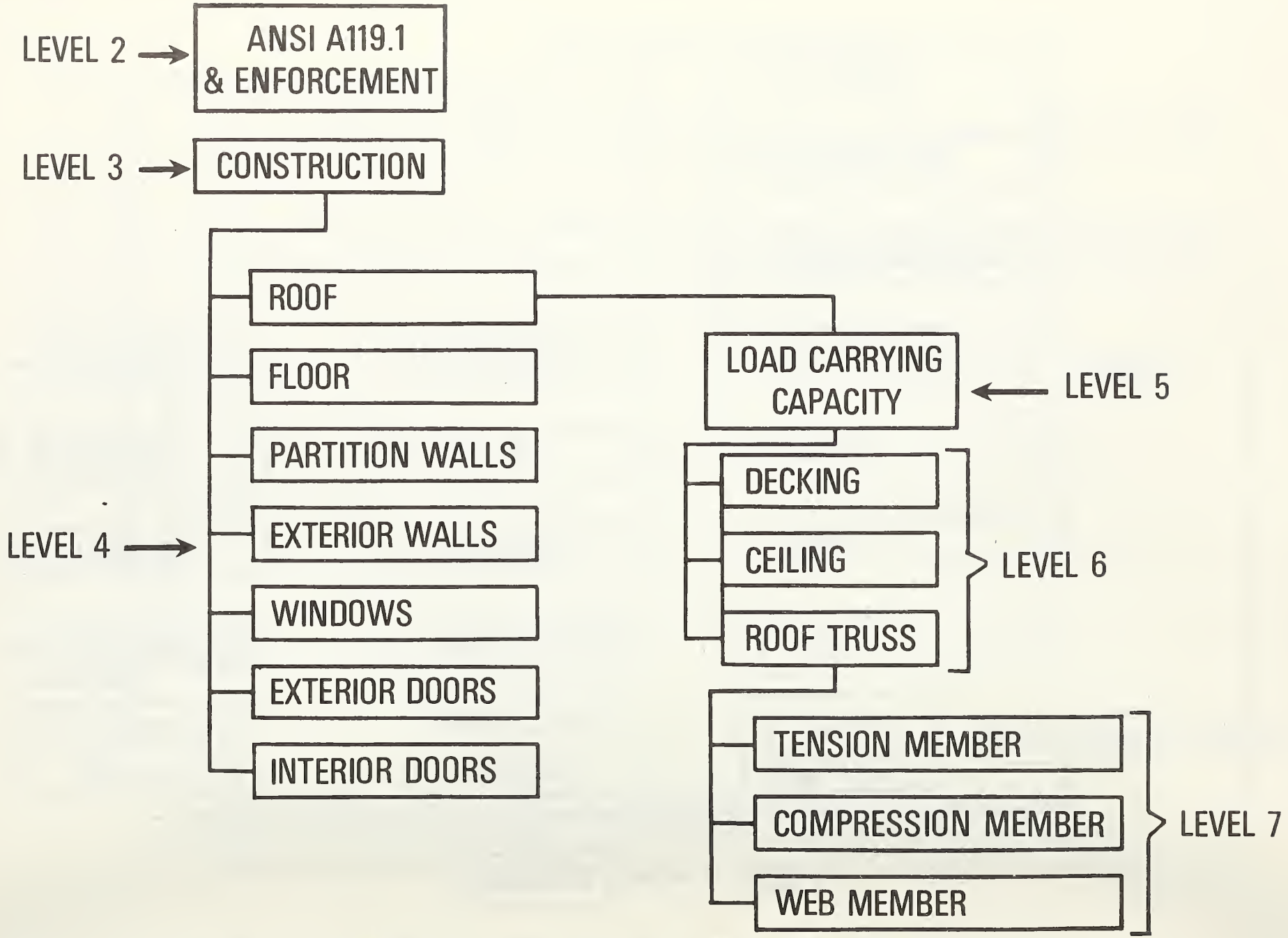


Figure 3 - Organization of Performance List (Levels 2 through 7) For one subsection.

FIRST LEVEL SUMMATION:
TOTAL NUMBER OF PROBLEMS = NO. 3528

(A)	(B)	(C)	(D) NO.	%2ND	%1ST	HOMES	%HOMES	LEVEL
SECOND AND THIRD LEVEL SUMMATIONS:								
ANSI	ANSI STANDARD A119.1/ENFORCEMENT PROCESSES	(0)	2120		60.1	246	95.7	2
CONS	PART B CONSTRUCTION	(0)	730	34.4	20.7	235	91.4	3
PLUM	PART C PLUMBING	(0)	701	33.1	19.9	208	80.9	3
HEAT	PART D HEATING SYSTEM	(0)	409	19.3	11.6	168	65.4	3
ELEC	PART E ELECTRICAL	(0)	280	13.2	7.9	142	55.3	3
NANS	ROUTINE MAINTENANCE	(0)	934		26.5	169	65.8	2
NCON	CONSTRUCTION	(0)	550	58.9	15.6	143	55.6	3
NPLM	PLUMBING	(17)	216	23.1	6.1	94	36.6	3
NELC	ELECTRICAL	(6)	124	13.3	3.5	74	28.8	3
NHTG	HEATING	(4)	44	4.7	1.2	34	13.2	3
APEQ	MECHANICAL/ELECTRICAL APPLIANCES -EQUIPMENT	(0)	374		10.6	106	41.2	2
AFHA	FURNACE,HOT AIR,GAS OR OIL	(39)	181	48.4	5.1	77	30.0	3
AHWW	HOT WATER HEATERS	(28)	82	21.9	2.3	52	20.2	3
ARGE	RANGE - GAS/ELECTRIC	(11)	72	19.3	2.0	36	14.0	3
AEEX	EXHAUST FAN		25	6.7	.7	14	5.4	3
ACRF	REFRIGERATOR	(9)	10	2.7	.3	9	3.5	3
ASDE	SMOKE DECTOR		3	.8	.1	3	1.2	3
AFEB	ELECTRIC BASEBOARD HEATING UNITS	(1)	1	.3	.0	1	.4	3
MISC	MISCELLANEOUS		100		2.8	53	20.6	2

TOTAL NUMBER OF MOBILE HOMES REVIEWED = 257

Figure 4 - Typical Problem Summation-Levels 1 through 3

(A)	(B)		(C)	NO. (D)	%3RD	%2ND	%1ST	HOMES	%HOMES	LEVEL
* ANSI	ANSI STANDARD A119.1/ENFORCEMENT PROCESSES		(0)	2120			60.1	246	95.7	2 *
CONS	PART B	CONSTRUCTION	(0)	730		34.4	20.7	235	91.4	3
EXTW	B6/B7	EXTERIOR WALLS	(0)	237	32.5	11.2	6.7	173	67.3	4
ROOF	B6/B7	ROOF SYSTEM	(0)	184	25.2	8.7	5.2	112	43.6	4
INTW	B6/B7	PARTITION WALLS	(0)	120	16.4	5.7	3.4	100	38.9	4
TRAN	B-APP.	TRANSIT CONSIDERATIONS	(0)	83	11.4	3.9	2.4	53	20.6	4
FLOR	B6/B7	FLOOR SYSTEMS	(0)	75	10.3	3.5	2.1	60	23.3	4
DEXT	B6/B7/B8	DOORS EXTERIOR	(0)	16	2.2	.8	.5	15	5.8	4
WNDW	B6/B7/B8	WINDOWS	(0)	12	1.6	.6	.3	10	3.9	4
TIDN	B6.5.1	TIEDOWNS	(0)	3	.4	.1	.1	3	1.2	4
DINT	B8.3.2/3	DOOR INTERIOR	(0)	0	.0	.0	.0	0	.0	4
FWEQ	B2.1	FIRE WARNING EQUIPMENT	(0)	0	.0	.0	.0	0	.0	4
SPEQ	B8.4	SPECIAL REQUIREMENTS	(0)	0	.0	.0	.0	0	.0	4
PLUM	PART C	PLUMBING	(0)	701		33.1	19.9	208	80.9	3
WDTN	C11	WATER DISTRIBUTION SYSTEM	(0)	218	31.1	10.3	6.2	156	60.7	4
DSYS	C12	DRAINAGE SYSTEM	(0)	152	21.7	7.2	4.3	84	32.7	4
PFIA	C9	PLUMBING FIXTURES	(0)	143	20.4	6.7	4.1	76	29.6	4
JCTI	C7.1	JOINTS + CONNECTIONS/TIGHT (GAS, WATER	(105)	105	15.0	5.0	3.0	58	22.6	4
PREQ	C5.2	PROTECTIVE REQUIREMENT	(0)	50	7.1	2.4	1.4	45	17.5	4
VANV	C13	VENTS AND VENTING	(0)	27	3.9	1.3	.8	23	8.9	4
PFAP	C5.1.4	PROHIBITED FITTINGS AND PRACTICES	(0)	3	.4	.1	.1	3	1.2	4
PHAS	C10	HANGERS AND SUPPORTS	(2)	2	.3	.1	.1	2	.8	4
TANC	C8	TRAPS AND CLEANOUTS	(0)	1	.1	.0	.0	1	.4	4
ATOF	C5.1.5	ALIGN OF FITTINGS/DIRECTION OF FLOW		0	.0	.0	.0	0	.0	4
HEAT	PART D	HEATING SYSTEM	(0)	409		19.3	11.6	168	65.4	3
HPSY	D5	PIPING SYSTEM	(0)	210	51.3	9.9	6.0	117	45.5	4
HAPL	D6	APPLIANCES	(0)	198	48.4	9.3	5.6	133	51.8	4
HLPG	D4.2.5	LP GAS SAFETY DEVICES		1	.2	.0	.0	1	.4	4
ELEC	PART E	ELECTRICAL	(0)	280		13.2	7.9	142	55.3	3
EWDR	E11	WIRING METHODS	(21)	179	63.9	8.4	5.1	108	42.0	4
EREC	E6	RECEPTACLE OUTLETS REQUIRED	(0)	36	12.9	1.7	1.0	28	10.9	4
ERXY	E5.0	MATERIALS AND EQUIPMENT	(0)	19	6.8	.9	.5	19	7.4	4
EXUR	E20	LIGHTING FIXTURES	(14)	15	5.4	.7	.4	12	4.7	4
EBFA	E22	OUTDOOR OUTLETS, FIXTURES, AIR-COOLING	(5)	12	4.3	.6	.3	12	4.7	4
EGOB	E23	GROUNDING AND BONDING	(0)	5	1.8	.2	.1	5	1.9	4
EDIS	E9	DISCONNECTING MEANS AND BRANCH CIRCUIT	(0)	4	1.4	.2	.1	4	1.6	4
EPOW	E10	POWER SUPPLY	(0)	4	1.4	.2	.1	4	1.6	4
ESWL	E18	WALL SWITCHES	(3)	3	1.1	.1	.1	2	.8	4
ERRO	E19	RECEPTACLE OUTLETS	(0)	3	1.1	.1	.1	3	1.2	4
EBCR	E7	BRANCH CIRCUITS REQUIRED	(0)	0	.0	.0	.0	0	.0	4
EUND	E12	UNDER CHASSIS WIRING	(0)	0	.0	.0	.0	0	.0	4
EPPL	E13	SWITCHES AND RECEPTACLE PLATES	(0)	0	.0	.0	.0	0	.0	4
ECON	E14	CONDUCTORS IN OUTLET BOXES	(0)	0	.0	.0	.0	0	.0	4
EPOL	E16	POLARIZATION	(0)	0	.0	.0	.0	0	.0	4
ETER	E17	CONNECTION TO TERMINALS AND SPLICES	(0)	0	.0	.0	.0	0	.0	4

Figure 5 - Typical Problem Summation-Levels 2 through 4

(A)	(B)		(C)	(D)	NO.	%7TH	%6TH	%5TH	%4TH	%3RD	HOMES	%HOMES	LEVEL
* ANSI	ANSI STANDARD A119.1/ENFORCEMENT PROCESSES		(0)	2120							246	95.7	2
CONS	PART B	CONSTRUCTION	(0)	730							235	91.4	3
EXTW	B6/B7	EXTERIOR WALLS	(0)	237					32.5		173	67.3	4
EXDR	B7.1	DURABILITY	(0)	132				55.7	18.1		127	49.4	5
EXDR4.	B7.1	EXTERIOR FASTENERS		128			97.0	54.0	17.5		126	49.0	6
EXDR2.	B7.1	INTERIOR COVERING		3			2.3	1.3	.4		2	.8	6
EXDR1.	B7.1	EXTERIOR COVERING		1			.8	.4	.1		1	.4	6
EXDR3.	B7.1	CAULKING		0			.0	.0	.0		0	.0	6
EXDR5.	B7.1	INTERIOR FASTENERS		0			.0	.0	.0		0	.0	6
EXWR	B7.1	WEATHER RESISTANCE - RAIN LEAKS	(5)	57				24.1	7.8		37	14.4	5
EXWR2.	B7.1	WINDOWS		28			49.1	11.8	3.8		21	8.2	6
EXWR3.	B7.1	DOORS		16			28.1	6.8	2.2		15	5.8	6
EXWR1.	B7.1	PENETRATION OF EXTERIOR COVERING		8			14.0	3.4	1.1		7	2.7	6
EXWR4.	B7.1	INTERSECTION OF WALL AND ROOF		0			.0	.0	.0		0	.0	6
EXWR5.	B7.1	INTERSECTION OF WALL AND FLOOR		0			.0	.0	.0		0	.0	6
EXSS	B6.5/6.6	FASTENING OF STRUCTURAL SYSTEMS	(0)	45				19.0	6.2		44	17.1	5
EXSS1.	B6.5/6.6	EXTERIOR COVERING TO WALL FRAMING		45			100.0	19.0	6.2		44	17.1	6
EXSS2.	B6.5/6.6	INTERIOR COVERING TO WALL FRAMING		0			.0	.0	.0		0	.0	6
EXSS3.	B6.5/6.6	WALL TO ROOF		0			.0	.0	.0		0	.0	6
EXSS4.	B6.5/6.6	WALL TO FLOOR		0			.0	.0	.0		0	.0	6
EXSS5.	B6.5/6.6	WALL TO WALL		0			.0	.0	.0		0	.0	6
EXCC	B6.6	LOAD CARRYING CAPACITY	(1)	1				.4	.1		1	.4	5
EXCC1.	B6.6	EXTERIOR COVERING		0			.0	.0	.0		0	.0	6
EXCC2.	B6.6	WALL FRAMING		0			.0	.0	.0		0	.0	6
EXCC3.	B6.6	INTERIOR COVERING		0			.0	.0	.0		0	.0	6
EXHL	B7.5	HEAT LOSS	(0)	1				.4	.1		1	.4	5
EXHL1.	B7.5	INSULATION		1			100.0	.4	.1		1	.4	6
EXHL2.	B7.5.4	AIR INFILTRATION		0			.0	.0	.0		0	.0	6
EXCR	B7.2	CONDENSATION RESISTANCE	(1)	1				.4	.1		1	.4	5
EXCR1.	B7.2	VAPOR BARRIER IN CEILING		0			.0	.0	.0		0	.0	6
EXCR2.	B7.2	NO VAPOR BARRIER IN CEILING		0			.0	.0	.0		0	.0	6
EXFS	B7.3	INTERIOR FLAME SPREAD - INTERIOR COVERIN		0				.0	.0		0	.0	5
EXBM	B7.6	METALLIC ROOF BONDING/EXTERIOR COVERINGS		0				.0	.0		0	.0	5
RCOF	B6/B7	ROOF SYSTEM	(0)	184					25.2		112	43.6	4
RLWP	B7.1	RAIN LEAK - WATER RESISTANCE MEM. PENE	(144)	162				88.0	22.2		103	40.1	5
RIEW	B7.1	INTERSECTION OF ROOF AND EXTERIOR WALL		11			6.8	6.0	1.5		11	4.3	6
RLMP	B7.1	MEMBRANE PENETRATION	(1)	7			4.3	3.8	1.0		7	2.7	6
RLMP1.	B7.1	AT MEMBRANE JOINT (WITHIN FIELD OF R		2	28.6		1.2	1.1	.3		2	.8	7
RLMP2.	B7.1	AT VENT PIPE (PLUMBING)		2	28.6		1.2	1.1	.3		2	.8	7
RLMP3.	B7.1	AT VENT PIPE (HEATING)		2	28.6		1.2	1.1	.3		2	.8	7
RLMP4.	B7.1	AT DOUBLE WIDE JOINT		0	.0		.0	.0	.0		0	.0	7
RLMP5.	B7.1	AT TIP OUT JOINT		0	.0		.0	.0	.0		0	.0	7
FLCC	B6.4	LOAD CARRY CAPACITY	(0)	8				4.3	1.1		7	2.7	5
RTRS	B6.4	ROOF TRUSS	(1)	7			87.5	3.8	1.0		6	2.3	6
RTRS4.		ROOF TRUSS CUT FOR ROOF JACK		4	57.1		50.0	2.2	.5		4	1.6	7
RTRS1.	B6.4	TENSION MEMBER FAILURE		2	28.6		25.0	1.1	.3		2	.8	7
RTRS2.	B6.4	COMPRESSION MEMBER FAILURE		0	.0		.0	.0	.0		0	.0	7
RTRS3.	B6.4	WEB MEMBER FAILURE		0	.0		.0	.0	.0		0	.0	7
RDEL	B6.4	DECKING		1			12.5	.5	.1		1	.4	6
CEIL		CEILING		0			.0	.0	.0		0	.0	6
RDEF	B6.10	DEFLECTION	(0)	8				4.3	1.1		8	3.1	5

Figure 6 - Typical Problem Summations - Levels 2 through 8 (No 8th level problems on this page)

Appendix A

Field Inspection Forms

HUD No. _____
Date of Inspection _____

Construction Data

Length _____ Feet
Width _____ Feet

Manufacturer _____
Model _____
Serial Number _____
Year _____

Seals	Number
_____	_____
_____	_____
_____	_____

1. Under Frame
   Number of Axles _____
   Type of Outrigger
   _____ Z Member
   _____ C Member
   _____ Open Web Joist
   _____ Other
   Outrigger Spacing _____ Feet
   Long Beam Spacing _____ Feet
   Long Beam Depth _____ Inches

	Yes	No	Picture
Metal Under Frame Damage	_____	_____	_____
Moisture Barrier Damage	_____	_____	_____
Hurricane Straps	_____	_____	_____

   Number _____

2. Wall Framing

	Not Seen	Framing Type
Exterior Wall	_____	_____
Interior Wall	_____	_____

3. Floor Framing
   Not Seen _____
   Framing Type _____

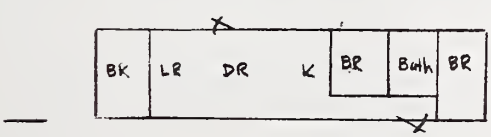
4. Roof System
   Type of Truss
   _____ Bowstring
   _____ Peaked
   _____ Other (Identify)

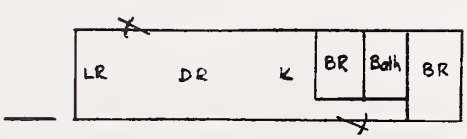
   Not Seen _____
   Roof Construction (Check)
   _____ Ceiling Material
   _____ Vapor Barrier
   _____ Insulation
   _____ Roof Truss
   _____ Insulation
   _____ Vapor Barrier
   _____ Metal Covering

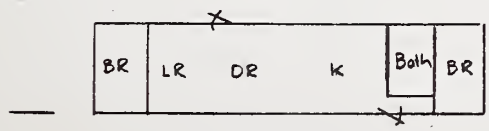
5. Flame Spread
   Ceiling
   _____ Gypsum Bb.
   _____ Veg. Fiberbd.

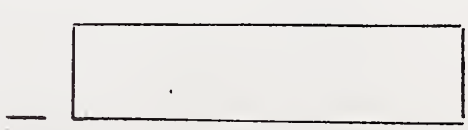
   Kitchen Cabinet
   _____ Wood
   _____ Pressed Wood
   _____ Plastic

   Paneling
   _____ Fire Rated
   _____ Not F.R.
   _____ Flame Spread









6. General

	Yes	No	Picture
Rusted Exterior Fasteners	_____	_____	_____
Interior Rain Leaks	_____	_____	_____
Emergency Egress Window	_____	_____	_____
Good _____ (No obstructions)			
Bad _____ (Obstructions)			

Comments:

HUD No. _____
Date of Inspection _____

Electrical Data

1. Distribution Panel Box (Part E-9 - 10)

Ampere Rating: 50 - 60 - 100 - 125 - 150

10.9	Located in rear third of home:	Yes _____	No _____
9.2	Minimum 24 in. from floor:	Yes _____	No _____
9.3	Minimum 6 in. clear space in front:	Yes _____	No _____

9 Fastened to: _____ Paneling _____ Stud Framing

_____ Other (indicate)

2. Type of Wire: _____ Copper _____ Aluminum _____ Cu Clad Aluminum

3. Branch Circuits (Part E-7)

4-15 Amp. Circuits: Yes _____ No _____
2-20 Amp. Circuits: Yes _____ No _____

4. Receptacle Outlets Required (Part E-6)

		Yes	No
	Receptacles Approved for wire used:		
6.1	Maximum 12 foot spacing:		
6.1a.	Counter tops in kitchen:		
6.1b	Adjacent to refrigerator and range:		
6.1c	Built-in vanities:		
6.1d	Counter tops under all cabinets:		
6.2	Within/adjacent shower/tub space:		

Outside Fixture: Yes ____ No ____ Weathertight: Yes _____ No _____

5. Wiring Methods (part E-11)

		Yes	No	Not Seen
11.3	Nomet. cable with nomet. boxes:			
11.4	Outlet boxes flush with surface:			
11.5	Boxes securely fastened:			
11.6	Continued sheath between boxes:			
11.7	Cable thru studs protected:			
11.9	Cable supported within 12" boxes, etc.:			
11.10	Support nonmet. cable 8":			

Lighting Fixture (Part E-20)
Ceiling fixture securely fastened: Yes _____ No _____

6. Hot Water Heater Enclosure

A. Accessibility: Good _____ Bad _____

_____ Interior _____ Exterior

B. Enclosure Construction

_____ Unfinished (backside of paneling, exposed studs)
_____ Paneled - Thickness _____
_____ Gypsum Wallboard - Thickness _____
_____ Insulation - Foil backed _____

Cable across HWH door: Yes _____ No _____

7. Range

Name Brand _____
Model No. _____
Fuel _____ L.P.G. _____ Natural _____ Elec.
Clearances: _____ Overhead Distance to Cabinets
_____ Exhaust Hood (Yes or No)
Charring of adjacent cabinets: Yes _____
No _____

8. Refrigerator

Name Brand _____
Model No. _____

Comments:

HUD No. _____
Date of Inspection _____

Heating Data

1. Heating System

Name Brand _____
Model No. _____
Fuel Type _____ Gas _____ Oil _____ Electric
_____ LP
_____ Natural

Input Capacity _____ BTU
Output Capacity _____ BTU

Heating Unit Enclosure Construction

_____ Unfinished (backside of paneling, exposed studs)
_____ Paneled - Thickness _____
_____ Gypsum Wallboard - Thickness _____
_____ Insulation - Foil backed _____

Certificate: Yes _____ No _____
Where: _____ Furnace Company
_____ Electric Panel
_____ Others

	Yes	No
Wall thermostat		
3 ft. or more from furnace		
Floor register w/dampers		
Smooth riser connection		
(5.1.1.1) Combust. intake rodent proof		
(6.4.2b) Drafthood aligned & secured		

Pipe material and size _____
Fitting material _____

2. Fuel Burning Appliances

	Furnace		HWH		Dryer		AC	
	Yes	No	Yes	No	Yes	No	Yes	No
A. Information on clearances, input, etc., attached to appliance (6.6.1)	___	___	___	___	___	___	___	___
B. Type of fuel marked on each fuel burning appliance (6.6.2)	___	___	___	___	___	___	___	___
C. Appliance accessible for inspection, repair, replacement w/o removing construction (6.7)	___	___	___	___	___	___	___	___

3. LP - Natural Gas Piping

		Yes	No
(5.1.10.1)	Supply location on "A" frame 18" from roadside	_____	_____
(5.1.11)	Metal tag at gas supply con.	_____	_____
(5.1.2.2)	Alum. connectors used outdoors	_____	_____
(5.1.16)	Gas piping used for electric ground	_____	_____
(5.1.18)	Adequate pipe hangers & supports	_____	_____

4. Outside Venting _____ No Roof Inspection

	Yes	No	Not Seen
Furnace vent roof jack	_____	_____	_____
Secured	_____	_____	_____
HWH drafthood aligned/secured	_____	_____	_____
Roof jack secured	_____	_____	_____
Vent terminating under mobile home	_____	_____	_____
3 ft. or more from air intake	_____	_____	_____
Cooking Appl. vent within 10 ft.	_____	_____	_____
Wall _____			
Ceiling _____			
Attic vents	_____	_____	_____
Eaves _____			
Roof _____			
Roof jack secured	_____	_____	_____

Comments:

HUD No _____
Date of Inspection _____

Plumbing Data

1. Approved Materials (Table C-1 Appendix C)

	Yes	No	Not Labeled	Not Seen
DWV Piping				
Water Piping				
Valves				
Water Closet				
Lavatory				
Bath Tub				
Kitchen Sink				

2. Plumbing Facilities

	Yes	No	Missing
At Least One Water Closet			
At Least One Lavatory			
At Least One Kitchen Sink			
Adequate Washer Drain			
Adequate Washer Water Supply			
Accessible Facilities			

3. Water Distribution (Part C-11)

	Yes	No	Not Seen
Minimum Size Piping (11.1.1)			
Proper Water Connection Location (11.2.1)			
Cap and Chain			
Tagged			
Minimum Size			
Backflow Protection (11.2.2.1)			
Adequate air gaps (11.2.3)			
Anti-siphon Ball Cock (11.2.6)			
Dishwasher (11.2.4)			
Clothes Washer (11.2.4)			

Types of Piping Materials

Copper _____ Location _____
Galv. Street _____ Location _____
Plastic _____ Location _____

Indication of External Corrosion Yes _____ No _____
Indication of Frozen Water Piping Yes _____ No _____

4. Hot Water Heater (11.3)

_____ Gas
_____ Electric

_____ Interior Access
_____ Exterior Access
_____ Not Accessible
_____ Missing

	Yes	No	Not Seen
Labeled Heater			
Valve(s) T&P Relief (11.3.1.1)			
Approved & Listed T&P Valves (11.3.1.1)			
Proper Location T&P Valves (11.3.1.2)			
Proper Location Relief Valve Drain (11.3.1.3)			
Threated End (11.3.1.3)			
Terminated in floor			

5. Drainage System (Part C-12)

Drain Outlets	Yes	No	Not Seen
Drain Outlets			
Proper Location (12.2.1)			
Eroper Clearance (12.2.2)			
Hose Coupler (12.2.3)			
Cap and Chain (12.3.3)			
Min. Outlet Size (12.3.3.3)			
Proper Trap Arm Length (12.5.3)			
Adequate Traps (8.1)			
Clean Outs (8.2)			
Trap Arm Grade (8.1.9.1)			

	Yes	No	Not Seen
Removability of Traps (8.1.9.4)			
Access to Bathtub Slip Joint Connection and Trap (9.1.4)			
Dishwasher Drain Air Gap (9.2.3)			
Clothes Washer (9.2.4)			
Proper Drain (9.2.4.1)			
Standpipe Dimensions (9.2.4.2)			
Trap for Standpipe (9.2.4.2)			
Vented Standpipe Trap (9.2.4.2)			
Accessible Standpipe (9.2.4.7)			

Type of DWV Piping Materials

_____ABS _____PVC

6. Vents and Venting (Part C-13)

	Yes	No	Not Seen
Main Vent Through Roof (13.3.1)			
Individual Vents (13.3.2)			
Individual Vent Valves			
Vent Grade (13.4)			
Adequate Horizontal Vents			
Adequate Vent Term (13.5)			
Water Tight Flashing (13.5.2)			
Removable Vent Caps (13.5.2)			

7. Protective Requirements (Part C-5.2)

	Yes	No	Not Seen
Protection of Piping/Weather			
Protection of Piping/Road Damage			
Rodent Resistance			

Comments:

Appendix B

Performance Problem List and Rank Ordered Summation

FIRST LEVEL SUMMATION:	NO.
TOTAL NUMBER OF PROBLEMS	3528

SECOND AND THIRD LEVEL SUMMATIONS:			NO.	%2ND	%1ST	HOMES	%HOMES	LEVEL
ANSI	ANSI STANDARD A119.1/ENFORCEMENT PROCESSES	(0)	2120		60.1	246	95.7	2
CONS	PART B CONSTRUCTION	(0)	730	34.4	20.7	235	91.4	3
PLUM	PART C PLUMBING	(0)	701	33.1	19.9	208	80.9	3
HEAT	PART D HEATING SYSTEM	(0)	409	19.3	11.6	168	65.4	3
ELEC	PART E ELECTRICAL	(0)	280	13.2	7.9	142	55.3	3
NANS	ROUTINE MAINTENANCE	(0)	934		26.5	169	65.8	2
NCON	CONSTRUCTION	(0)	550	58.9	15.6	143	55.6	3
NPLM	PLUMBING	(17)	216	23.1	6.1	94	36.6	3
NELC	ELECTRICAL	(6)	124	13.3	3.5	74	28.8	3
NHTG	HEATING	(4)	44	4.7	1.2	34	13.2	3
APEQ	MECHANICAL/ELECTRICAL APPLIANCES -EQUIPMENT	(0)	374		10.6	106	41.2	2
AFHA	FURNACE,HOT AIR,GAS OR OIL	(39)	181	48.4	5.1	77	30.0	3
AHWW	HOT WATER HEATERS	(28)	82	21.9	2.3	52	20.2	3
ARGE	RANGE - GAS/ELECTRIC	(11)	72	19.3	2.0	36	14.0	3
AEEX	EXHAUST FAN		25	6.7	.7	14	5.4	3
ACRF	REFRIGERATOR	(9)	10	2.7	.3	9	3.5	3
ASDE	SMOKE DECTOR		3	.8	.1	3	1.2	3
AFEB	ELECTRIC BASEBOARD HEATING UNITS	(1)	1	.3	.0	1	.4	3
MISC	MISCELLANEOUS		100		2.8	53	20.6	2

TOTAL NUMBER OF MOBILE HOMES REVIEWED = 257

FOURTH LEVEL SUMMATION:				NO.	%3RD	%2ND	%1ST	HOMES	%HOMES	LEVEL
* ANSI	ANSI STANDARD A119.1/ENFORCEMENT PROCESSES	(	0)	2120			60.1	246	95.7	2 *
CONS	PART 8	CONSTRUCTION	(| 0)	730		34.4	20.7	235	91.4	3
EXTW	86/87	EXTERIOR WALLS	(| 0)	237	32.5	11.2	6.7	173	67.3	4
ROOF	86/87	ROOF SYSTEM	(| 0)	184	25.2	8.7	5.2	112	43.6	4
INTW	86/87	PARTITION WALLS	(| 0)	120	16.4	5.7	3.4	100	38.9	4
TRAN	8-APP.	TRANSIT CONSIDERATIONS	(| 0)	83	11.4	3.9	2.4	53	20.6	4
FLOR	86/87	FLOOR SYSTEMS	(| 0)	75	10.3	3.5	2.1	60	23.3	4
DEXT	86/87/88	DOORS EXTERIOR	(| 0)	16	2.2	.8	.5	15	5.8	4
WNDW	86/87/88	WINDOWS	(| 0)	12	1.6	.6	.3	10	3.9	4
TIDN	86.5.1	TIEDOWNS	(| 0)	3	.4	.1	.1	3	1.2	4
DINT	88.3.2/3	DOOR INTERIOR	(| 0)	0	.0	.0	.0	0	.0	4
FWEQ	89.1	FIRE WARNING EQUIPMENT	(| 0)	0	.0	.0	.0	0	.0	4
SREQ	88.4	SPECIAL REQUIREMENTS	(| 0)	0	.0	.0	.0	0	.0	4
PLUM	PART C	PLUMBING	(| 0)	701		33.1	19.9	208	80.9	3
WDTN	C11	WATER DISTRIBUTION SYSTEM	(| 0)	218	31.1	10.3	6.2	156	60.7	4
DSYS	C12	DRAINAGE SYSTEM	(| 0)	152	21.7	7.2	4.3	84	32.7	4
PFIA	C9	PLUMBING FIXTURES	(| 0)	143	20.4	6.7	4.1	76	29.6	4
JCTI	C7.1	JOINTS + CONNECTIONS/TIGHT (GAS, WATER	(| 105)	105	15.0	5.0	3.0	58	22.6	4
PREQ	C5.2	PROTECTIVE REQUIREMENT	(| 0)	50	7.1	2.4	1.4	45	17.5	4
VANV	C13	VENTS AND VENTING	(| 0)	27	3.9	1.3	.8	23	8.9	4
PFAP	C5.1.4	PROHIBITED FITTINGS AND PRACTICES	(| 0)	3	.4	.1	.1	3	1.2	4
PHAS	C10	HANGERS AND SUPPORTS	(| 2)	2	.3	.1	.1	2	.8	4
TANC	C8	TRAPS AND CLEANOUTS	(| 0)	1	.1	.0	.0	1	.4	4
ATDF	C5.1.5	ALIGN OF FITTINGS/DIRECTION OF FLOW			0	.0	.0	.0	0	.0	4
HEAT	PART D	HEATING SYSTEM	(| 0)	409		19.3	11.6	168	65.4	3
HPSY	D5	PIPING SYSTEM	(| 0)	210	51.3	9.9	6.0	117	45.5	4
HAPL	D6	APPLIANCES	(| 0)	198	48.4	9.3	5.6	133	51.8	4
HLPG	D4.2.5	LP GAS SAFETY DEVICES			1	.2	.0	.0	1	.4	4
ELEC	PART E	ELECTRICAL	(| 0)	280		13.2	7.9	142	55.3	3
EWOR	E11	WIRING METHODS	(| 21)	179	63.9	8.4	5.1	108	42.0	4
EREC	E6	RECEPTACLE OUTLETS REQUIRED	(| 0)	36	12.9	1.7	1.0	28	10.9	4
ERXY	E5.0	MATERIALS AND EQUIPMENT	(| 0)	19	6.8	.9	.5	19	7.4	4
EXUR	E20	LIGHTING FIXTURES	(| 14)	15	5.4	.7	.4	12	4.7	4
EBFA	E22	OUTDOOR OUTLETS, FIXTURES, AIR-COOLING	(| 5)	12	4.3	.6	.3	12	4.7	4
EGDB	E23	GROUNDING AND BONDING	(| 0)	5	1.8	.2	.1	5	1.9	4
EDIS	E9	DISCONNECTING MEANS AND BRANCH CIRCUIT	(| 0)	4	1.4	.2	.1	4	1.6	4
EPOW	E10	POWER SUPPLY	(| 0)	4	1.4	.2	.1	4	1.6	4
ESWL	E18	WALL SWITCHES	(| 3)	3	1.1	.1	.1	2	.8	4
EFRO	E19	RECEPTACLE OUTLETS	(| 0)	3	1.1	.1	.1	3	1.2	4
EBCR	E7	BRANCH CIRCUITS REQUIRED	(| 0)	0	.0	.0	.0	0	.0	4
EUNO	E12	UNDER CHASSIS WIRING	(| 0)	0	.0	.0	.0	0	.0	4
EFPL	E13	SWITCHES AND RECEPTACLE PLATES	(| 0)	0	.0	.0	.0	0	.0	4
ECON	E14	CONDUCTORS IN OUTLET BOXES	(| 0)	0	.0	.0	.0	0	.0	4
EPOL	E16	POLARIZATION	(| 0)	0	.0	.0	.0	0	.0	4
ETER	E17	CONNECTION TO TERMINALS AND SPLICES	(| 0)	0	.0	.0	.0	0	.0	4

FOURTH LEVEL SUMMATION:				NO.	%3RD	%2ND	%1ST	HOMES	%HOMES	LEVEL
EMKE	E25	ELECTRICAL MARKING	(0)	0	.0	.0	.0	0	.0	4
* NANS		ROUTINE MAINTENANCE	(0)	934			26.5	169	65.8	2 *
NCON		CONSTRUCTION	(0)	550		58.9	15.6	143	55.6	3
NCXD		EXTERIOR DOORS	(43)	244	44.4	26.1	6.9	97	37.7	4
NCWD		WINDOWS	(23)	122	22.2	13.1	3.5	66	25.7	4
NCES		EXTERIOR STAIRS		41	7.5	4.4	1.2	25	9.7	4
NCPD		PARTITIONS DOORS	(15)	40	7.3	4.3	1.1	27	10.5	4
NCSM		SKIRTING		32	5.8	3.4	.9	21	8.2	4
NCHH		HOT WATER HEATER COMPARTMENT	(0)	27	4.9	2.9	.8	26	10.1	4
NCBL		BLOCKING	(9)	20	3.6	2.1	.6	15	5.8	4
NCFL		FLOOR	(1)	13	2.4	1.4	.4	9	3.5	4
NCMG		SITE GRADING		7	1.3	.7	.2	7	2.7	4
NCTD		TIE DOWN STRAPS LOOSE, ETC		4	.7	.4	.1	4	1.6	4
NPLM		PLUMBING	(17)	216		23.1	6.1	94	36.6	3
NPWS		WATER SUPPLY PIPING	(15)	79	36.6	8.5	2.2	53	20.6	4
NPFX		FIXTUERS	(0)	69	31.9	7.4	2.0	42	16.3	4
NPBT		SEWER		39	18.1	4.2	1.1	26	10.1	4
NPPR		PRESSURE REGULATOR		12	5.6	1.3	.3	9	3.5	4
NPMW		WASHING MACHING	(0)	0	.0	.0	.0	0	.0	4
NPDW		DISH WASHER	(0)	0	.0	.0	.0	0	.0	4
NPEX		EXTERIOR DARIN-FURNACE,WATER HEATER		0	.0	.0	.0	0	.0	4
NELC		ELECTRICAL	(6)	124		13.3	3.5	74	28.8	3
NEDP		DISTRIBUTION PANEL BOARD	(10)	55	44.4	5.9	1.6	40	15.6	4
NERC		RECEPTICAL OUTLETS	(1)	33	26.6	3.5	.9	26	10.1	4
NEPP		POWER POLE/LIFELINE		18	14.5	1.9	.5	17	6.6	4
NESW		SWITCHES	(6)	7	5.6	.7	.2	6	2.3	4
NEEF		EXTERIOR LIGHT FIXTURE		3	2.4	.3	.1	3	1.2	4
NEIF		INTERIOR LIGHTING FIXTURES	(1)	1	.8	.1	.0	1	.4	4
NESR		SERVICE		1	.8	.1	.0	1	.4	4
NEGR		EXTERNAL GROUNDING		0	.0	.0	.0	0	.0	4
NEBC		BRANCH CIRCUIT MALFUNCTION		0	.0	.0	.0	0	.0	4
NHTG		HEATING	(4)	44		4.7	1.2	34	13.2	3
NHGP		GAS SUPPLY PIPING		23	52.3	2.5	.7	20	7.8	4
NHSP		INSTALLED SPACE HEATERS		10	22.7	1.1	.3	8	3.1	4
NHOP		OIL SUPPLT PIPING	(7)	7	15.9	.7	.2	6	2.3	4
NHGR		GAS PRESSURE REGULATOR		0	.0	.0	.0	0	.0	4
NHRJ		ROOF JACK		0	.0	.0	.0	0	.0	4
* APEQ		MECHANICAL/ELECTRICAL APPLIANCES -EQUIPMENT	(0)	374			10.6	106	41.2	2 *
AFHA		FURNACE,HOT AIR,GAS OR OIL	(39)	181		48.4	5.1	77	30.0	3
AFPL		PILOT/ELECTRONIC IGNITION	(3)	40	22.1	10.7	1.1	32	12.5	4

FOURTH LEVEL SUMMATION:			NO.	%3RD	%2ND	%1ST	HOMES	%HOMES	LEVEL
AFCL	CONTROLS	(2)	35	19.3	9.4	1.0	21	8.2	4
AFFG	FUEL GUN	(0)	32	17.7	8.6	.9	20	7.8	4
AFWT	WALL THERMOSTAT	(17)	21	11.6	5.6	.6	18	7.0	4
AFBM	BLOWER MOTOR	(2)	4	2.2	1.1	.1	2	.8	4
AFTR	FILTER		3	1.7	.8	.1	3	1.2	4
AFAB	BURNER ASSEMBLY		2	1.1	.5	.1	2	.8	4
AFBL	BLOWER ASSEMBLY	(2)	2	1.1	.5	.1	2	.8	4
AFDR	FURNACE DOORS		1	.6	.3	.0	1	.4	4
AFGR	GAS REGULATOR		1	.6	.3	.0	1	.4	4
AFSC	FUEL SUPPLY CONNECTION		1	.6	.3	.0	1	.4	4
AHWW	HOT WATER HEATERS	(28)	82		21.9	2.3	52	20.2	3
AHEL	ELECTRIC HOT WATER HEATER	(17)	43	52.4	11.5	1.2	29	11.3	4
AHGS	GAS HOT WATER HEATER	(2)	11	13.4	2.9	.3	9	3.5	4
ARGE	RANGE - GAS/ELECTRIC	(11)	72		19.3	2.0	36	14.0	3
ARPL	PILOT	(3)	18	25.0	4.8	.5	16	6.2	4
ARGL	GAS LEAK		17	23.6	4.5	.5	14	5.4	4
ARCL	CONTROLS	(2)	11	15.3	2.9	.3	10	3.9	4
ARBU	BURNER	(0)	6	8.3	1.6	.2	5	1.9	4
ARIW	INTERNAL WIRING		6	8.3	1.6	.2	2	.8	4
ARHW	HARDWARE	(0)	3	4.2	.8	.1	3	1.2	4
AEEX	EXHAUST FAN		25		6.7	.7	14	5.4	3
ACRF	REFRIGERATOR	(9)	10		2.7	.3	9	3.5	3
ACRL	CONTROLS	(0)	1	10.0	.3	.0	1	.4	4
ACRC	COMPRESSOR		0	.0	.0	.0	0	.0	4
ACRM	COMPRESSOR MOTOR		0	.0	.0	.0	0	.0	4
ACRR	REFRIGERANT SYSTEM	(0)	0	.0	.0	.0	0	.0	4
ACRG	GASKETING (DOORS		0	.0	.0	.0	0	.0	4
ACRN	FAN		0	.0	.0	.0	0	.0	4
ASDE	SMOKE DECTOR		3		.8	.1	3	1.2	3
AFEB	ELECTRIC BASEBOARD HEATING UNITS	(1)	1		.3	.0	1	.4	3
AFMT	HEATING ELEMENT		0	.0	.0	.0	0	.0	4
AFST	THERMOSTAT	(0)	0	.0	.0	.0	0	.0	4
AFNC	COMTROLS	(0)	0	.0	.0	.0	0	.0	4

FOURTH THROUGH EIGHTH LEVEL SUMMATIONS:				NO.	%7TH	%6TH	%5TH	%4TH	%3RD	HOMES	%HOMES	LEVEL
* ANSI		ANSI STANDARD A119.1/ENFORCEMENT PROCESSES	(0)	2120						246	95.7	2 *
CONS	PART B	CONSTRUCTION	(0)	730						235	91.4	3
EXTW	86/87	EXTERIOR WALLS	(0)	237					32.5	173	67.3	4
EXDR	87.1	DURABILITY	(0)	132				55.7	18.1	127	49.4	5
EXDR4.	87.1	EXTERIOR FASTENERS		128			97.0	54.0	17.5	126	49.0	6
EXDR2.	87.1	INTERIOR COVERING		3			2.3	1.3	.4	2	.8	6
EXDR1.	87.1	EXTERIOR COVERING		1			.8	.4	.1	1	.4	6
EXDR3.	87.1	CAULKING		0			.0	.0	.0	0	.0	6
EXDR5.	87.1	INTERIOR FASTENERS		0			.0	.0	.0	0	.0	6
EXWR	87.1	WEATHER RESISTANCE - RAIN LEAKS	(5)	57				24.1	7.8	37	14.4	5
EXWR2.	87.1	WINDOWS		28			49.1	11.8	3.8	21	8.2	6
EXWR3.	87.1	DOORS		16			28.1	6.8	2.2	15	5.8	6
EXWR1.	87.1	PENETRATION OF EXTERIOR COVERING		8			14.0	3.4	1.1	7	2.7	6
EXWR4.	87.1	INTERSECTION OF WALL AND ROOF		0			.0	.0	.0	0	.0	6
EXWR5.	87.1	INTERSECTION OF WALL AND FLOOR		0			.0	.0	.0	0	.0	6
EXSS	86.5/6.6	FASTENING OF STRUCTURAL SYSTEMS	(0)	45				19.0	6.2	44	17.1	5
EXSS1.	86.5/6.6	EXTERIOR COVERING TO WALL FRAMING		45			100.0	19.0	6.2	44	17.1	6
EXSS2.	86.5/6.6	INTERIOR COVERING TO WALL FRAMING		0			.0	.0	.0	0	.0	6
EXSS3.	86.5/6.6	WALL TO ROOF		0			.0	.0	.0	0	.0	6
EXSS4.	86.5/6.6	WALL TO FLOOR		0			.0	.0	.0	0	.0	6
EXSS5.	86.5/6.6	WALL TO WALL		0			.0	.0	.0	0	.0	6
EXCC	86.6	LOAD CARRYING CAPACITY	(1)	1				.4	.1	1	.4	5
EXCC1.	86.6	EXTERIOR COVERING		0			.0	.0	.0	0	.0	6
EXCC2.	86.6	WALL FRAMING		0			.0	.0	.0	0	.0	6
EXCC3.	86.6	INTERIOR COVERING		0			.0	.0	.0	0	.0	6
EXHL	87.5	HEAT LOSS	(0)	1				.4	.1	1	.4	5
EXHL1.	87.5	INSULATION		1			100.0	.4	.1	1	.4	6
EXHL2.	87.5.4	AIR INFILTRATION		0			.0	.0	.0	0	.0	6
EXCR	87.2	CONDENSATION RESISTANCE	(1)	1				.4	.1	1	.4	5
EXCR1.	87.2	VAPOR BARRIER IN CEILING		0			.0	.0	.0	0	.0	6
EXCR2.	87.2	NO VAPOR BARRIER IN CEILING		0			.0	.0	.0	0	.0	6
EXFS	87.3	INTERIOR FLAME SPREAD - INTERIOR COVERIN		0				.0	.0	0	.0	5
EXBM	87.6	METALLIC ROOF BONDING/EXTERIOR COVERINGS		0				.0	.0	0	.0	5
ROOF	86/87	ROOF SYSTEM	(0)	184					25.2	112	43.6	4
RLWR	87.1	RAIN LEAK - WATER RESISTANCE MEM. PENE	(144)	162				88.0	22.2	103	40.1	5
RIEW	87.1	INTERSECTION OF ROOF AND EXTERIOR WALL		11			6.8	6.0	1.5	11	4.3	6
RLMP	87.1	MEMBRANE PENETRATION	(1)	7			4.3	3.8	1.0	7	2.7	6
RLMP1.	87.1	AT MEMBRANE JOINT (WITHIN FIELD OF R		2		28.6	1.2	1.1	.3	2	.8	7
RLMP2.	87.1	AT VENT PIPE (PLUMBING)		2		28.6	1.2	1.1	.3	2	.8	7
RLMP3.	87.1	AT VENT PIPE (HEATING)		2		28.6	1.2	1.1	.3	2	.8	7
RLMP4.	87.1	AT DOUBLE WIDE JOINT		0		.0	.0	.0	.0	0	.0	7
RLMP5.	87.1	AT TIP OUT JOINT		0		.0	.0	.0	.0	0	.0	7
RLCC	86.4	LOAD CARRY CAPACITY	(0)	8				4.3	1.1	7	2.7	5
RTRS	86.4	ROOF TRUSS	(1)	7			87.5	3.8	1.0	6	2.3	6
RTRS4.		ROOF TRUSS CUT FOR ROOF JACK		4		57.1	50.0	2.2	.5	4	1.6	7
RTRS1.	86.4	TENSION MEMBER FAILURE		2		28.6	25.0	1.1	.3	2	.8	7
RTRS2.	86.4	COMPRESSION MEMBER FAILURE		0		.0	.0	.0	.0	0	.0	7
RTRS3.	86.4	WEB MEMBER FAILURE		0		.0	.0	.0	.0	0	.0	7
RDEL	86.4	DECKING		1			12.5	.5	.1	1	.4	6
CEIL		CEILING		0			.0	.0	.0	0	.0	6
RDEF	86.10	DEFLECTION	(0)	8				4.3	1.1	8	3.1	5

FOURTH THROUGH EIGHTH LEVEL SUMMATIONS:				NO.	%7TH	%6TH	%5TH	%4TH	%3RD	HOMES	%HOMES	LEVEL
RDEF3.	B6.10	CEILING		7			B7.5	3.B	1.0	7	2.7	6
RDEF1.	B6.10	OECKING		1			12.5	.5	.1	1	.4	6
RDEF2.	B6.10	ROOF TRUSS		0			.0	.0	.0	0	.0	6
RHLS	B7.5	HEAT LOSS	(0)	3				1.6	.4	3	1.2	5
RHLS1.	B7.5	INSULATION		3			100.0	1.6	.4	3	1.2	6
RHLS2.	B7.5.4	AIR INFILTRATION		0			.0	.0	.0	0	.0	6
ROUR		OURABILITY	(0)	2				1.1	.3	2	.B	5
RDUR1.		MEMBRANE		2			100.0	1.1	.3	2	.8	6
RDUR2.		CAULKING		0			.0	.0	.0	0	.0	6
RBEC	B7.6	METALLIC ROOF BONOING/EXTERIOR COVERINGS		1				.5	.1	1	.4	5
RFSS	B6.5	FASTENING OF STRUCTURAL SYSTEMS	(0)	0				.0	.0	0	.0	5
RFSS1.	B6.5	TRUSS CONSTRUCTION		0			.0	.0	.0	0	.0	6
RFSS2.	B6.5	TRUSS-TO-WALL CONSTRUCTION		0			.0	.0	.0	0	.0	6
RFSS3.	B6.5	ROOFING TO TRUSS ATTACHMENT		0			.0	.0	.0	0	.0	6
RFSS4.	B6.5	CEILING TO TRUSS ATTACHMENT		0			.0	.0	.0	0	.0	6
RFSS5.	B6.5	DOUBLE WIOE MISALIGNMENT		0			.0	.0	.0	0	.0	6
RFSS6.	B6.5	TIP OUT MISALIGNMENT		0			.0	.0	.0	0	.0	6
CIFS	B7.3	INTERIOF FLAME SPREAO - CEILING		0				.0	.0	0	.0	5
RRES	B7.4	ROOENT RESISTANCE		0				.0	.0	0	.0	5
RCNR	B7.2	CONOENSATION RESISTANCE	(0)	0				.0	.0	0	.0	5
RCNR1.	B7.2	VAPOR BARRIER IN CEILING		0			.0	.0	.0	0	.0	6
RCNR2.	B7.2	CEILING VENTILATED		0			.0	.0	.0	0	.0	6
INTW	B6/B7	PARTITION WALLS	(0)	120					16.4	100	3B.9	4
INSS	B6.5/6.7	FASTENING OF STRUCTURAL SYSTEMS	(0)	120				100.0	16.4	100	3B.9	5
INSS1.	B6.5/6.7	PANELING TO WALL FRAMING		11B			9B.3	9B.3	16.2	9B	3B.1	6
INSS2.	B6.5/6.7	WALL TO ROOF SYSTEM		1			.B	.B	.1	1	.4	6
INSS4.	B6.5/6.7	OOOR FRAMING		1			.B	.B	.1	1	.4	6
INSS3.	B6.5/6.7	WALL TO FLOOR SYSTEM		0			.0	.0	.0	0	.0	6
INSS5.	B6.5/6.7	PARTITION TO EXTERIOR WALL		0			.0	.0	.0	0	.0	6
INCC	B6.7	LOAO CARRYING CAPACITY	(0)	0				.0	.0	0	.0	5
INCC1.	B6.7	PANELING		0			.0	.0	.0	0	.0	6
INCC2.	B6.7	WALL FRAMING		0			.0	.0	.0	0	.0	6
INOR		DURABILITY OF PANELING		0				.0	.0	0	.0	5
INFS	B7.3	INTERIOR FLAME SPREAO - PANELING		0				.0	.0	0	.0	5
INON	B6.6.1	DRILLING/NOTCHING OF STRUCTURAL MEMBERS		0				.0	.0	0	.0	5
TRAN	B-APP.	TRANSIT CONSIDERATIONS	(0)	B3					11.4	53	20.6	4
TRAN1.	B.1	A FRAME ASSEMBLY	(14)	57				6B.7	7.B	47	1B.3	5
TRAN12.		LONGITUOINAL MEMBERS		34			59.6	41.0	4.7	34	13.2	6
TRAN13.		TRANSVERSE MEMBERS		9			15.B	10.B	1.2	9	3.5	6
TRANB.	B.B	TIRES		9				10.B	1.2	B	3.1	5
TRAN5.	B.5	AXLES		7				B.4	1.0	6	2.3	5
TRAN4.	B.4	SPRING/SPRING HANGERS		4				4.8	.5	3	1.2	5
TRAN7.	B.7	WHEELS/RIMS		4				4.B	.5	3	1.2	5
TRAN2.	B.2	COUPLING MECHANISM		1				1.2	.1	1	.4	5
TRAN9.	B.9	BRAKES	(1)	1				1.2	.1	1	.4	5
TRAN10.	B.9.1	MAXIMUM STOPPING DISTANCE		0			.0	.0	.0	0	.0	6
TRAN3.	B.3	RUNNING GEAR ASSEMBLY		0				.0	.0	0	.0	5
TRAN6.	B.6	HUBS ANO BEARINGS		0				.0	.0	0	.0	5
TRAN11.	B.10	LOW VOLTAGE WIRING		0				.0	.0	0	.0	5
FLOR	B6/B7	FLOOR SYSTEMS	(0)	75					10.3	60	23.3	4
FLWR	B7.1	WEATHER RESISTANCE	(0)	3B				50.7	5.2	36	14.0	5
FLWR1.	B7.1	UNDERNEATH OF FLOOR SYSTEM		3B			100.0	50.7	5.2	36	14.0	6
FDUR		OURABILITY	(0)	27				36.0	3.7	19	7.4	5
FDUR1.		FLOOR COVERING		14			51.9	1B.7	1.9	9	3.5	6
FOUR2.		FLOOR COVERING TO OECKING		9			33.3	12.0	1.2	9	3.5	6
FDUR3.		DECKING		4			14.B	5.3	.5	3	1.2	6

FOURTH THROUGH EIGHTH LEVEL SUMMATIONS:				NO.	%7TH	%6TH	%5TH	%4TH	%3RD	HOMES	%HOMES	LEVEL
FLIF	B7.3	INTERIOR FLAME SPREAD-FLOOR COVERING	(0)	5				6.7	.7	5	1.9	5
FLIF1.	B7.3	HOT WATER HEATER COMPARTMENT FLOOR		5			100.0	6.7	.7	5	1.9	6
FLCC	B6.9	LOAD CARRYING CAPACITY	(0)	1				1.3	.1	1	.4	5
FLCC1.	B6.9	DECKING		1			100.0	1.3	.1	1	.4	6
FLCC2.	B6.9	FLOOR JOISTS		0			.0	.0	.0	0	.0	6
FDEF	B6.10	DEFLECTION	(0)	1				1.3	.1	1	.4	5
FDEF1.	B6.10	DECKING		1			100.0	1.3	.1	1	.4	6
FDEF2.	B6.10	FLOOR JOISTS		0			.0	.0	.0	0	.0	6
FASS	B6.5	FASTENING OF STRUCTURAL SYSTEMS	(0)	1				1.3	.1	1	.4	5
FASS2.	B6.5	FLOOR SYSTEM TO METAL FRAME		1			100.0	1.3	.1	1	.4	6
FASS1.	B6.5	DECKING TO FLOOR JOISTS		0			.0	.0	.0	0	.0	6
FASS3.	B6.5	FLOOR SYSTEM TO EXTERIOR WALLS		0			.0	.0	.0	0	.0	6
FASS4.	B6.5	WEATHER BARRIER		0			.0	.0	.0	0	.0	6
FLRR	B7.4	RODENT RESISTANCE		1				1.3	.1	1	.4	5
FLDN	B6.9.1	DRILLING/NOTCHING OF STRUCTURAL MEMBERS		1				1.3	.1	1	.4	5
FLHL	B7.5	HEAT LOSS	(0)	0				.0	.0	0	.0	5
FLHL1.	B7.5	INSULATION		0			.0	.0	.0	0	.0	6
FLHL2.	B7.5	AIR INFILTRATION		0			.0	.0	.0	0	.0	6
DEXT	B6/B7/B8	DOORS EXTERIOR	(0)	16					2.2	15	5.8	4
DEWR	B7.1	WEATHER RESISTANCE - WATER LEAK		8				50.0	1.1	8	3.1	5
DEDU		DURABILITY		7				43.8	1.0	7	2.7	5
DELC	B6.3	LOAD CARRYING CAPACITY - RACKING		1				6.3	.1	1	.4	5
DEHL	B7.5.4	HEAT LOSS - AIR INFILTRATION		0				.0	.0	0	.0	5
DESZ	B8.3.1	SIZE		0				.0	.0	0	.0	5
DENL	B8.3.1	NUMBER AND LOCATION		0				.0	.0	0	.0	5
WNDW	B6/B7/B8	WINDOWS	(0)	12					1.6	10	3.9	4
WNWR	B7.1/B8.5	WEATHER RESISTANCE - WATER LEAK		12				100.0	1.6	10	3.9	5
WNCR	B7.2/B8.5	CONDENSATION RESISTANCE		0				.0	.0	0	.0	5
WNHL	B7.5.4	HEAT LOSS - AIR INFILTRATION		0				.0	.0	0	.0	5
WNCC	B6.3	LOAD CARRYING CAPACITY - RACKING		0				.0	.0	0	.0	5
WNSZ	B8.3.1	SIZE		0				.0	.0	0	.0	5
WNGL	B8.3.1	GLAZING		0				.0	.0	0	.0	5
WNDR		DURABILITY		0				.0	.0	0	.0	5
WNBR	B8.1.2	BATHROOM		0				.0	.0	0	.0	5
TIDN	B6.5.1	TIEDOWNS	(0)	3					.4	3	1.2	4
TIDN1.	B6.5.1.4	WEATHER RESISTANCE		2				66.7	.3	2	.8	5
TIDN2.	B6.5.1	LOAD CAPACITY		1				33.3	.1	1	.4	5
TIDN3.	B6.5.2	SPACING		0				.0	.0	0	.0	5
DINT	B8.3.2/3	DOOR INTERIOR	(0)	0					.0	0	.0	4
DILH	B8.3.2/3	LOCKS, HARDWARE		0				.0	.0	0	.0	5
DIDU		DURABILITY		0				.0	.0	0	.0	5
FWEQ	B9.1	FIRE WARNING EQUIPMENT	(0)	0					.0	0	.0	4
FWEQ1.	B9.1	LISTED DETECTOR		0				.0	.0	0	.0	5
FWEQ2.	B9.1	TROUBLE SIGNAL		0				.0	.0	0	.0	5
FWEQ3.	B9.1	LOCATION		0				.0	.0	0	.0	5
SREQ	B8.4	SPECIAL REQUIREMENTS	(0)	0					.0	0	.0	4
SREQ1.	B8.4.1	MINIMUM AREAS		0				.0	.0	0	.0	5
SREQ2.	B8.4.2	MINIMUM WIDTH		0				.0	.0	0	.0	5
SREQ3.	B8.4.3	TOILET COMPARTMENT		0				.0	.0	0	.0	5
SREQ4	B8.4.4	HALLWAYS		0				.0	.0	0	.0	5
PLUM	PART C	PLUMBING	(0)	701						208	80.9	3
WDTN	C11	WATER DISTRIBUTION SYSTEM	(0)	218					31.1	156	60.7	4
WOSC	C11.2	WATER OUTLETS AND SUPPLY CONNECTIONS	(0)	145				66.5	20.7	134	52.1	5
WOSC1.	C11.2.1	WATER CONNECTION PIPE SIZE, LOCATION		134			92.4	61.5	19.1	133	51.8	6

FOURTH THROUGH EIGHTH LEVEL SUMMATIONS:				NO.	%7TH	%6TH	%5TH	%4TH	%3RD	HOMES	%HOMES	LEVEL
WOSC6.	C11.2.6	FLUSH TANK		10			6.9	4.6	1.4	10	3.9	6
WOSC4.	C11.2.4	APPLIANCE CONNECTIONS/PROTECT BY AIR GAP		1			.7	.5	.1	1	.4	6
WOSC2.	C11.2.2	PROHIBITED CONNECTIONS	(0)	0			.0	.0	.0	0	.0	6
WOSC21.	C11.2.2.1	INSTALLATION SHALL PREVENT BACKFLOW		0		.0	.0	.0	.0	0	.0	7
WOSC22.	C11.2.2.2	NO CONNECTION TO DRAINAGE OR VENT		0		.0	.0	.0	.0	0	.0	7
WOSC3.	C11.2.3	RIM OUTLETS - SPACING ABOVE FLOOD LEVEL		0			.0	.0	.0	0	.0	6
WOSC5.	C11.2.5	FLUSHOMETER VALVES/MANUAL FLUSH VALVE		0			.0	.0	.0	0	.0	6
WHSD	C11.3	WATER HEATER SAFETY DEVICES	(0)	50				22.9	7.1	45	17.5	5
WHRV	C11.3.1	RELIEF VALVES	(0)	50			100.0	22.9	7.1	45	17.5	6
WHRV3.	C11.3.1.3	RELIEF VALVE DRAIN	(0)	44		88.0	88.0	20.2	6.3	40	15.6	7
WHRV33.		TERMINATES IN FLOOR		19	43.2	38.0	38.0	8.7	2.7	19	7.4	8
WHRV32.		THREADED END		12	27.3	24.0	24.0	5.5	1.7	12	4.7	8
WHRV31.		IMPROPER LOCATION		5	11.4	10.0	10.0	2.3	.7	5	1.9	8
WHRV34.		UNDERSIZE PIPE		5	11.4	10.0	10.0	2.3	.7	5	1.9	8
WHRV35.		TERMINATES ABOVE FLOOR		3	6.8	6.0	6.0	1.4	.4	3	1.2	8
WHRV1.	C11.3.1.1	TEMPERATURE AND PRESSURE RELIEF VALVES		3		6.0	6.0	1.4	.4	3	1.2	7
WHRV2.	C11.3.1.2	PRESSURE AND TEMPERATURE LIMITS OF VAL		3		6.0	6.0	1.4	.4	3	1.2	7
WHTR	C11.3.2	WATER HEATERS	(0)	0			.0	.0	.0	0	.0	6
WHTR1.	C11.3.2.1	TAPPING FOR PRES/TEMP RELIEF VALVE		0		.0	.0	.0	.0	0	.0	7
WDML	C11.4	MATERIALS	(0)	23				10.6	3.3	22	8.6	5
WDML2.		CORROSION OF PIPE		16			69.6	7.3	2.3	16	6.2	6
WDML1.		CORROSION OF DISSIMILAR METALS		7			30.4	3.2	1.0	7	2.7	6
PMAT	C11.4.1	PIPING MATERIAL (IRON, STEEL, CO	(0)	0			.0	.0	.0	0	.0	6
PMAT1.	C11.4.1.1	PLASTIC PIPING		0		.0	.0	.0	.0	0	.0	7
FMAT	C11.4.2	FITTINGS (CHANGES IN DIRECTION SIZ	(0)	0			.0	.0	.0	0	.0	6
FMAT1.	C11.4.2.1	FITTINGS FOR SCREW PIPING		0		.0	.0	.0	.0	0	.0	7
FMAT2.	C11.4.2.2	FITTINGS FOR COPPER TUBING		0		.0	.0	.0	.0	0	.0	7
XMAT	C11.4.3	PROHIBITED MATERIAL		0			.0	.0	.0	0	.0	6
WSPL	C11.1	WATER SUPPLY	(0)	0				.0	.0	0	.0	5
WSPL1.	C11.1.1	SUPPLY PIPING SIZE		0			.0	.0	.0	0	.0	6
WSPL2.	C11.1.2	HOT WATER SUPPLY		0			.0	.0	.0	0	.0	6
PINS	C11.5	INSTALLATION OF PIPING	(0)	0				.0	.0	0	.0	5
PINS1.	C11.5.1	WORKMANSHIP		0			.0	.0	.0	0	.0	6
PINS2.	C11.5.2	SCREW PIPE		0			.0	.0	.0	0	.0	6
PINS3.	C11.5.3	SOLDER FITTINGS (JOINTS IN COPPER TUBE		0			.0	.0	.0	0	.0	6
PINS4.	C11.5.4	FLARED FITTINGS - USE OF FLARING TOOL		0			.0	.0	.0	0	.0	6
PINS5.	C11.5.5	PLASTIC PIPE AND FITTINGS		0			.0	.0	.0	0	.0	6
PSWS	C11.6	SIZE OF WATER SUPPLY PIPING	(0)	0				.0	.0	0	.0	5
PSWS1.	C11.6.1	MINIMUM SIZE (TABLE C-3)		0			.0	.0	.0	0	.0	6
PSWS2.	C11.6.2	SIZING PROCEDURE	(0)	0			.0	.0	.0	0	.0	6
PSWS21.	C11.6.2.1	SIZE OF BRANCH (REFER TO TABLE C-3		0		.0	.0	.0	.0	0	.0	7
PSWS22.	C11.6.2.2	WATER HEATER AND FOOD WASTE DISPOSAL		0		.0	.0	.0	.0	0	.0	7
LVAL	C11.7	LINE VALVES (CROSS SECTIONAL AREA)		0				.0	.0	0	.0	5
DSYS	C12	DRAINAGE SYSTEM	(0)	152					21.7	84	32.7	4
DOUT	C12.2	DRAIN OUTLETS	(0)	149				98.0	21.3	82	31.9	5
DOUT3.	C12.2.3	HOSE COUPLERS AND CAPS	(74)	148			99.3	97.4	21.1	82	31.9	6
DOUT32.	C12.2.3.2	SIZE COMPARED TO PIPING, WATER-TIGHT C		73		49.3	49.0	48.0	10.4	73	28.4	7
DOUT33.	C12.2.3.3	MINIMUM DIAMETER - DRAIN CONNECTION		1		.7	.7	.7	.1	1	.4	7
DOUT31.	C12.2.3.1	QUICK DISCONNECT TYPE		0		.0	.0	.0	.0	0	.0	7
DOUT2.	C12.2.2	CLEARANCE FROM DRAIN OUTLET		1			.7	.7	.1	1	.4	6
DOUT1.	C12.2.1	LOCATION OF DRAIN		0			.0	.0	.0	0	.0	6
DOUT4.	C12.2.4	PREASSEMBLY OF DRAIN LINES		0			.0	.0	.0	0	.0	6
DSML	C12.1	MATERIALS	(0)	2				1.3	.3	2	.8	5
DSML2.	C12.1.2	FITTINGS	(0)	2			100.0	1.3	.3	2	.8	6
DSML22.	C12.1.2.2	FITTINGS FOR COPPER TUBING MATERIALS		1		50.0	50.0	.7	.1	1	.4	7
DSML23.	C12.1.2.3	SOCKET FITTINGS FOR PLASTIC PIPE		1		50.0	50.0	.7	.1	1	.4	7

FOURTH THROUGH EIGHTH LEVEL SUMMATIONS:				NO.	%7TH	%6TH	%5TH	%4TH	%3RD	HOMES	%HOMES	LEVEL
DSML21.	C12.1.2.1	FITTINGS FOR SCREW PIPE [MATERIALS		0		.0	.0	.0	.0	0	.0	7
OSML24.	C12.1.2.4	JOINING COPPER TUBING TO THREADED PIPE		0		.0	.0	.0	.0	0	.0	7
DSML25.		DEFECTIVE FITTING		0		.0	.0	.0	.0	0	.0	7
DSML1.	C12.1.1	PIPE		0			.0	.0	.0	0	.0	6
DSGR	C12.7	GRAOE OF HORIZONTAL DRAINAGE PIPING		1				.7	.1	1	.4	5
OFCN	C12.3	FIXTURE CONNECTION	(0)	0				.0	.0	0	.0	5
DFCN1.	C12.3.1	TOILET CONNECTION		0			.0	.0	.0	0	.0	6
DPSZ	C12.4	SIZE OF DRAINAGE PIPE	(0)	0				.0	.0	0	.0	5
OPSZ1.	C12.4.1	FIXTURE LOAD	(0)	0			.0	.0	.0	0	.0	6
DPSZ11.	C12.4.1.1	MIN PIPE DIA - 1-1/2" 1 TO 3 FIX		0		.0	.0	.0	.0	0	.0	7
OPSZ12.	C12.4.1.2	MIN PIPE DIA - 2" 4 OR MORE FIX		0		.0	.0	.0	.0	0	.0	7
DPSZ13.	C12.4.1.3	3" MIN DIA PIPE FOR TOILETS		0		.0	.0	.0	.0	0	.0	7
OSWV	C12.5	WET-VENTED DRAINAGE SYSTEM	(0)	0				.0	.0	0	.0	5
OSWV1.	C12.5.1	HORIZONTAL PIPING		0			.0	.0	.0	0	.0	6
DSWV2.	C12.5.2	SIZE - PIPING AND NUMBER OF FIXTURES		0			.0	.0	.0	0	.0	6
DSWV3.	C12.5.3	LENGTH OF TRAP ARM [TABLE C-3]		0			.0	.0	.0	0	.0	6
OSBF	C12.6	OFFSETS AND BRANCH FITTINGS	(0)	0				.0	.0	0	.0	5
DSBF1.	C12.6.1	CHANGES IN DIRECTION - FITTING TYPES		0			.0	.0	.0	0	.0	6
OSBF2.	C12.6.2	HORIZONTAL TO VERTICAL		0			.0	.0	.0	0	.0	6
DSBF3.	C12.6.3	HORIZONTAL TO HORIZONTAL		0			.0	.0	.0	0	.0	6
PFIA	C9	PLUMBING FIXTURES	(0)	143					20.4	76	29.6	4
PFIX	C9.2	FIXTURES	(0)	86				60.1	12.3	59	23.0	5
TOIL	C9.2.1	TOILETS	(18)	65			75.6	45.5	9.3	46	17.9	6
TOIL5.	C9.2.1.5	FLOOR CONNECTION		26		40.0	30.2	18.2	3.7	24	9.3	7
TOIL2.	C9.2.1.2	TOILET FLUSHING OEVICES		21		32.3	24.4	14.7	3.0	14	5.4	7
TOIL1.	C9.2.1.1	TOILET OESIGN		0		.0	.0	.0	.0	0	.0	7
TOIL3.	C9.2.1.3	OVERFLOW PIPES - FLUSH TANKS		0		.0	.0	.0	.0	0	.0	7
TOIL4.	C9.2.1.4	PROHIBITED TOILETS		0		.0	.0	.0	.0	0	.0	7
TOIL6.	C9.2.1.6	WATER CLOSET		0		.0	.0	.0	.0	0	.0	7
SHRS	C9.2.2	SHOWER STALLS	(0)	16			18.6	11.2	2.3	15	5.8	6
SHRS2.	C9.2.2.2	WATERTIGHTNESS OF JOINT AT DRAIN		10		62.5	11.6	7.0	1.4	9	3.5	7
SHRS3.	C9.2.2.3	WATERTIGHTNESS OF SHOWER/ENCL		6		37.5	7.0	4.2	.9	6	2.3	7
SHRS1.	C9.2.2.1	SHOWER STALL CONSTRUCTION		0		.0	.0	.0	.0	0	.0	7
SHRS4.	C9.2.2.4	PREFABRICATEO PLUMBING FIXTURES		0		.0	.0	.0	.0	0	.0	7
WACD	C9.2.4	CLOTHES WASHING MACHINE	(0)	5			5.8	3.5	.7	4	1.6	6
WACO2.	C9.2.4.2	STANOPIPE SPECIFICATIONS		5		100.0	5.8	3.5	.7	4	1.6	7
WACD1.	C9.2.4.1	ORAIN		0		.0	.0	.0	.0	0	.0	7
WACD3.	C9.2.4.3	PROHIBITEO CONNECTIONS OF ORAIN		0		.0	.0	.0	.0	0	.0	7
OISH	C9.2.3	OISHWASHING MACHINES	(0)	0			.0	.0	.0	0	.0	6
DISH1.	C9.2.3.1	CONNECTION TO ORAIN		0		.0	.0	.0	.0	0	.0	7
OISH2.	C9.2.3.2	PROHIBITEO CONNECTIONS OF DRAIN		0		.0	.0	.0	.0	0	.0	7
PFGR	C9.1	GENERAL REQUIREMENT	(0)	57				39.9	8.1	35	13.6	5
PFGR1.	C9.1.1	QUALITY OF FIXTURES		57			100.0	39.9	8.1	35	13.6	6
PFGR2.	C9.1.2	STRAINERS		0			.0	.0	.0	0	.0	6
PFGR3.	C9.1.3	FIXTURE CONNECTION		0			.0	.0	.0	0	.0	6
PFGR4.	C9.1.4	CONCEALED CONNECTIONS		0			.0	.0	.0	0	.0	6
PFGR5.	C9.1.5	OIRECTIONAL FITTING		0			.0	.0	.0	0	.0	6
IOPF	C9.3	INSTALLATION OF PLUMBING FIXTURES	(0)	0				.0	.0	0	.0	5
IOPF1.	C9.3.1	ACCESS		0			.0	.0	.0	0	.0	6
IOPF2.	C9.3.2	ALIGNMENT		0			.0	.0	.0	0	.0	6
IOPF3.	C9.3.3	BRACKETS		0			.0	.0	.0	0	.0	6
JCTI	C7.1	JOINTS + CONNECTIONS/TIGHT [GAS, WATER	(105)	105					15.0	58	22.6	4
JCTI1.	C7.1.1	ASSEMBLING PIPE		0				.0	.0	0	.0	5
JCTI2.	C7.1.2	THREADEO JOINTS		0				.0	.0	0	.0	5
JCTI3.	C7.1.3	SOLOERED JOINTS		0				.0	.0	0	.0	5
JCTI4.	C7.1.4	PLASTIC PIPE, FITTING ANO JOINTS		0				.0	.0	0	.0	5

FOURTH THROUGH EIGHTH LEVEL SUMMATIONS:				NO.	%7TH	%6TH	%5TH	%4TH	%3RD	HOMES	%HOMES	LEVEL
JCTI5.	C7.1.5	UNION JOINTS		0				.0	.0	0	.0	5
JCTI6.	C7.1.6	FLARED		0				.0	.0	0	.0	5
JCTI7.	C7.1.7	CAST IRON SOIL PIPE JOINTS		0				.0	.0	0	.0	5
PREQ	C5.2	PROTECTIVE REQUIREMENT	(0)	50					7.1	45	17.5	4
PREQ5.	C5.2.5	RODENT RESISTANCE		34				68.0	4.9	34	13.2	5
PREQ4.	C5.2.4	FREEZING		16				32.0	2.3	12	4.7	5
PREQ1.	C5.2.1	CUTTING STRUCTURAL MEMBERS		0				.0	.0	0	.0	5
PREQ2.	C5.2.2	EXPOSED PIPING		0				.0	.0	0	.0	5
PREQ3.	C5.2.3	ROAD DAMAGE		0				.0	.0	0	.0	5
VANV	C13	VENTS AND VENTING	(0)	27					3.9	23	8.9	4
VVTL	C13.5	VENT TERMINAL	(3)	26				96.3	3.7	22	8.6	5
VVTL3.	C13.5.3	VENT CAPS		20			76.9	74.1	2.9	19	7.4	6
VVTL1.	C13.5.1	ROOF EXTENSION		2			7.7	7.4	.3	2	.8	6
VVTL2.	C13.5.2	FLASHING		1			3.8	3.7	.1	1	.4	6
VMAT	C13.2	MATERIALS	(0)	1				3.7	.1	1	.4	5
VMAT2.	C13.2.2	FITTINGS	(0)	1			100.0	3.7	.1	1	.4	6
VMAT23.	C13.2.2.3	FITTINGS FOR PLASTIC PIPE		1		100.0	100.0	3.7	.1	1	.4	7
VMAT21.	C13.2.2.1	FITTINGS FOR SCREW PIPE		0		.0	.0	.0	.0	0	.0	7
VMAT22.	C13.2.2.2	FITTINGS FOR COPPER TUBING		0		.0	.0	.0	.0	0	.0	7
VMAT24.	C13.2.2.4	ADAPTERS (COPPER TUBING TO THREADED PIPE		0		.0	.0	.0	.0	0	.0	7
VMAT25.	C13.2.2.5	LISTED RECTANGULAR TUBING CAN BE USED		0		.0	.0	.0	.0	0	.0	7
VMAT1.	C13.2.1	PIPE		0			.0	.0	.0	0	.0	6
VVGL	C13.1	GENERAL - SIPHONAGE AND BACK PRESSURE		0				.0	.0	0	.0	5
VVSP	C13.3	SIZE OF VENT PIPING	(0)	0				.0	.0	0	.0	5
VVSP1.	C13.3.1	MAIN VENT- MINIMUM DIAMETER OF PIPING		0			.0	.0	.0	0	.0	6
VVSP2.	C13.3.2	INDIVIDUAL VENTS		0			.0	.0	.0	0	.0	6
VVSP3.	C13.3.3	COMMON VENT		0			.0	.0	.0	0	.0	6
VVSP4.	C13.3.4	INTERSECTING VENTS		0			.0	.0	.0	0	.0	6
VVSP5.	C13.3.5	DISTANCE OF FIXTURE TRAP FROM VENT		0			.0	.0	.0	0	.0	6
VVGC	C13.4	GRADE AND CONNECTIONS	(0)	0				.0	.0	0	.0	5
VVGC1.	C13.4.1	HORIZONTAL VENTS		0			.0	.0	.0	0	.0	6
VVGC2.	C13.4.2	GRADE		0			.0	.0	.0	0	.0	6
PFAP	C5.1.4	PROHIBITED FITTINGS AND PRACTICES	(0)	3					.4	3	1.2	4
PFAP5.	C5.1.4.5	IMPROPER LOCATION OF PIPE, FIXT/EQUIP		3				100.0	.4	3	1.2	5
PFAP1.	C5.1.4.1	DRAINAGE/VENT PIPING - DRILLED OR TAPED		0				.0	.0	0	.0	5
PFAP2.	C5.1.4.2	VENT PIPES NOT AS DRAIN PIPES		0				.0	.0	0	.0	5
PFAP3.	C5.1.4.3	OBSTRUCTIVE FITTINGS, CONNECTIONS,ETC		0				.0	.0	0	.0	5
PFAP4.	C5.1.4.4	MATERIAL IMPERFECTIONS (CONCEALED)		0				.0	.0	0	.0	5
PFAP6.	C5.1.4.6	GALVANIZED PIPE BENT OR WELDED		0				.0	.0	0	.0	5
PHAS	C10	HANGERS AND SUPPORTS	(2)	2					.3	2	.8	4
PHAS1.	C10.1	STRAINS AND STRESS DURING/AFTER INSTAL		0				.0	.0	0	.0	5
PHAS2.	C10.2	PIPING SUPPORTS/INTERVALS		0				.0	.0	0	.0	5
PHAS3.	C10.3	HANGERS AND ANCHORS	(0)	0				.0	.0	0	.0	5
PHAS31.	C10.3.1	STRENGTH REQUIREMENTS		0			.0	.0	.0	0	.0	6
PHAS32.	C10.3.2	ATTACHMENT TO STRUCTURE		0			.0	.0	.0	0	.0	6
TANC	C8	TRAPS AND CLEANOUTS	(0)	1					.1	1	.4	4
TRAP	C8.1	TRAPS	(0)	1				100.0	.1	1	.4	5
TRAP2.	C8.1.2	DUAL FIXTURES		1			100.0	100.0	.1	1	.4	6
TRAP1.	C8.1.1	TRAPS REQUIRED		0			.0	.0	.0	0	.0	6
TRAP3.	C8.1.3	PROHIBITED TRAPS		0			.0	.0	.0	0	.0	6
TRAP4.	C8.1.4	MATERIALS AND DESIGNS		0			.0	.0	.0	0	.0	6
TRAP5.	C8.1.5	TRAP SEAL		0			.0	.0	.0	0	.0	6
TRAP6.	C8.1.6	SIZE		0			.0	.0	.0	0	.0	6
TRAP7.	C8.1.7	LOCATION		0			.0	.0	.0	0	.0	6
TRAP8.	C8.1.8	LENGTH OF TAILPIECE		0			.0	.0	.0	0	.0	6
TRAP9.	C8.1.9	INSTALLATION	(0)	0			.0	.0	.0	0	.0	6

FOURTH THROUGH EIGHTH LEVEL SUMMATIONS:				NO.	%7TH	%6TH	%5TH	%4TH	%3RD	HOMES	%HOMES	LEVEL
TRAP91.	C8.1.9.1	GRADE OF TRAP ARM		0		.0	.0	.0	.0	0	.0	7
TRAP92.	C8.1.9.2	TRAP ARM OFFSET		0		.0	.0	.0	.0	0	.0	7
TRAP93.	C8.1.9.3	CONCEALED P TRAPS		0		.0	.0	.0	.0	0	.0	7
TRAP94.	C8.1.9.4	REMOVABILITY OF TRAPS		0		.0	.0	.0	.0	0	.0	7
CLOT	C8.2	CLEANOUT OPENINGS	(0)	0				.0	.0	0	.0	5
LOCF	C8.2.1	LOCATION OF CLEANOUT FITTINGS	(0)	0			.0	.0	.0	0	.0	6
LOCF1.	C8.2.1.1	WHEN INSTALLED		0		.0	.0	.0	.0	0	.0	7
LOCF2.	C8.2.1.2	WHERE INSTALLED		0		.0	.0	.0	.0	0	.0	7
LOCF3.	C8.2.1.3	USE OF CLEANING TOOL		0		.0	.0	.0	.0	0	.0	7
ACTC	C8.2.2	ACCESS TO CLEANOUTS		0			.0	.0	.0	0	.0	6
CMAT	C8.2.3	MATERIAL		0			.0	.0	.0	0	.0	6
COES	C8.2.4	OESIGN		0			.0	.0	.0	0	.0	6
ATDF	C5.1.5	ALIGN OF FITTINGS/DIRECTION OF FLOW		0					.0	0	.0	4
HEAT	PART 0	HEATING SYSTEM	(0)	409						168	65.4	3
HPSY	05	PIPING SYSTEM	(0)	210					51.3	117	45.5	4
HGPS	05.1	GAS PIPING SYSTEMS	(0)	210				100.0	51.3	117	45.5	5
HGPG	05.1.1	GENERAL	(0)	61			29.0	29.0	14.9	60	23.3	6
HGPG1.	05.1.1.1	ROOENT RESISTANCE		61		100.0	29.0	29.0	14.9	60	23.3	7
HGLS	D5.1.10	LOCATION OF GAS SUPPLY CONNECTION	(0)	61			29.0	29.0	14.9	61	23.7	6
HGLS1.	D5.1.10.1	LP-GAS SYSTEMS		61		100.0	29.0	29.0	14.9	61	23.7	7
HGLS2.	05.1.10.2	COMBINATION LP-GAS AND NATURAL GAS		0		.0	.0	.0	.0	0	.0	7
HGIO	D5.1.11	IDENTIFICATION OF GAS SUPPLY CONNECTION		46			21.9	21.9	11.2	46	17.9	6
HGHS	D5.1.18	HANGERS AND SUPPORTS		27			12.9	12.9	6.6	27	10.5	6
HGAC	D5.1.13	APPLIANCE CONNECTION	(0)	11			5.2	5.2	2.7	11	4.3	6
HGAC2.		FLEXIBLE CONNECTOR THRU UNDERSIDE OF U		7		63.6	3.3	3.3	1.7	7	2.7	7
HGAC1.		FLEXIBLE CONNECTOR/SHARP RADIUS 8END		4		36.4	1.9	1.9	1.0	4	1.6	7
HGPM	D5.1.2	MATERIALS - USED/REPAIRED DEFECTS	(0)	3			1.4	1.4	.7	3	1.2	6
HGPM5.		CORROSION OF METALS		2		66.7	1.0	1.0	.5	2	.8	7
HGPM2.	05.1.2.2	FITTINGS FOR GAS PIPING		1		33.3	.5	.5	.2	1	.4	7
HGPM1.	05.1.2.1	STEEL OR WROUGHT IRON PIPE		0		.0	.0	.0	.0	0	.0	7
HGPM3.	05.1.2.3	COPPER TUBING		0		.0	.0	.0	.0	0	.0	7
HGPM4.	05.1.2.4	STEEL TUBING		0		.0	.0	.0	.0	0	.0	7
HGPD	05.1.3	PIPING DESIGN - LP GAS/NATURAL GAS	(1)	1			.5	.5	.2	1	.4	6
HGPD1.	05.1.3.1	CROSS OVER FOR GAS PIPING		0		.0	.0	.0	.0	0	.0	7
HGPZ	D5.1.4	GAS PIPE SIZING [TABLE D-2. PG 71]		0			.0	.0	.0	0	.0	6
HGJP	05.1.5	JOINTS FOR GAS PIPE		0			.0	.0	.0	0	.0	6
HGJT	05.1.6	JOINTS FOR TUBING		0			.0	.0	.0	0	.0	6
HGJC	D5.1.7	PIPE JOINT COMPOUND - SCREW JOINTS		0			.0	.0	.0	0	.0	6
HGCT	D5.1.8	CONCEALED TUBING INSIDE WALLS, FLOOR		0			.0	.0	.0	0	.0	6
HGHJ	D5.1.9	CONCEALED JOINTS		0			.0	.0	.0	0	.0	6
HGSC	D5.1.12	GAS SUPPLY CONNECTORS	(0)	0			.0	.0	.0	0	.0	6
HGSC1.	D5.1.12.1	LP-GAS		0		.0	.0	.0	.0	0	.0	7
HGVS	05.1.14	VALVES - SHUTOFF LISTED TYPE		0			.0	.0	.0	0	.0	6
HGIC	D5.1.15	GAS INLET CAP		0			.0	.0	.0	0	.0	6
HGEG	05.1.16	ELECTRICAL GROUND		0			.0	.0	.0	0	.0	6
HGCP	05.1.17	PIPE COUPLINGS AND UNIONS		0			.0	.0	.0	0	.0	6
HGTL	05.1.19	TESTING FOR LEAKAGE	(0)	0			.0	.0	.0	0	.0	6
HGTL1.	D5.1.19.1	8EFORE APPLIANCES ARE CONNECTED		0		.0	.0	.0	.0	0	.0	7
HGTL2.	05.1.19.2	AFTER APPLIANCES ARE CONNECTED		0		.0	.0	.0	.0	0	.0	7
HOPS	D5.2	OIL PIPING SYSTEM	(0)	0				.0	.0	0	.0	5
HOPG	05.2.1	GENERAL		0			.0	.0	.0	0	.0	6
HOPM	05.2.2	MATERIAL - NO USED AND/OR REPAIRED	(0)	0			.0	.0	.0	0	.0	6
HOPM1.	D5.2.2.1	STEEL OR WROUGHT-IRON PIPE		0		.0	.0	.0	.0	0	.0	7
HOPM2.	D5.2.2.2	FITTINGS FOR OIL PIPING		0		.0	.0	.0	.0	0	.0	7

FOURTH THROUGH EIGHTH LEVEL SUMMATIONS:				NO.	%7TH	%6TH	%5TH	%4TH	%3RD	HOMES	%HOMES	LEVEL
HOPM3.	D5.2.2.3	COPPER TUBING		0		.0	.0	.0	.0	0	.0	7
HOPM4.	D5.2.2.4	STEEL TUBING		0		.0	.0	.0	.0	0	.0	7
HOSP	D5.2.3	SIZE OF OIL PIPING		0			.0	.0	.0	0	.0	6
HOJP	D5.2.4	JOINTS FOR OIL PIPING		0			.0	.0	.0	0	.0	6
HOJT	D5.2.5	JOINTS FOR TUBING		0			.0	.0	.0	0	.0	6
HOCP	D5.2.6	PIPE JOINT COMPOUND		0			.0	.0	.0	0	.0	6
HOCU	D5.2.7	COUPLINGS		0			.0	.0	.0	0	.0	6
HOGP	D5.2.8	GRADE OF PIPING		0			.0	.0	.0	0	.0	6
HOSH	D5.2.9	STRAP HANGERS		0			.0	.0	.0	0	.0	6
HOTL	D5.2.10	TESTING FOR LEAKAGE		0			.0	.0	.0	0	.0	6
HAPL	D6	APPLIANCES	(0)	198					48.4	133	51.8	4
HACA	D6.10	CIRCULATING AIR SYSTEM	(0)	58				29.3	14.2	51	19.8	5
HARG	D6.10.5	REGISTERS	(11)	55			94.8	27.8	13.4	50	19.5	6
HARG6.	D6.10.5	DUCT TUBE RISER		19		34.5	32.8	9.6	4.6	19	7.4	7
HARG5.	D6.10.5	AIR BLOCKAGE		11		20.0	19.0	5.6	2.7	11	4.3	7
HARG3.	D6.10.5	RISER MISSING OR DAMAGED		6		10.9	10.3	3.0	1.5	6	2.3	7
HARG4.	D6.10.5	DIRT, FLOOR COVERING AND DUCT		6		10.9	10.3	3.0	1.5	6	2.3	7
HARG2.	D6.10.5.2	STRUCTURAL REQUIREMENTS		2		3.6	3.4	1.0	.5	2	.8	7
HARG1.	D6.10.5.1	FLAMMABILITY REQMTS FOR PLASTIC		0		.0	.0	.0	.0	0	.0	7
HACS	D6.10.1	SUPPLY SYSTEM	(1)	2			3.4	1.0	.5	2	.8	6
HACS3.	D6.10.1.3	AIR TIGHTNESS OF SUPPLY DUCT SYSTEM		1		50.0	1.7	.5	.2	1	.4	7
HACS1.	D6.10.1.1	DUCT MATERIAL		0		.0	.0	.0	.0	0	.0	7
HACS2.	D6.10.1.2	SIZING OF DUCT		0		.0	.0	.0	.0	0	.0	7
HARA	D6.10.2	RETURN AIR SYSTEM	(0)	1			1.7	.5	.2	1	.4	6
HARA1.	D6.10.2.1	RETURN AIR OPENINGS		1		100.0	1.7	.5	.2	1	.4	7
HARA2.	D6.10.2.2	DUCT MATERIALS	(0)	0		.0	.0	.0	.0	0	.0	7
HARA21.	D6.10.2.2.1	CLASS 0 OR CLASS 1 AIR DUCTS		0	.0	.0	.0	.0	.0	0	.0	8
HARA22.	D6.10.2.2.2	FLAME SPREAD NOT MORE THAN 200		0	.0	.0	.0	.0	.0	0	.0	8
HARA23.	D6.10.2.2.3	INTERIOR OF COMBUSTIBLE MATERIAL		0	.0	.0	.0	.0	.0	0	.0	8
HARA3.	D6.10.2.3	SIZING		0		.0	.0	.0	.0	0	.0	7
HARA4.	D6.10.2.4	PERMANENT UNCLOSABLE OPENINGS		0		.0	.0	.0	.0	0	.0	7
HAJS	D6.10.3	JOINTS AND SEAMS		0			.0	.0	.0	0	.0	6
HASU	D6.10.4	SUPPORTS		0			.0	.0	.0	0	.0	6
HAAC	D6.7	ACCESSIBILITY - INSPECTION, SERVICE, E	(0)	50				25.3	12.2	50	19.5	5
HAAC2.	D6.7	HOT WATER HEATER-POOR ACCESS		49			98.0	24.7	12.0	49	19.1	6
HAAC1.	D6.7	FURNACE-POOR ACCESS		1			2.0	.5	.2	1	.4	6
HAAC3.	D6.7	DRYER-POOR ACCESS		0			.0	.0	.0	0	.0	6
HAAC4.	D6.7	AIR CONDITIONER-POOR ACCESS		0			.0	.0	.0	0	.0	6
HAVA	D6.4	VENTING, VENTILATION AND COMBUSTION	(1)	33				16.7	8.1	33	12.8	5
HAVE	D6.4.1	VENTING SYSTEM	(1)	32			97.0	16.2	7.8	32	12.5	6
HAVE3.	D6.4.1	JOINTS OF VENT SYSTEM SECURE	(1)	27		84.4	81.8	13.6	6.6	27	10.5	7
HAVE31.		FURNACE		25	92.6	78.1	75.8	12.6	6.1	25	9.7	8
HAVE32.		HOT WATER HEATER		1	3.7	3.1	3.0	.5	.2	1	.4	8
HAVE4.	D6.4.2	VENTING SHALL NOT TERMINATE UNDER		2		6.3	6.1	1.0	.5	2	.8	7
HAVE1.	D6.4.1	SYSTEM LISTED AS PART OF APPLIANCE		1		3.1	3.0	.5	.2	1	.4	7
HAVE5.	D6.4.3	VENTING SYSTEM TERMINATION		1		3.1	3.0	.5	.2	1	.4	7
HAVE2.	D6.4.1	SYSTEM CONSISTING OF LISTED COMPON		0		.0	.0	.0	.0	0	.0	7
HAVE6.	D6.4.4	VENTILATION OF KITCHEN		0		.0	.0	.0	.0	0	.0	7
HAMK	D6.6	MARKING	(0)	32				16.2	7.8	28	10.9	5
HAFU1.	D6.6.2	FURNACE		16			50.0	8.1	3.9	16	6.2	6
HAMK1.	D6.6.1	FURNACE CLEARANCES AND OPERATIONS		13			40.6	6.6	3.2	13	5.1	6
HAFU2.	D6.6.2	HOT WATER HEATER		2			6.3	1.0	.5	2	.8	6
HAMK2.	D6.6.1	HOT WATER HEATER CLEARANCES AND OPERATIO		1			3.1	.5	.2	1	.4	6
HAMK3.	D6.6.1	DRYER CLEARANCES AND OPERATIONS		0			.0	.0	.0	0	.0	6
HAMK4.	D6.6.1	AIR CONDITIONER CLEARANCES AND OPERATION		0			.0	.0	.0	0	.0	6
HAFU	D6.6.2	TYPE OF FUEL MARKING		0			.0	.0	.0	0	.0	6

FOURTH THROUGH EIGHTH LEVEL SUMMATIONS:				NO.	%7TH	%6TH	%5TH	%4TH	%3RD	HOMES	%HOMES	LEVEL
HAFU3.	D6.6.2	DRYER		0			.0	.0	.0	0	.0	6
HAFU4.	D6.6.2	AIR CONDITIONER		0			.0	.0	.0	0	.0	6
HAIC	D6.3	INSTALLATION OF APPLIANCES	(0)	25				12.6	6.1	23	8.9	5
HAIN1.		MIS-LOCATION OF FURNACE THERMOSTAT		24			96.0	12.1	5.9	22	8.6	6
HAMS	D6.3.2	SEPARATION OF COMBUSTION SYSTEM		1			4.0	.5	.2	1	.4	6
HAIN	D6.3.1	LISTING AND INSTRUCTIONS		0			.0	.0	.0	0	.0	6
HANP	D6.3.3	NEGATIVE PRESSURE CREATED BY AIR	(0)	0			.0	.0	.0	0	.0	6
HANP1.	D6.3.3.1	AIR CIRCULATING FAN OPERATION		0		.0	.0	.0	.0	0	.0	7
HANP2.	D6.3.3.2	LOCATION OF AIR INLETS AND OUTLETS		0		.0	.0	.0	.0	0	.0	7
HAGL	D6.1	GENERAL - LISTED	(0)	0				.0	.0	0	.0	5
HAVT	D6.1.2	VENTED TYPE		0			.0	.0	.0	0	.0	6
HACN	D6.1.3	CONVERTION FROM ONE FUEL TO ANOTHER		0			.0	.0	.0	0	.0	6
HACD	D6.2	CLOTHES DRYER	(0)	0				.0	.0	0	.0	5
HADE	D6.2.1	EXHAUST		0			.0	.0	.0	0	.0	6
HAPD	D6.2.2	PROHIBITED DUCT CONNECTION		0			.0	.0	.0	0	.0	6
HAED	D6.2.3	EXHAUST DUCT NOT BENEATH MOBILE HOME		0			.0	.0	.0	0	.0	6
HAPC	D6.2.4	PROHIBITED CONNECTORS IN DUCT		0			.0	.0	.0	0	.0	6
HAIO	D6.5	INSTRUCTION		0				.0	.0	0	.0	5
HALN	D6.8	LOCATION - RELATIVE TO COMBUSTIBLES		0				.0	.0	0	.0	5
HACL	D6.9	CLEARANCES		0				.0	.0	0	.0	5
HLPG	D4.2.5	LP GAS SAFETY DEVICES		1					.2	1	.4	4
ELEC	PART E	ELECTRICAL	(0)	280						142	55.3	3
EWOR	E11	WIRING METHODS	(21)	179					63.9	108	42.0	4
EWFB	E11.5	FASTENING BOXES, FITTINGS, CABINETS		91				50.8	32.5	69	26.8	5
EWPS	E11.7	PASSING OF CABLE THROUGH STUDS		25				14.0	8.9	25	9.7	5
EWSU	E11.9	CABLE SUPPORT		16				8.9	5.7	15	5.8	5
EWLR	E11.6	LOOSE CONNECTIONS		15				8.4	5.4	15	5.8	5
EWCS	E11.6	CONTINUITY OF CABLE SHEATH		5				2.8	1.8	5	1.9	5
EWPR	E11.12	CABLE PROTECTION		4				2.2	1.4	4	1.6	5
EWTC	E11.1	TUBING, CONDUIT, CABLE TERMINATION		1				.6	.4	1	.4	5
EWSN	E11.10	CABLE SUPPORT - NON-METALLIC OUTLET		1				.6	.4	1	.4	5
EWRC	E11.2	RIGID METAL CONDUIT		0				.0	.0	0	.0	5
EWNM	E11.3	NON-METALLIC OUTLET BOXES		0				.0	.0	0	.0	5
EWBL	E11.4	OUTLET BOX LOCATION		0				.0	.0	0	.0	5
EWBR	E11.8	CABLE BEND RADIUS		0				.0	.0	0	.0	5
EWCP	E11.11	CABLE PRACTICES - APPLIANCES		0				.0	.0	0	.0	5
EREC	E6	RECEPTACLE OUTLETS REQUIRED	(0)	36					12.9	28	10.9	4
ERLW	E6.1	LOCATION ON WALLS	(17)	36				100.0	12.9	28	10.9	5
ERLW1.	E6.1(A)	COUNTER TOPS IN KITCHENS		9			25.0	25.0	3.2	9	3.5	6
ERLW2.	E6.1(B)	ADJACENT TO APPLIANCES		4			11.1	11.1	1.4	4	1.6	6
ERLW3.	E6.1(C)	COUNTER TOP SPACES FOR BUILT-IN		3			8.3	8.3	1.1	3	1.2	6
ERLW4.	E6.1(D)	COUNTER TOP SPACES UNDER WALL-CABINETS		3			8.3	8.3	1.1	3	1.2	6
ERSB	E6.2	LOCATIONS IN SHOWER OR BATHTUB SPACES		0				.0	.0	0	.0	5
ERXY	E5.0	MATERIALS AND EQUIPMENT	(0)	19					6.8	19	7.4	4
ERXY1.	E5.1	LISTED AND APPROVED	(1)	19				100.0	6.8	19	7.4	5
ERXY11.	E5.1	ALUMINUM/COPPER DEVICES		18			94.7	94.7	6.4	18	7.0	6
ERXY2.	E5.2	APPLIANCE ACCESSABILITY		0				.0	.0	0	.0	5
EXUR	E20	LIGHTING FIXTURES	(14)	15					5.4	12	4.7	4
EXGE	E20.1	GENERAL	(0)	1				6.7	.4	1	.4	5
EXGE1.	E20.1.1	COMBUSTIBLE WALL OR CEILING FINISH		1			100.0	6.7	.4	1	.4	6
EXGE2.	E20.1.2	USE OF PENDANT-TYPE FIXTURES		0			.0	.0	.0	0	.0	6
EXRL	E20.2	RECESSED LIGHTING FIXTURE	(0)	0				.0	.0	0	.0	5
EXRL1.	E20.2.1	INSULATION FOR CONDUCTORS		0			.0	.0	.0	0	.0	6
EXRL2.	E20.2.2	CIRCUIT CONDUCTORS AT HIGH TEMP		0			.0	.0	.0	0	.0	6

FOURTH THROUGH EIGHTH LEVEL SUMMATIONS:				NO.	%7TH	%6TH	%5TH	%4TH	%3RD	HOMES	%HOMES	LEVEL
EXRL3.	E20.2.3	CONDUCTORS RUN DIRECTLY TO FIXTURE		0			.0	.0	.0	0	.0	6
EXRL4.	E20.2.4	TAP CONNECTION CONDUCTORS		0			.0	.0	.0	0	.0	6
EAFL	E20.3	FLUORESCENT LIGHTING FIXTURES		0				.0	.0	0	.0	5
EHSF	E20.4	SHOWER FIXTURES	(0)	0				.0	.0	0	.0	5
EHSF1.	E20.4.1	LOCATED OVER BATHTUB IN SHOWER STALL		0			.0	.0	.0	0	.0	6
EHSF2.	E20.4.2	FIXTURE AND FAN SWITCH LOCATION		0			.0	.0	.0	0	.0	6
EBFA	E22	OUTDOOR OUTLETS, FIXTURES, AIR-COOLING	(5)	12					4.3	12	4.7	4
EBTF	E22.1	TYPE OF OUTDOOR FIXTURES AND EQUIPMENT		7				58.3	2.5	7	2.7	5
EBAC	E22.2	OUTDOOR AC OR HEATING RECEPTACLE - TAG		0				.0	.0	0	.0	5
EGDB	E23	GROUNDING AND BONDING	(0)	5					1.8	5	1.9	4
EGSE	E23.1	SERVICE GROUNDING	(2)	2				40.0	.7	2	.8	5
EGSE1.	E23.1.1	GROUNDING WIRE CONNECTION		0			.0	.0	.0	0	.0	6
EGSE2.	E23.1.2	GROUNDING OF DISTRIBUTION PANEL		0			.0	.0	.0	0	.0	6
EGSE3.	E23.1.3	GROUNDING BUSS TERMINALS		0			.0	.0	.0	0	.0	6
EIGD	E23.3	INTERIOR GROUNDING - ELECTRICAL	(0)	2				40.0	.7	2	.8	5
EIGD2.	E23.3.2	GROUNDING OF ELECTRICAL EQUIPMENT	(0)	2			100.0	40.0	.7	2	.8	6
EIGD25.	E23.3.2.5	GROUNDING AT LIGHT FIXTURE		2		100.0	100.0	40.0	.7	2	.8	7
EIGD21.	E23.3.2.1	SECURING TO GROUNDED STRUC METAL		0		.0	.0	.0	.0	0	.0	7
EIGD22.	E23.3.2.2	METALLIC RACEWAY TO METALLIC O/B		0		.0	.0	.0	.0	0	.0	7
EIGD23.	E23.3.2.3	CONDUCTORS AND A METALLIC BOX		0		.0	.0	.0	.0	0	.0	7
EIGD24.	E23.3.2.4	CONDUCTORS/NON-METALLIC BOX		0		.0	.0	.0	.0	0	.0	7
EIGD26.	E23.3.2.6	NON-METALLIC SHEATHED CABLE		0		.0	.0	.0	.0	0	.0	7
EIGD27.	E23.3.2.7	GROUNDING FIXTURE TO METALLIC RACEWAY		0		.0	.0	.0	.0	0	.0	7
EIGD1.	E23.3.1	GROUNDING OF EXPOSED METAL PARTS		0			.0	.0	.0	0	.0	6
EIGD3.	E23.3.3	MULTIPLE GROUNDING CONDUCTORS		0			.0	.0	.0	0	.0	6
EIGD4.	E23.3.4	GROUNDING CORD CONNECTED APPLIANCES		0			.0	.0	.0	0	.0	6
EIBN	E23.4	BONDING OF NONCURRENT - CARRYING MET	(0)	1				20.0	.4	1	.4	5
EIBN1.	E23.4.1	EXPOSED NONCURRENT - CARRRYING METAL		1			100.0	20.0	.4	1	.4	6
EIBN2.	E23.4.2	TYPE OF GROUNDING TERMINALS		0			.0	.0	.0	0	.0	6
EIBN3.	E23.4.3.	GROUNDING OF METALLIC PIPES/DUCTS		0			.0	.0	.0	0	.0	6
ENIN	E23.2	INSULATED NEUTRAL	(0)	0				.0	.0	0	.0	5
ENIN1.	E23.2.1	INSULATION OF GROUNDED CIRCUIT		0			.0	.0	.0	0	.0	6
ENIN2.	E23.2.2	GROUNDED RANGES AND DRYERS		0			.0	.0	.0	0	.0	6
EDIS	E9	DISCONNECTING MEANS AND BRANCH CIRCUIT	(0)	4					1.4	4	1.6	4
EDLF	E9.2	LOCATION ABOVE FLOOR		4				100.0	1.4	4	1.6	5
EDPD	E9.1	OVERCURRENT PROTECTION DEVICE		0				.0	.0	0	.0	5
EDWS	E9.3	WORKING SPACE		0				.0	.0	0	.0	5
EDRT	E9.4	RATING, TYPE, GROUNDING		0				.0	.0	0	.0	5
EDMK	E9.5	MARKINGS		0				.0	.0	0	.0	5
EDFT	E9.6	FUSE TYPES		0				.0	.0	0	.0	5
EDNE	E9.7	NEC ARTICLE 210		0				.0	.0	0	.0	5
EDOP	E9.8	OVERCURRENT PROTECTION		0				.0	.0	0	.0	5
EDRP	E9.9	RECEPTACLE PROTECTION		0				.0	.0	0	.0	5
EDCB	E9.10	CIRCUIT BREAKER PROTECTION		0				.0	.0	0	.0	5
EPOW	E10	POWER SUPPLY	(0)	4					1.4	4	1.6	4
EPEF	E10.9	ENTRANCE OF FEEDER ASSEMBLY TO HOME		4				100.0	1.4	4	1.6	5
EPCD	E10.4	CLAMP AT DISTRIBUTION PANEL KNOCKOUT		0				.0	.0	0	.0	5
ESWL	E18	WALL SWITCHES	(3)	3					1.1	2	.8	4
ESWR	E18.1	SWITCH RATINGS	(0)	0				.0	.0	0	.0	5
ESWR1.	E18.1	LIGHTING CIRCUITS		0			.0	.0	.0	0	.0	6
ESWR2.	E18.1	MOTORS OR OTHER LOADS		0			.0	.0	.0	0	.0	6
EFRO	E19	RECEPTACLE OUTLETS	(0)	3					1.1	3	1.2	4
EFIN	E19.1	INSTALLATION IN ACCORDANCE		3				100.0	1.1	3	1.2	5
EBCR	E7	BRANCH CIRCUITS REQUIRED	(0)	0					.0	0	.0	4
EBCR1.	E7.1.1	LIGHTING		0				.0	.0	0	.0	5
EBCR2.	E7.1.2	PORTABLE APPLIANCES		0				.0	.0	0	.0	5

FOURTH THROUGH EIGHTH LEVEL SUMMATIONS:				NO.	%7TH	%6TH	%5TH	%4TH	%3RD	HOMES	%HOMES	LEVEL
EBCR3.	E7.1.3	GENERAL APPLIANCES	(0)	0				.0	.0	0	.0	
EBCR31.	E7.1.3(A)	FIXED APPLIANCES/CIRCUIT WITH L/O		0			.0	.0	.0	0	.0	
EBCR32.	E7.1.3(B)	FIXED APPLIANCES/CIRCUIT WITHOUT L/O		0			.0	.0	.0	0	.0	
EBCR33.	E7.1.3(C)	SINGLE PORTABLE APPLIANCE		0			.0	.0	.0	0	.0	
EBCR34.	E7.1.3(D)	RANGE BRANCH CIRCUIT		0			.0	.0	.0	0	.0	
EBCR35.	E7.1.3(E)	WHEN LAUNDRY FACILITIES PROVIDED		0			.0	.0	.0	0	.0	
EUND	E12	UNDER CHASSIS WIRING	(0)	0					.0	0	.0	
EUPE	E12.1	PROTECTION OF EXPOSED WIRING		0				.0	.0	0	.0	5
EUCT	E12.2	CONDUCTOR TYPES		0				.0	.0	0	.0	
EFPL	E13	SWITCHES AND RECEPTACLE PLATES	(0)	0					.0	0	.0	
EFSG	E13.1	SWITCH GROUNDING		0				.0	.0	0	.0	5
EFMT	E13.2	METALLIC FACEPLATE THICKNESS		0				.0	.0	0	.0	5
EFLF	E13.3	LISTED FACEPLATES		0				.0	.0	0	.0	5
EFMG	E13.4	METALLIC FACEPLATE GROUNDINGS		0				.0	.0	0	.0	5
ECON	E14	CONDUCTORS IN OUTLET BOXES	(0)	0					.0	0	.0	
ECBS	E14.1	OUTLET BOX SIZE		0				.0	.0	0	.0	5
ECFC	E14.2	FREE CONDUCTOR LENGTH		0				.0	.0	0	.0	5
EPOL	E16	POLARIZATION	(0)	0					.0	0	.0	
EPGC	E16.1	GROUNDED CIRCUIT CONDUCTOR		0				.0	.0	0	.0	5
EPOU	E16.2	OTHER USE — WHITE CONDUCTOR OF CABLE		0				.0	.0	0	.0	5
EPGR	E16.3	GROUNDING CONDUCTOR COLOR		0				.0	.0	0	.0	5
ETER	E17	CONNECTION TO TERMINALS AND SPLICES	(0)	0					.0	0	.0	
ETCP	E17.1	CONNECTION OF CONDUCTORS TO TERMINAL		0				.0	.0	0	.0	5
ETSJ	E17.2	SPLICING AND JOINING OF CONNECTORS		0				.0	.0	0	.0	5
EMKE	E25	ELECTRICAL MARKING	(0)	0					.0	0	.0	
EMCB	E25.1	MAIN CIRCUIT BREAKER		0				.0	.0	0	.0	5
EMFS	E25.2	MAXIMUM FUSE SIZE		0				.0	.0	0	.0	5
EMNP	E25.3	METAL NAME PLATE		0				.0	.0	0	.0	5
* NANS		ROUTINE MAINTENANCE	(0)	934						169	65.8	2 *
NCON		CONSTRUCTION	(0)	550						143	55.6	3
NCXD		EXTERIOR DOORS	(43)	244					44.4	97	37.7	4
NCXH		HARDWARE		121				49.6	22.0	63	24.5	5
NCXF		IMPROPER FIT		38				15.6	6.9	30	11.7	5
NCST		STORM		19				7.8	3.5	16	6.2	5
NCXR		REGLAZED		10				4.1	1.8	7	2.7	5
NCSR		FROZEN		7				2.9	1.3	6	2.3	5
NCCD		CANOPY		4				1.6	.7	3	1.2	5
NCXS		SCREENS		2				.8	.4	2	.8	5
NCWD		WINDOWS	(23)	122					22.2	66	25.7	4
NCWR		REGLAZED		37				30.3	6.7	25	9.7	5
NCWH		HARDWARE		19				15.6	3.5	15	5.8	5
NCWT		STORM		19				15.6	3.5	17	6.6	5
NCWF		IMPROPER FIT		15				12.3	2.7	14	5.4	5
NCWS		SCREENS		9				7.4	1.6	9	3.5	5
NCES		EXTERIOR STAIRS		41					7.5	25	9.7	4
NCPD		PARTITIONS DOORS	(15)	40					7.3	27	10.5	4
NCPH		HARDWARE		19				47.5	3.5	14	5.4	5
NCPF		IMPROPER FIT		6				15.0	1.1	6	2.3	5
NCSM		SKIRTING		32					5.8	21	8.2	4
NCHH		HOT WATER HEATER COMPARTMENT	(0)	27					4.9	26	10.1	4
NCHD		COMPARTMENT DOOR		15				55.6	2.7	15	5.8	5

FOURTH THROUGH EIGHTH LEVEL SUMMATIONS:			NO.	%7TH	%6TH	%5TH	%4TH	%3RD	HOMES	%HOMES	LEVEL
NCHI	INSULATION		12				44.4	2.2	12	4.7	5
NCBL	BLOCKING	(9)	20					3.6	15	5.8	4
NCBE	LEVELING		9				45.0	1.6	6	2.3	5
NCBR	RACKING OF DOORS		2				10.0	.4	2	.8	5
NCFL	FLOOR	(1)	13					2.4	9	3.5	4
NCFV	HEATING DUCT VENT		12				92.3	2.2	9	3.5	5
NCMG	SITE GRADING		7					1.3	7	2.7	4
NCTD	TIE DOWN STRAPS LOOSE, ETC		4					.7	4	1.6	4
NPLM	PLUMBING	(17)	216						94	36.6	3
NPWS	WATER SUPPLY PIPING	(15)	79					36.6	53	20.6	4
NPWE	EXTERIOR	(46)	64				81.0	29.6	43	16.7	5
NPWB	FROZEN		18			28.1	22.8	8.3	14	5.4	6
NPWI	INTERIOR	(0)	0				.0	.0	0	.0	5
NPWA	FROZEN		0			.0	.0	.0	0	.0	6
NPFX	FIXTUERS	(0)	69					31.9	42	16.3	4
NPKS	KITCHEN SINK	(13)	29				42.0	13.4	23	8.9	5
NPKA	FAUCET ASSEMBLY		9			31.0	13.0	4.2	8	3.1	6
NPKC	CLOGGED DRAIN		6			20.7	8.7	2.8	4	1.6	6
NPKF	FLANGE SEAL		1			3.4	1.4	.5	1	.4	6
NPKD1.	ORAIN		0			.0	.0	.0	0	.0	6
NPKD2.	DRAIN LEAK		0			.0	.0	.0	0	.0	6
NPKD3.	ORAIN FROZEN		0			.0	.0	.0	0	.0	6
NPFT	TOILETS	(0)	21				30.4	9.7	17	6.6	5
NPXX	CLOGGED DRAIN		12			57.1	17.4	5.6	8	3.1	6
NPTT	FLUSH TANK		7			33.3	10.1	3.2	7	2.7	6
NPTA	TOILET SEAT		2			9.5	2.9	.9	2	.8	6
NPTF	FLUSHING DEVICES		0			.0	.0	.0	0	.0	6
NPXY1.	DRAIN		0			.0	.0	.0	0	.0	6
NPXY2.	DRAIN LEAK		0			.0	.0	.0	0	.0	6
NPXY3.	DRAIN FROZEN		0			.0	.0	.0	0	.0	6
NPTW	WAX SEAL		0			.0	.0	.0	0	.0	6
NPTP	TANK TOP		0			.0	.0	.0	0	.0	6
NPTK	TOILET FLANGE FITTING		0			.0	.0	.0	0	.0	6
NPTS	WATER SUPPLY CONNECTION		0			.0	.0	.0	0	.0	6
NPBS	LAVORATORIES	(3)	11				15.9	5.1	7	2.7	5
NPBC	CLOGGED DRAIN		4			36.4	5.8	1.9	3	1.2	6
NPBA	FAUCET ASSEMBLY		4			36.4	5.8	1.9	2	.8	6
NPBF	FLANGE SEAL		0			.0	.0	.0	0	.0	6
NPBD1.	DRAIN		0			.0	.0	.0	0	.0	6
NPBD2.	DRAIN LEAK		0			.0	.0	.0	0	.0	6
NPBD3.	DRAIN FROZEN		0			.0	.0	.0	0	.0	6
NPCB	BATHTUB WITH SHOWERHEAD	(5)	8				11.6	3.7	7	2.7	5
NPCR	CLOGGED DRAIN		2			25.0	2.9	.9	2	.8	6
NPCA	FAUCET ASSEMBLY		1			12.5	1.4	.5	1	.4	6
NPCC	CAULKING		0			.0	.0	.0	0	.0	6
NPCD1.	DRAIN		0			.0	.0	.0	0	.0	6
NPCD2.	DRAIN LEAK		0			.0	.0	.0	0	.0	6
NPCD3.	DRAIN FROZEN		0			.0	.0	.0	0	.0	6
NPBT	SEWER		39					18.1	26	10.1	4
NPPR	PRESSURE REGULATOR		12					5.6	9	3.5	4
NPMW	WASHING MACHING	(0)	0					.0	0	.0	4
NPMS	WATER SUPPLY		0				.0	.0	0	.0	5
NPMD	DRAIN		0				.0	.0	0	.0	5
NPDW	DISH WASHER	(0)	0					.0	0	.0	4

FOURTH THROUGH EIGHTH LEVEL SUMMATIONS:			NO.	%7TH	%6TH	%5TH	%4TH	%3RD	HOMES	%HOMES	LEVEL
NPDS	WATERSUPPLY		0				.0	.0	0	.0	5
NPEX	EXTERIOR DARIN-FURNACE.WATER HEATER		0					.0	0	.0	4
NELC	ELECTRICAL	(6)	124						74	28.8	3
NEDP	DISTRIBUTION PANEL BOARD	(10)	55					44.4	40	15.6	4
NEDF	FUSES		32				58.2	25.8	22	8.6	5
NECB	CIRCUIT BREAKERS		8				14.5	6.5	8	3.1	5
NEDT	FUSTAT		5				9.1	4.0	5	1.9	5
NERC	RECEPTICAL OUTLETS	(1)	33					26.6	26	10.1	4
NERD	OUT DOOR	(1)	30				90.9	24.2	24	9.3	5
NEHT	HEAT TAPE		26			86.7	78.8	21.0	21	8.2	6
NELF	LIGHT FIXRURE		3			10.0	9.1	2.4	3	1.2	6
NERI	INTERIOR	(0)	2				6.1	1.6	2	.8	5
NERF	FACEPLATE		2			100.0	6.1	1.6	2	.8	6
NEPP	POWER POLE/LIFELINE		18					14.5	17	6.6	4
NESW	SWITCHES	(6)	7					5.6	6	2.3	4
NESF	FACEPLATE		1				14.3	.8	1	.4	5
NEEF	EXTERIOR LIGHT FIXTURE		3					2.4	3	1.2	4
NEIF	INTERIOR LIGHTING FIXTURES	(1)	1					.8	1	.4	4
NEIN	NOT SECURELY ATTACHED		0				.0	.0	0	.0	5
NESR	SERVICE		1					.8	1	.4	4
NEGR	EXTERNAL GROUNDING		0					.0	0	.0	4
NE8C	BRANCH CIRCUIT MALFUNCTION		0					.0	0	.0	4
NHTG	HEATING	(4)	44						34	13.2	3
NHGP	GAS SUPPLY PIPING		23					52.3	20	7.8	4
NHSP	INSTALLED SPACE HEATERS		10					22.7	8	3.1	4
NHOP	OIL SUPPLT PIPING	(7)	7					15.9	6	2.3	4
NHOF	FROZEN		0				.0	.0	0	.0	5
NHGR	GAS PRESSURE REGULATOR		0					.0	0	.0	4
NHRJ	ROOF JACK		0					.0	0	.0	4
* APEQ	MECHANICAL/ELECTRICAL APPLIANCES -EQUIPMENT	(0)	374						106	41.2	2 *
AFHA	FURNACE.HOT AIR.GAS OR OIL	(39)	181						77	30.0	3
AFPL	PILOT/ELECTRONIC IGNITION	(3)	40					22.1	32	12.5	4
AFPR1.	RELIGHT PILOT		37				92.5	20.4	31	12.1	5
AFCL	CONTROLS	(2)	35					19.3	21	8.2	4
AF8U	BURNER	(1)	16				45.7	8.8	9	3.5	5
AFCV	CONTROLS VALVE		8			50.0	22.9	4.4	4	1.6	6
AFTC	THERMOCOUPLE		6			37.5	17.1	3.3	5	1.9	6
AFCR	RESET BUTTON		1			6.3	2.9	.6	1	.4	6
AFCA	CAD CELLS		0			.0	.0	.0	0	.0	6
AF8E	ELECTRODE		0			.0	.0	.0	0	.0	6
AF8W	BLOWER	(1)	15				42.9	8.3	12	4.7	5
AFLS	LIMIT SWITCH		14			93.3	40.0	7.7	11	4.3	6
AF8R	RESET BUTTON		0			.0	.0	.0	0	.0	6
AFTW	INTERNAL WIRING	(1)	2				5.7	1.1	2	.8	5
AFES	ON/OFF EMERGENCY SWITCH		1			50.0	2.9	.6	1	.4	6
AFFG	FUEL GUN	(0)	32					17.7	20	7.8	4
AFFL	GAS LEAK		28				87.5	15.5	16	6.2	5

FOURTH THROUGH EIGHTH LEVEL SUMMATIONS:			NO.	%7TH	%6TH	%5TH	%4TH	%3RD	HOMES	%HOMES	LEVEL
AFFN	NOZZLE / ORIFICE	(1)	3				9.4	1.7	3	1.2	5
AFFW	WRONG INITIALLY INSTALLED		2			66.7	6.3	1.1	2	.8	6
AFFO	OIL LEAK		1				3.1	.6	1	.4	5
AFFP	PUMP		0				.0	.0	0	.0	5
AFFM	PUMP MOTOR		0				.0	.0	0	.0	5
AFWT	WALL THERMOSTAT	(17)	21					11.6	18	7.0	4
AFTA	TRANSFORMER		4				19.0	2.2	4	1.6	5
AF8M	8LOWER MOTOR	(2)	4					2.2	2	.8	4
AFBG	BEARINGS		1				25.0	.6	1	.4	5
AFMM	MOTOR MOUNT		1				25.0	.6	1	.4	5
AFTR	FILTER		3					1.7	3	1.2	4
AFAB	BURNER ASSEM8LY		2					1.1	2	.8	4
AF8L	8LOWER ASSEM8LY	(2)	2					1.1	2	.8	4
AF8D	BELT DRIVE		0				.0	.0	0	.0	5
AF88	8EARINGS		0				.0	.0	0	.0	5
AFDR	FURNACE DOORS		1					.6	1	.4	4
AFGR	GAS REGULATOR		1					.6	1	.4	4
AFSC	FUEL SUPPLY CONNECTION		1					.6	1	.4	4
AHWW	HOT WATER HEATERS	(28)	82						52	20.2	3
AHEL	ELECTRIC HOT WATER HEATER	(17)	43					52.4	29	11.3	4
AHEH	HEAT ELEMENT		9				20.9	11.0	8	3.1	5
AHEC	CONTROLS	(0)	6				14.0	7.3	5	1.9	5
AHE8	RESET BUTTON		4			66.7	9.3	4.9	3	1.2	6
AHEM	THERMOSTAT		2			33.3	4.7	2.4	2	.8	6
AHEE	HEATING ELEMENT		0			.0	.0	.0	0	.0	6
AHER	PRESSURE RELIEF VALVE		5				11.6	6.1	5	1.9	5
AHTK	TANK	(0)	3				7.0	3.7	3	1.2	5
AHTE	LEAK		3			100.0	7.0	3.7	3	1.2	6
AHEP	PRESSURE REGULATOR		3				7.0	3.7	3	1.2	5
AHES	ANTI-SIPHON VALVE		0				.0	.0	0	.0	5
AHGS	GAS HOT WATER HEATER	(2)	11					13.4	9	3.5	4
AHPL	PILOT	(2)	4				36.4	4.9	2	.8	5
AHPR	RELIGHT PILOT		2			50.0	18.2	2.4	2	.8	6
AHRV	PRESSURE RELIEF VALVE		3				27.3	3.7	3	1.2	5
AHCL	CONTROLS	(0)	2				18.2	2.4	2	.8	5
AHCT	THERMOSTAT		2			100.0	18.2	2.4	2	.8	6
AHCB	BURNER		0			.0	.0	.0	0	.0	6
AHCR	RESET 8UTTON		0			.0	.0	.0	0	.0	6
AHBR	8URNER	(0)	0				.0	.0	0	.0	5
AHNZ	NOZZLE/ORIFICE		0			.0	.0	.0	0	.0	6
AHRG	REGULATOR		0			.0	.0	.0	0	.0	6
AH8L	LEAK		0			.0	.0	.0	0	.0	6
AHTG	TANK	(0)	0				.0	.0	0	.0	5
AHTL	LEAK		0			.0	.0	.0	0	.0	6
AHPG	PRESSURE REGULATOR		0				.0	.0	0	.0	5
AHAV	ANTI-SIPHON VALVE		0				.0	.0	0	.0	5
ARGE	RANGE - GAS/ELECTRIC	(11)	72						36	14.0	3
ARPL	PILOT	(3)	18					25.0	16	6.2	4
ARPR1.	RELIGHT PILOT		15				83.3	20.8	13	5.1	5
ARGL	GAS LEAK		17					23.6	14	5.4	4
ARCL	CONTROLS	(2)	11					15.3	10	3.9	4
AROB	OVEN BURNER		4				36.4	5.6	4	1.6	5

FOURTH THROUGH EIGHTH LEVEL SUMMATIONS:			NO.	%7TH	%6TH	%5TH	%4TH	%3RD	HOMES	%HOMES	LEVEL
ARSB	SURFACE BURNER		3				27.3	4.2	3	1.2	5
ARTH	THERMOSTAT		2				18.2	2.8	2	.8	5
ARTI	TIMER		0				.0	.0	0	.0	5
ARBU	BURNER	(0)	6					8.3	5	1.9	4
ARBV	OVEN		3				50.0	4.2	3	1.2	5
ARBS	SURFACE		3				50.0	4.2	2	.8	5
ARIW	INTERNAL WIRING		6					8.3	2	.8	4
ARHW	HARDWARE	(0)	3					4.2	3	1.2	4
ARHO	OVEN DOORS		3				100.0	4.2	3	1.2	5
ARHH	HINGES		0				.0	.0	0	.0	5
ARHD	DRAWS		0				.0	.0	0	.0	5
ARHK	KNOBS		0				.0	.0	0	.0	5
AEEX	EXHAUST FAN		25						14	5.4	3
ACRF	REFRIGERATOR	(9)	10						9	3.5	3
ACRL	CONTROLS	(0)	1					10.0	1	.4	4
ACRA	FAN		1				100.0	10.0	1	.4	5
ACRD	DEFROST TIMER		0				.0	.0	0	.0	5
ACRS	SWITCHES		0				.0	.0	0	.0	5
ACRC	COMPRESSOR		0					.0	0	.0	4
ACRM	COMPRESSOR MOTOR		0					.0	0	.0	4
ACRR	REFRIGERANT SYSTEM	(0)	0					.0	0	.0	4
ACRZ	FREEZER COILS		0				.0	.0	0	.0	5
ACRI	REFRIGERATOR COILS		0				.0	.0	0	.0	5
ACRT	TUBING		0				.0	.0	0	.0	5
ACRH	RECHARGE		0				.0	.0	0	.0	5
ACRG	GASKETING (DOORS)		0					.0	0	.0	4
ACRN	FAN		0					.0	0	.0	4
ASDE	SMOKE DECTOR		3						3	1.2	3
AFEB	ELECTRIC BASEBOARD HEATING UNITS	(1)	1						1	.4	3
AFMT	HEATING ELEMENT		0					.0	0	.0	4
AFST	THERMOSTAT	(0)	0					.0	0	.0	4
AFTF	TRANSFOMER		0				.0	.0	0	.0	5
AFNC	COMTROLS	(0)	0					.0	0	.0	4
AFPT	THERMOCOUPLES		0				.0	.0	0	.0	5

USCOMM-NBS-DC

Appendix C

Photographic Documentation

Figure C-1 Exterior Wall Fasteners Which Have Corroded and Worked Loose

Figure C-2 Rusted Exterior Fasteners

Figure C-3 Rusted Exterior Fasteners Causing Staining of Siding

Figure C-4 Exterior Fasteners Pulled Through Exterior Siding

Figure C-5 Water Staining At Wall-Floor Due to Rain Leak Through Exterior Wall

Figure C-6 Rain Leak Staining at Exterior Door

Figure C-7 Buckled Interior Wall Paneling on Exterior Wall Due to Water Penetration of Exterior Skin.

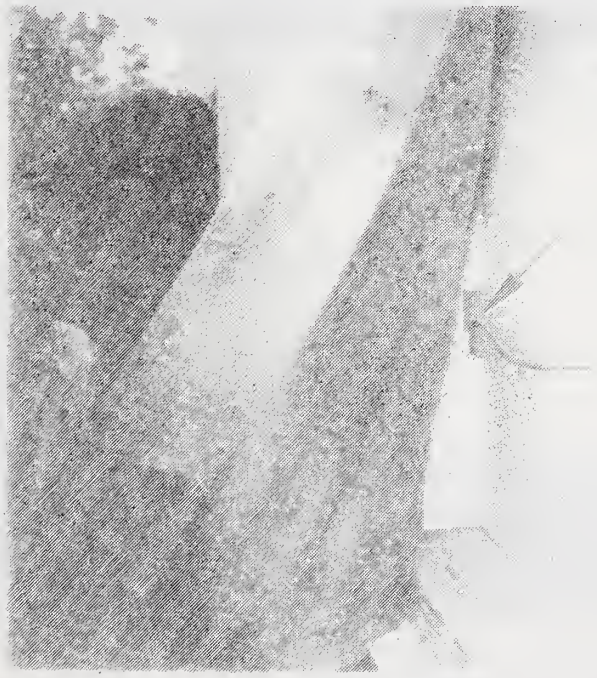


Figure C-8 No Insulation in Exterior Wall Stud Space and Unprotected Electrical Wire Running Through Notched Stud

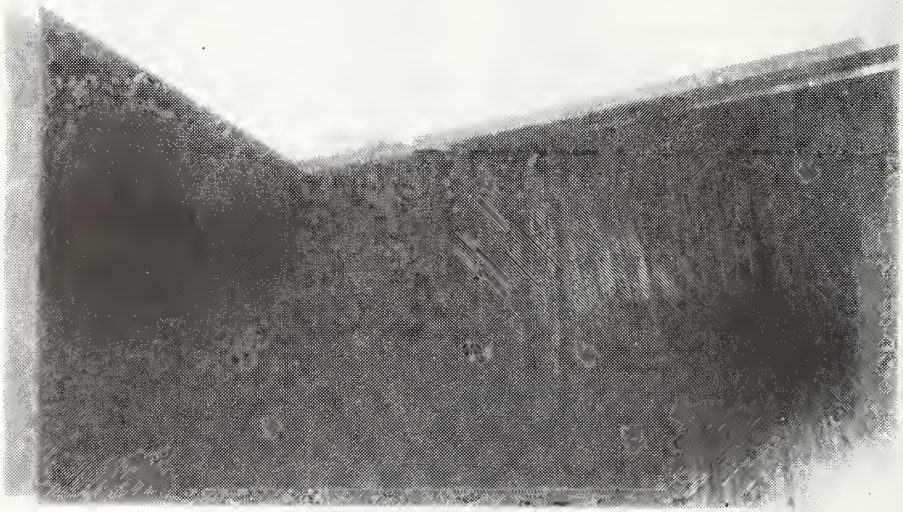


Figure C-9 Water Stained Ceiling Material Due to Rain Leak

Figure C-10 Damaged Metal Roof Allowing Rain Leak With Resulting Damage Shown in Figure C-11

Figure C-11 Water Damage to Ceiling Due to Rain Leak at Roof Membrane Joint

Figure C-12 Water Damage to Ceiling Due to Rain Leak at Vent Stack Penetration Through Roof

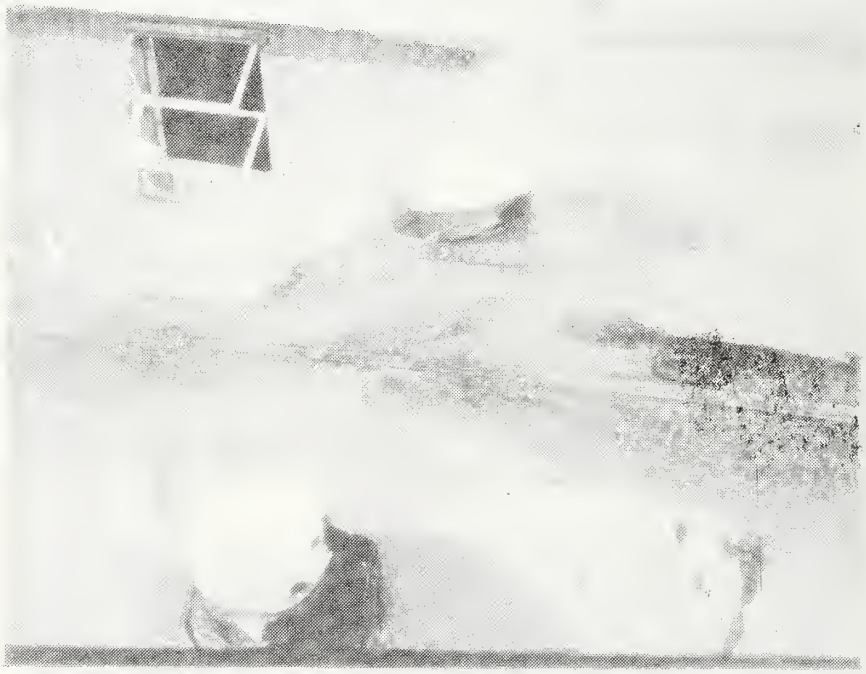


Figure C-13 Application of Coating Material to Vent Stack Penetration in Roof to Correct Rain Leak

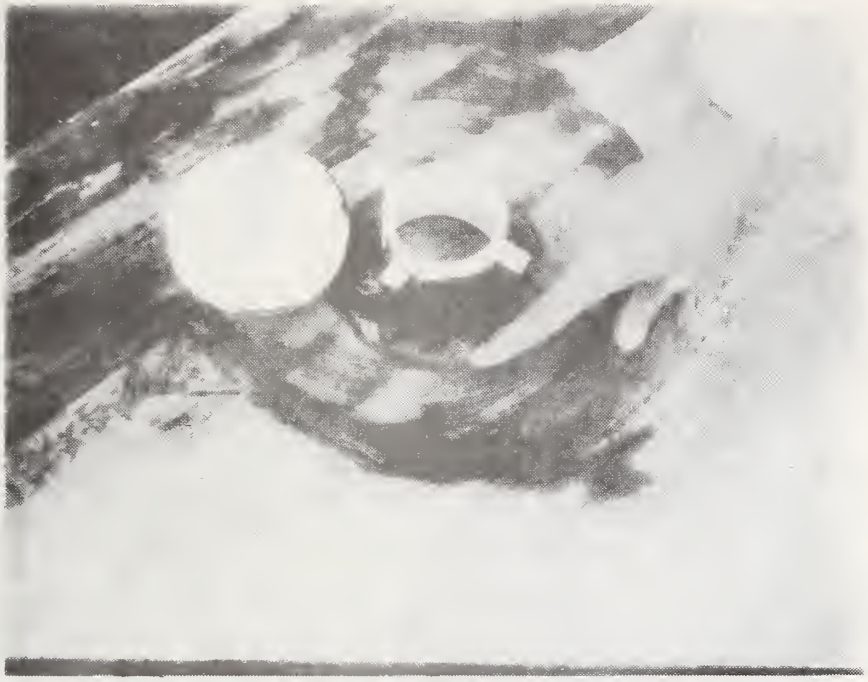


Figure C-14 Rain Leak at Flashing of Plumbing Vent Pipe

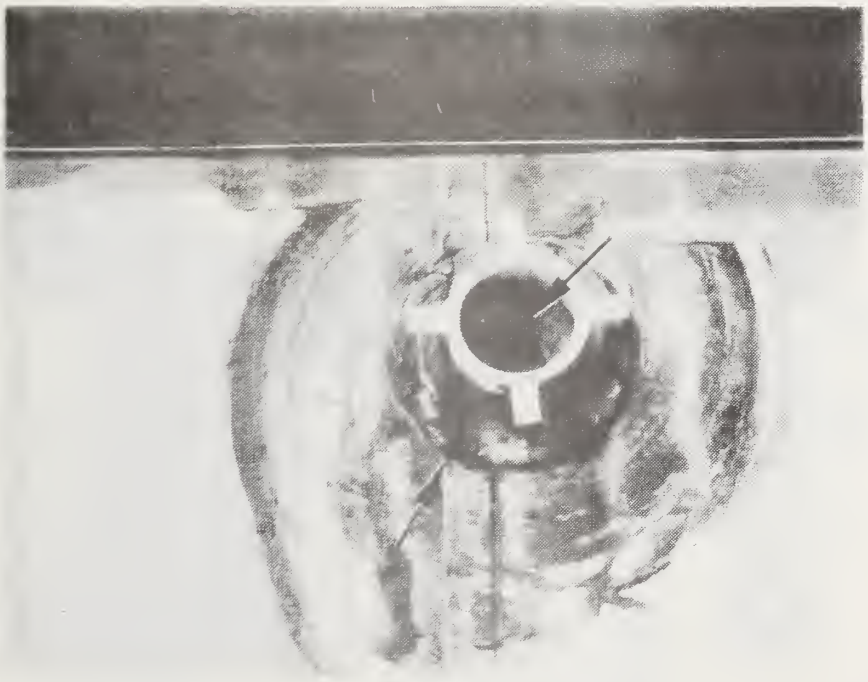


Figure C-15 Rain Leak at Plumbing Vent Pipe Flashing Located at Joint of Metal Roofing. Also, Vent Pipe Does Not Penetrate Roof Covering

Figure C-16 Ungasketed Heating Vent Pipe Attached With Sheet Metal Screws to Metal Roofing

Figure C-17 Application of Coating Material to Repair Water Leak at Tip-out Joint

Figure C-18 Location of Rain Leak at Tip-out Joint

Figure C-19 Bowstring Roof Truss Cut for Passage of Furnace Vent

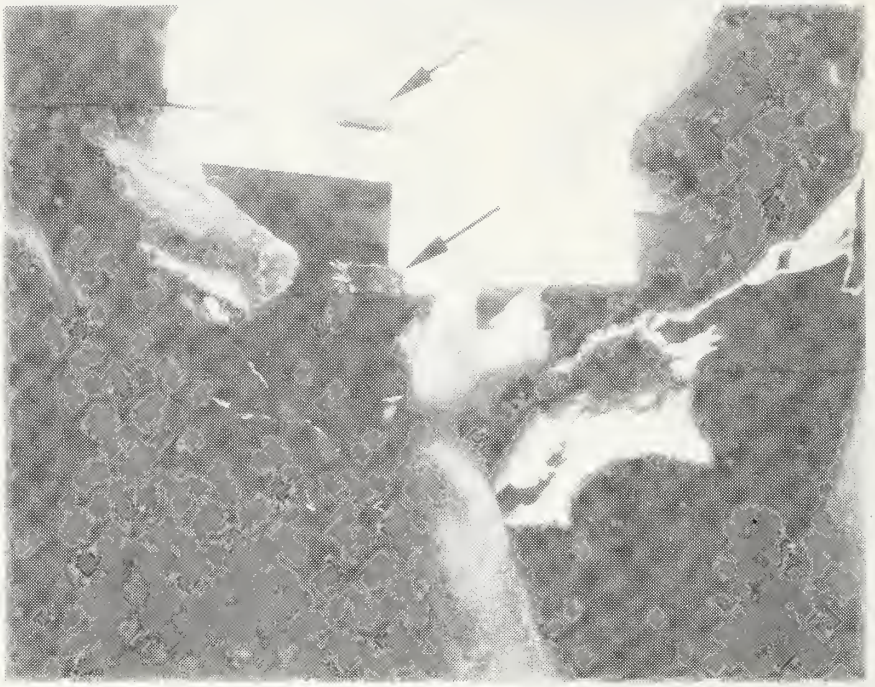


Figure C-20 Compression and Tension Chords of Bowstring Roof Truss Cut for Passage of Furnace Vent

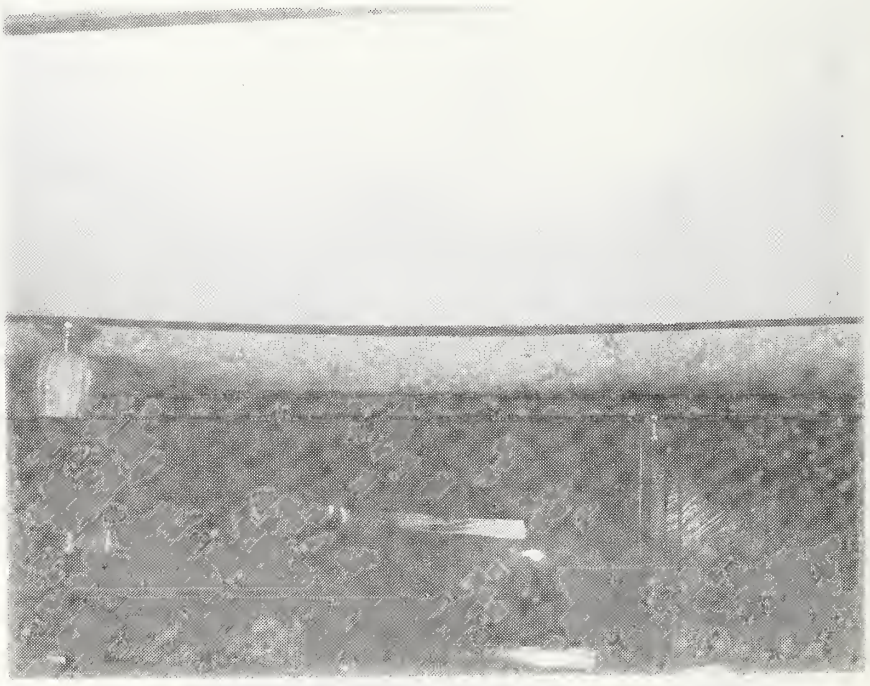


Figure C-21 Deflection of Ceiling Indicating Failure of Attachment to the Roof Truss

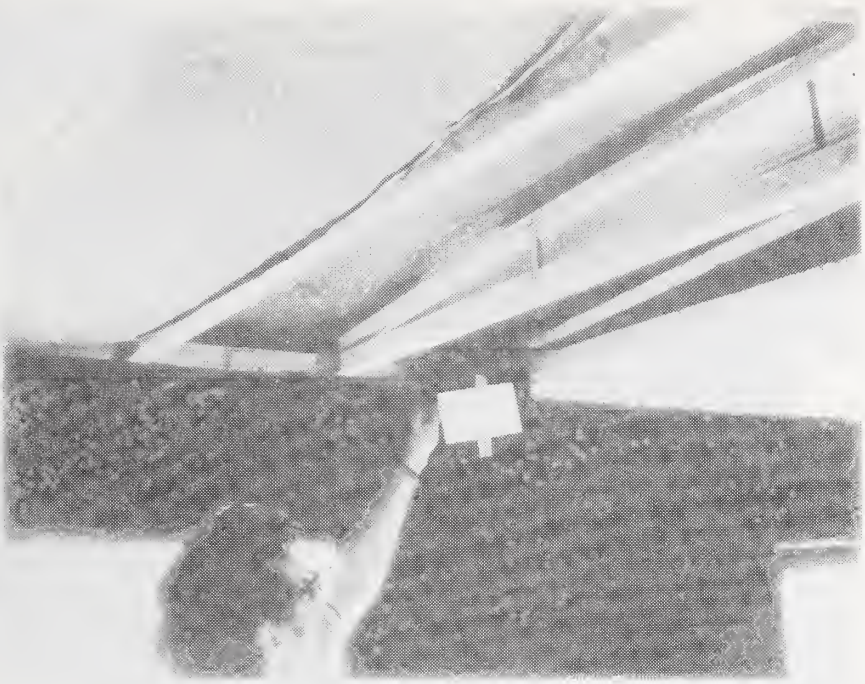


Figure C-22 Insulation Missing in Roof System. Note Metal Roofing Loosely Lying on Roof Truss Which Would Likely Result in "Roof Rumble" in Windy Condition

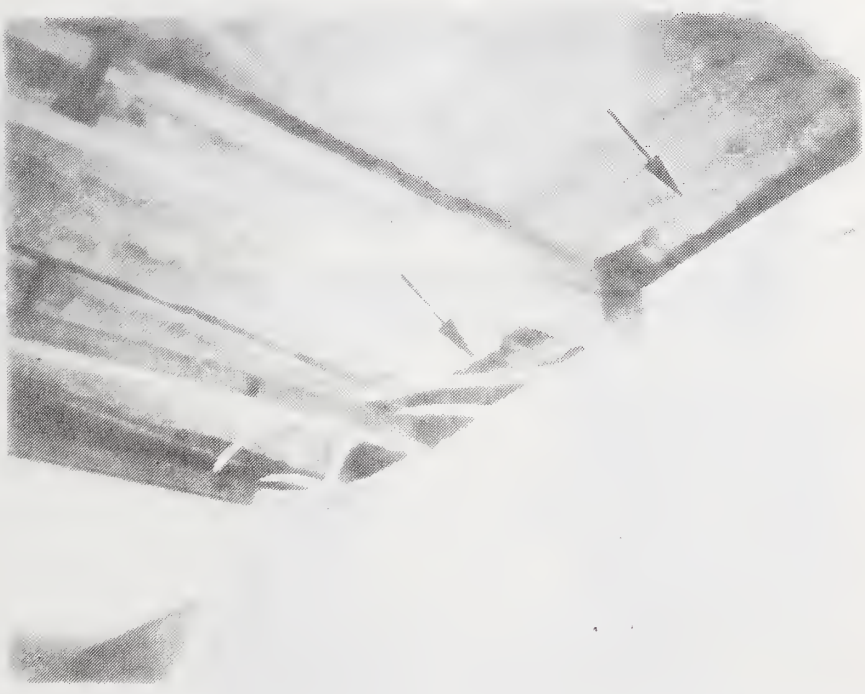


Figure C-23 Insulation Cut Short at Juncture of Roof Truss and Exterior Wall

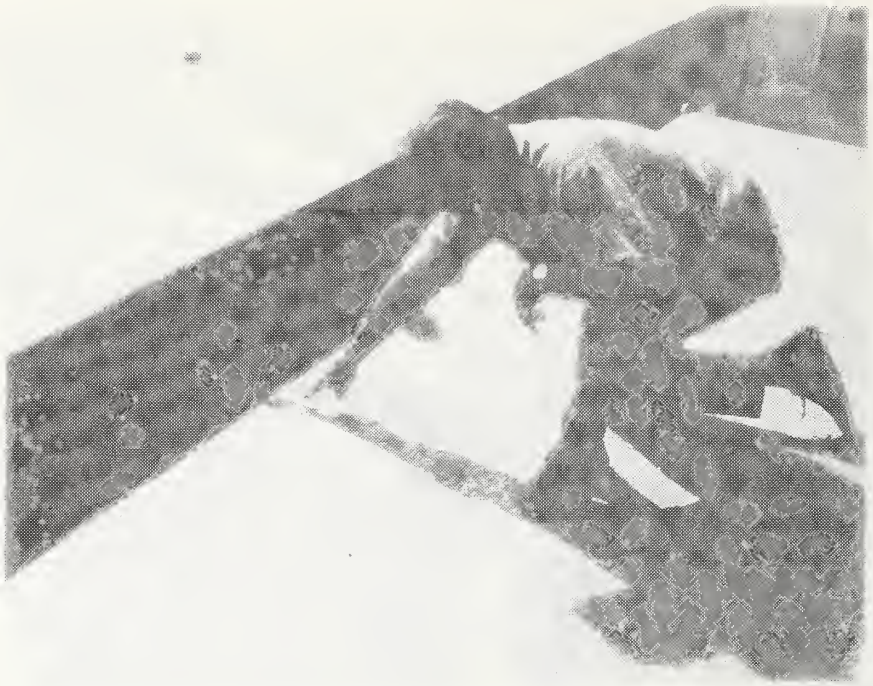


Figure C-24 Improperly Crimped Metal Membrane at Roof Edge

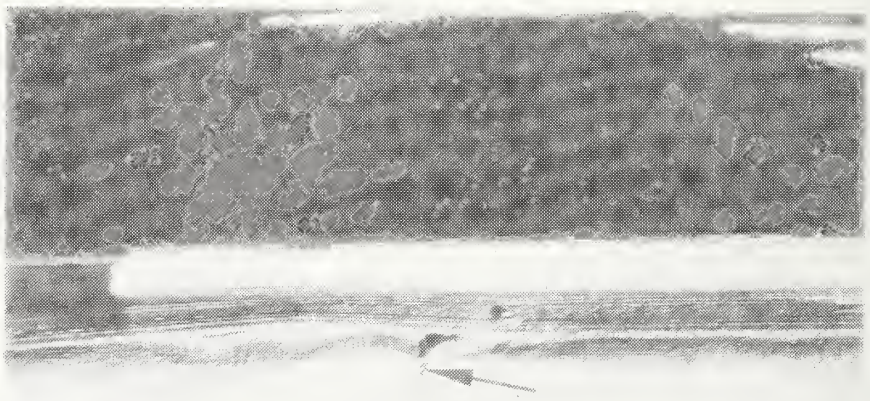


Figure C-25 Crack in Crimped Steel Roof Membrane-Water Leak Potential

Figure C-26 Crimped Steel Membrane at Change in Slope of Roof

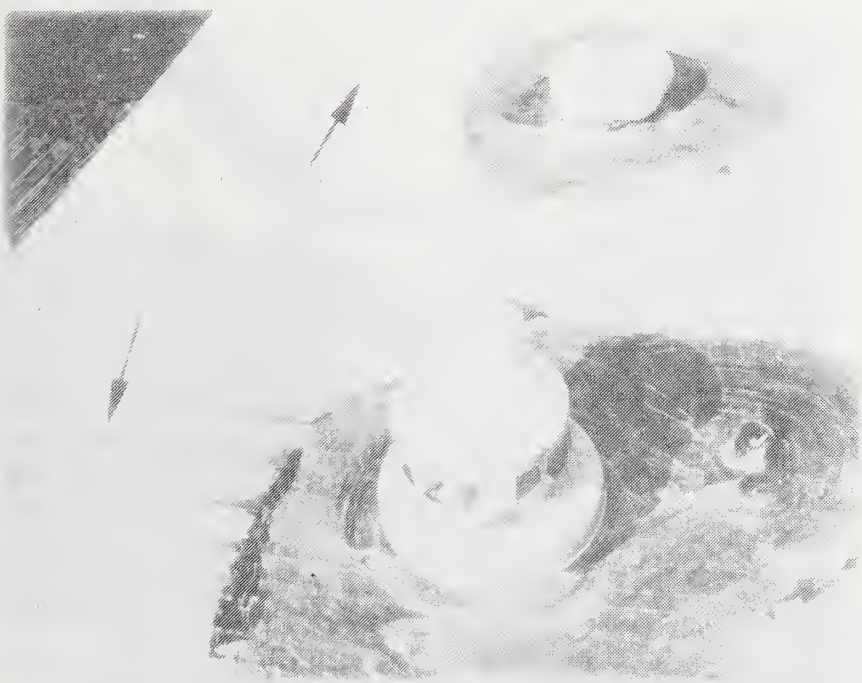


Figure C-27 Rusting Steel Roofing Membrane Near Roof Penetrations Which Have Been Coated With Roofing Sealant

Figure C-28 Failure of Ceiling/Roof Truss Attachment as Indicated by Sagging Ceiling

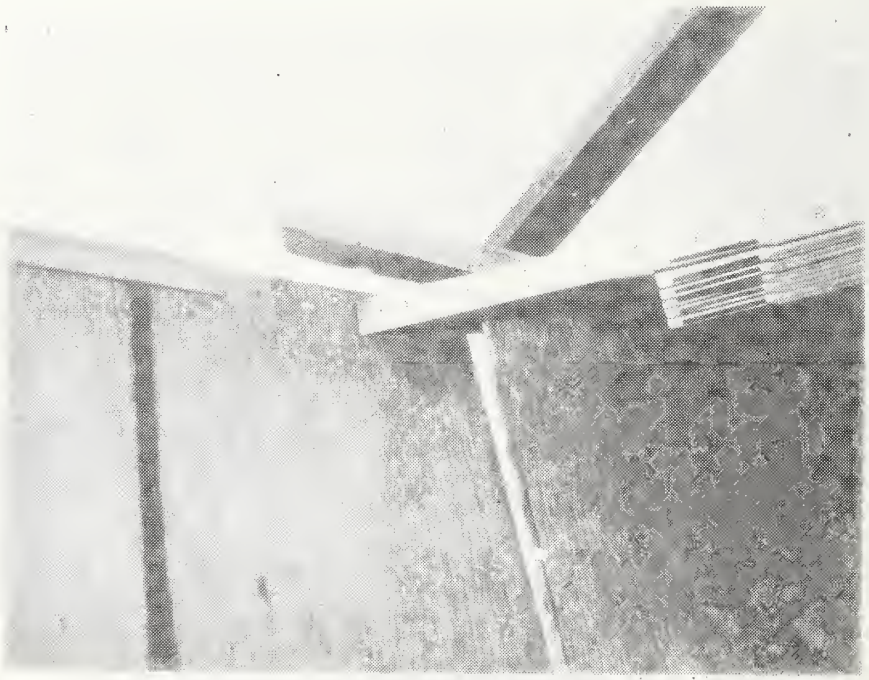


Figure C-29 Loose Interior Paneling to Wall Framing Attachment At Intersection of Exterior Wall and Ceiling

Figure C-30 Distortion of Interior Partition With Door - Due to Undercarriage Damage.

Figure C-31 Load Carrying Failure of Partition Wall Structural Member Due to Inferior Lumber Grade

Figure C-32 Distortion of Shower Enclosure Wall Due to Effects of Moisture

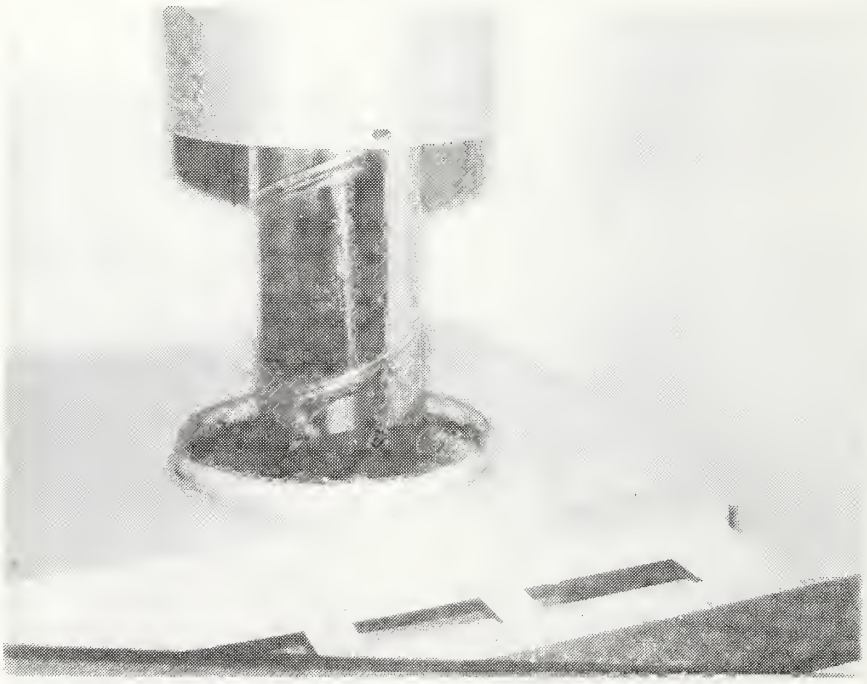


Figure C-33 Construction Detail - Gypsum Board Lining of Furnace Enclosure Wall

Figure C-34 A-Frame Assembly and Outrigger Failure Resulting in Damage to Mobile Home - Exterior View.

Figure C-35 Result of A-Frame Assembly and Outrigger Failure - Interior View Looking Toward Tongue End of Home Shown in Figure C-34.

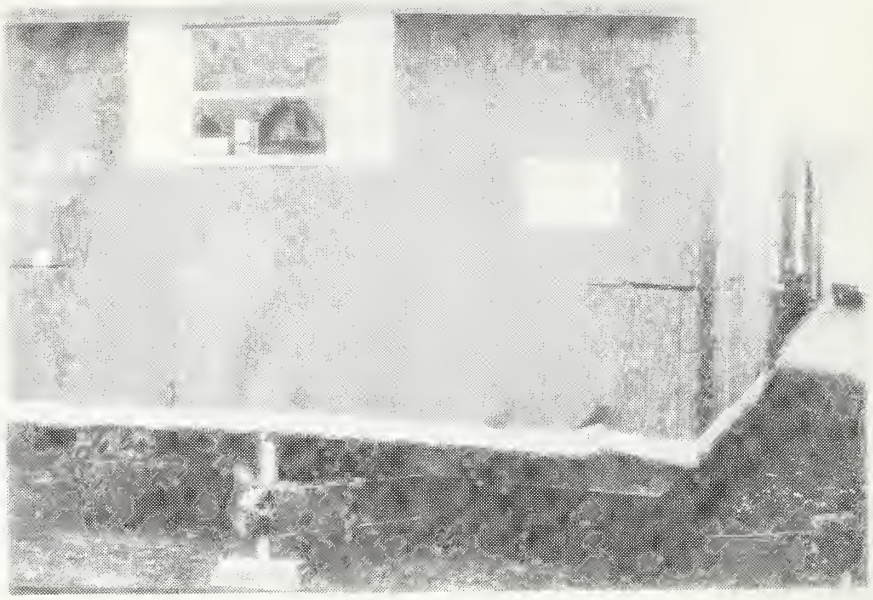


Figure C-36 A-Frame Assembly Failure

Figure C-37 Longitudinal Member Failure.

Figure C-38 View of Underside of Mobile Home - Weld Failure of Open Web Outrigger.

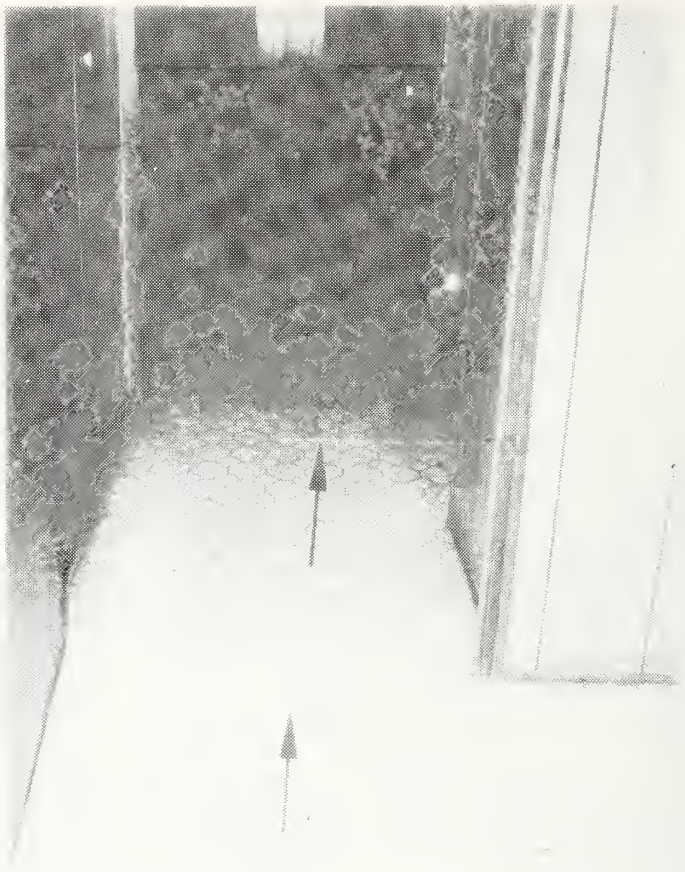


Figure C-39 Buckled Floor Covering at Joints of Floor Sheathing

Figure C-40 Damaged Floor Covering at Entrance to Bedroom

Figure C-41 Damaged Floor Covering

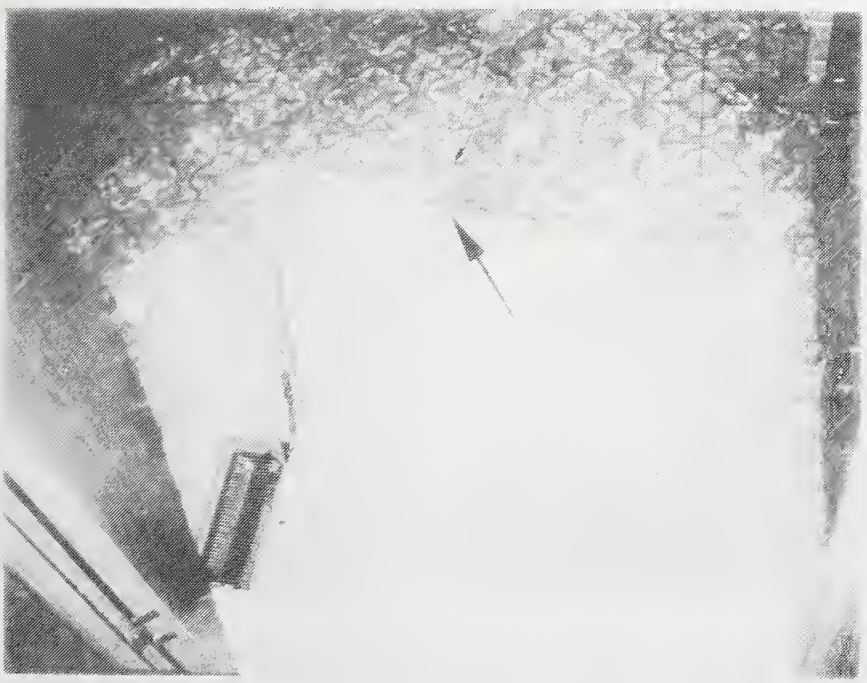


Figure C-42 Buckled Flooring and Covering Due to Distortion of Floor System Caused by Undercarriage Damage

Figure C-43 Buckling of Particle Board Floor Decking Due to Water Damage Caused by Plumbing Malfunction

Figure C-44 Damage to Bottomboard on Underside of Mobile Home Exposing Floor Insulation Resulting in Diminished Rodent Resistance and Excessive Air Infiltration.

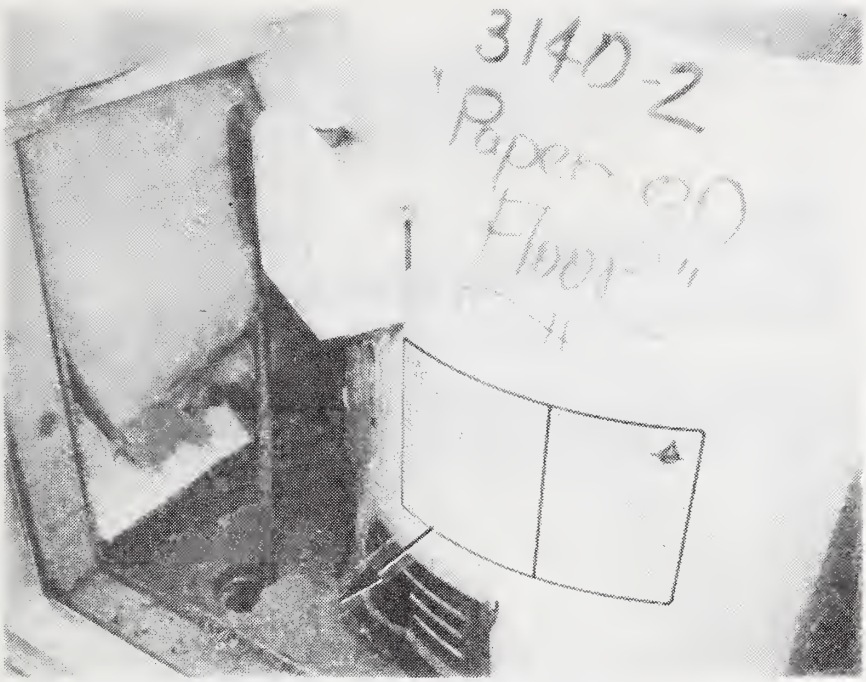


Figure C-45 Combustible Material on Hot Water Heater Compartment Floor

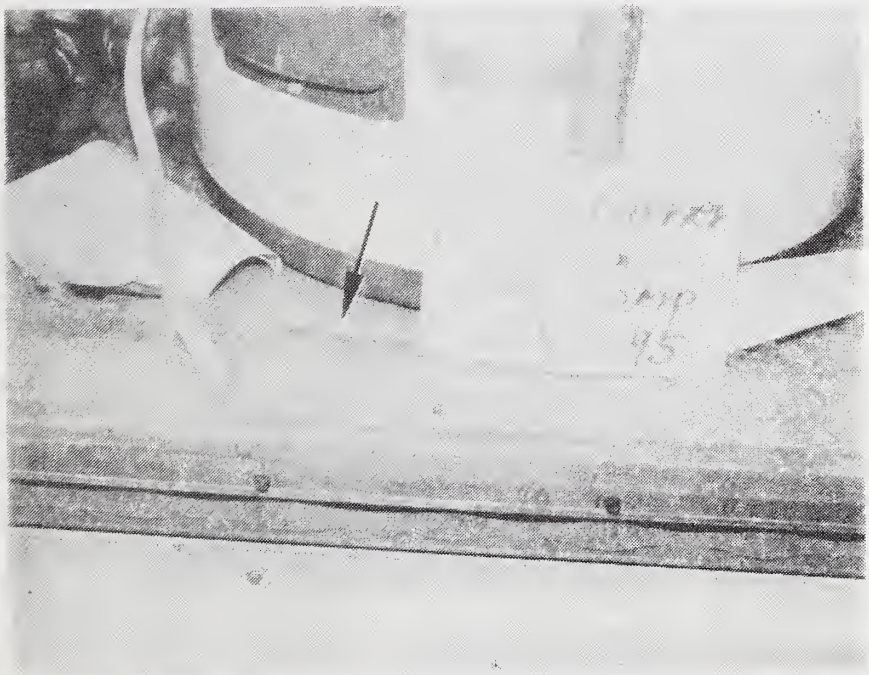


Figure C-46 Combustible Material on Hot Water Heater Compartment Floor

Figure C-47 Failure of Fastening of Bottomboard to Underside of Floor.

Figure C-48 Failure of Fastening of Bottomboard to Underside of Floor.

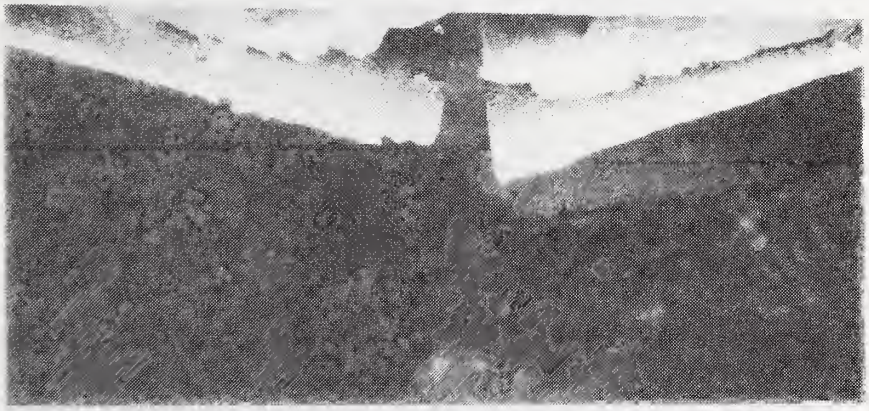


Figure C-49 Failure of Fastening of Bottomboard to Underside of Mobile Home

Figure C-50 Inadequate Rodent Resistance Due to Oversize Hole Cut for Passage of Plumbing Piping. No Attempt Was Made to Seal Holes.

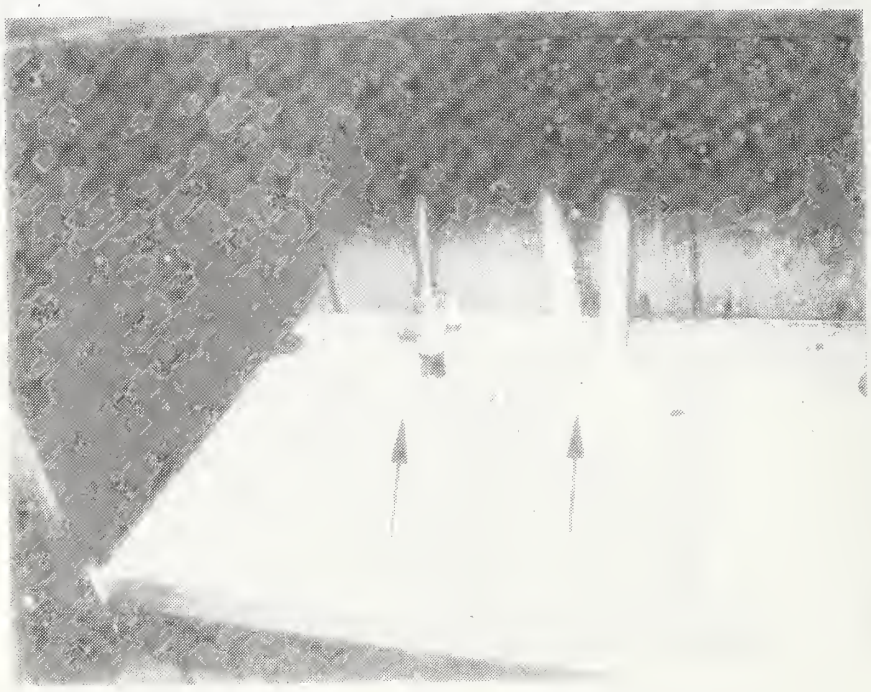


Figure C-51 Rodent Protection Was Provided at These Pipe Penetrations

Figure C-52 Notching of Floor Joists for Passage of Plumbing Piping

Figure C-53 Exterior Door Construction of Paper Honeycomb Core and Vegetable Fiber Board Skins. (This Mobile Home Had Been Abused and Experienced Exterior Water Damage)

Figure C-54 Exterior Door Construction of Paper Honeycomb Core and Aluminum Skins - Exterior Skin Was Buckled.

Figure C-55 Racked and Damaged Exterior Door Frame

Figure C-56 Water Leak Through Closed Awning Type Windows (Interior Storm Windows)

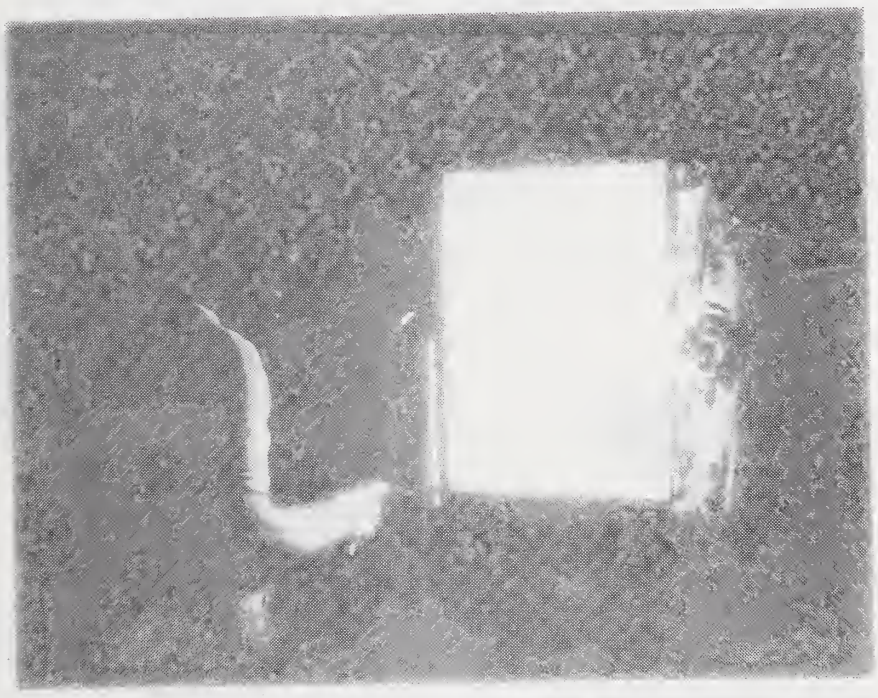


Figure C-57 Space for Air Leakage (Shows Light) Between Window and Wall Framing

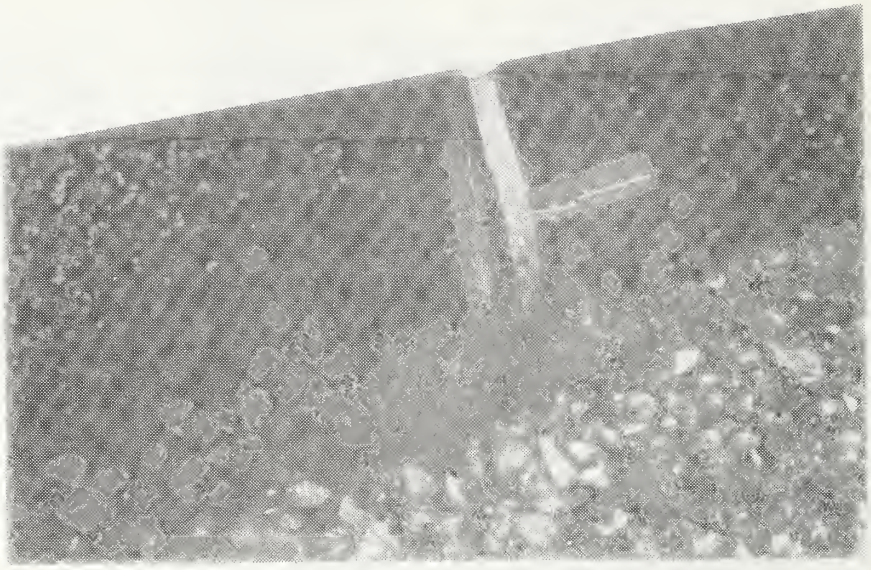


Figure C-58 Extensively Rusted Under-the-Skin Tie Down Strap

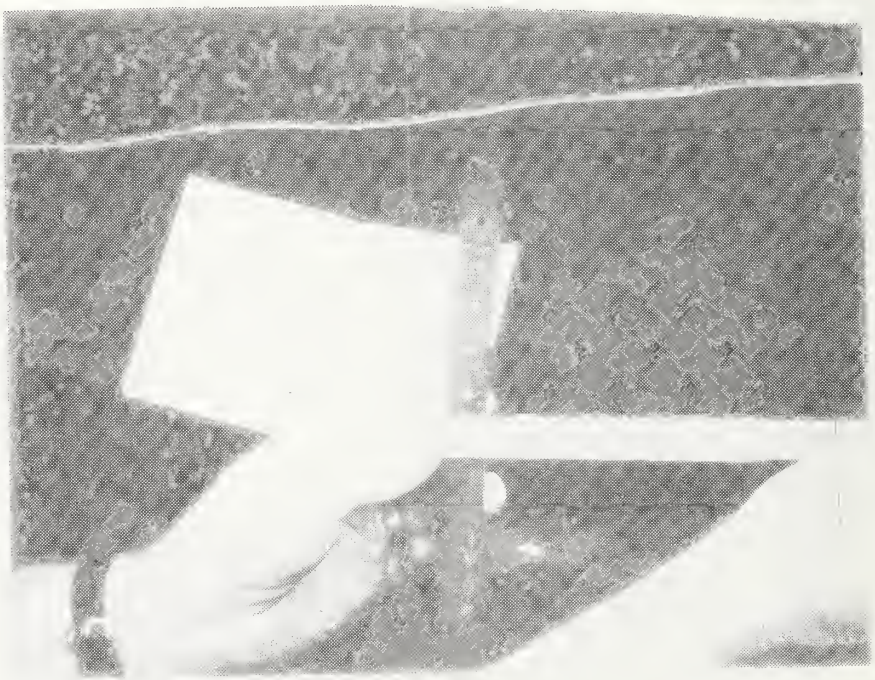


Figure C-59 Extensively Rusted and Undersized Under-the-Skin Tie Down Strap

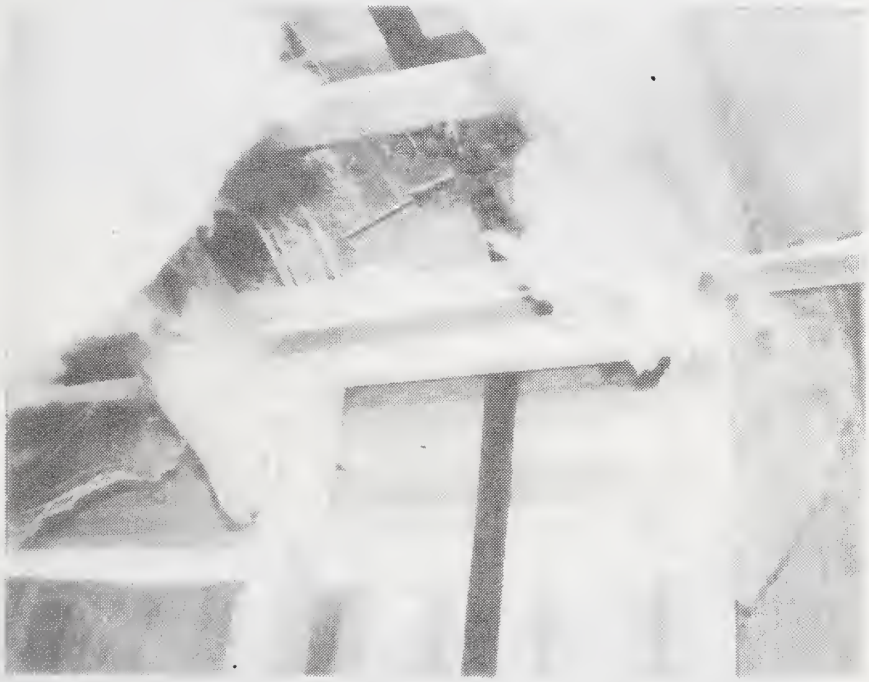


Figure C-60 Under-the-Skin Tie Down Strap Located Between Roof Trusses (Better Design Would Locate Tie Down Straps at Roof Trusses to Insure Load Transfer Between Walls).

Figure C-61 Deterioration of Kitchen Counter Top Due to Water Leak at Faucet

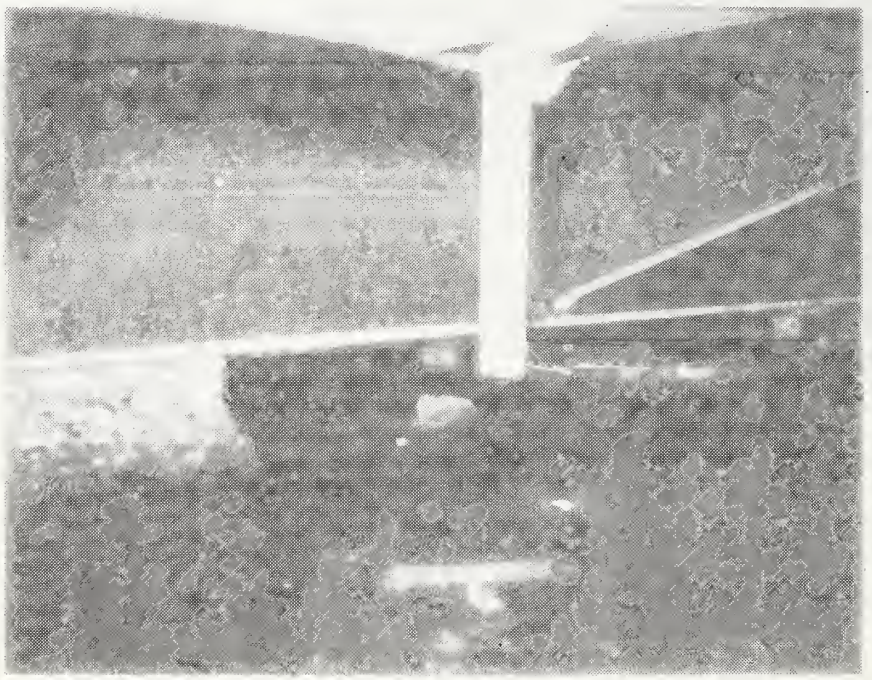


Figure C-62 Hot Water Heater Pressure Relief Overflow Pipe With Threaded End.

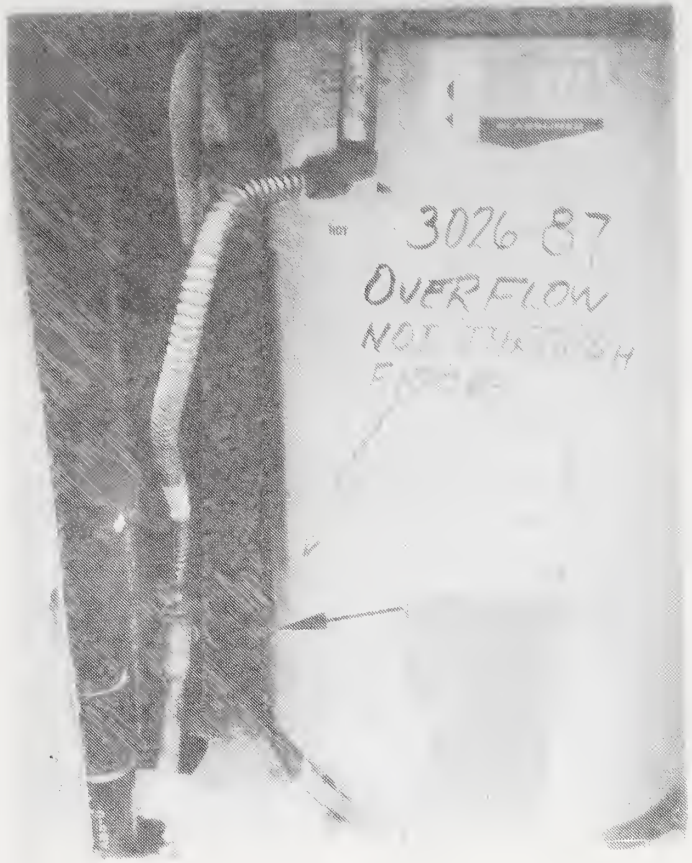


Figure C-64 Hot Water Heater Pressure Relief Overflow Pipe Terminating Above Floor Instead of Extending Through the Floor to the Underside of Mobile Home.

Figure C-63 Undersize Hot Water Heater Pressure Relief Overflow Pipe

Figure C-65 Excessive Corrosion of Galvanized Steel Water Pipe in Hot Water Heater Compartment. Also, Electrical Cable Not adequately Supported

Figure C-66 Corrosion of Dissimilar Metals (Copper to Galvanized Steel) Used for Water Supply Under Bathroom Sink

Figure C-67 Example of Poor Workmanship - Water Supply Piping and Electrical Wiring Passing Through the Same Undersize Wall Penetration

Figure C-68 Example of Poor Workmanship - Excessive Amount of Water Supply Piping Used Under Kitchen Sink

Figure C-69 Plumbing Pipe Running Along Inside Wall in Sleeping Quarters Covered With Lightweight Plastic Cover. Also, Electrical Box Inadequately Attached to Wall

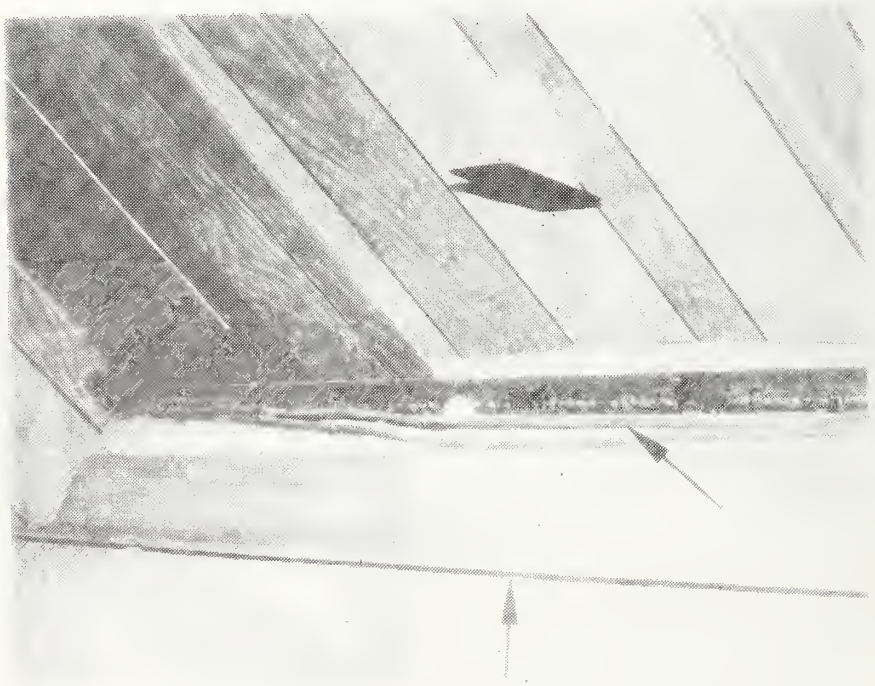


Figure C-70 Lightweight Plastic Pipe Cover Removed in Sleeping Quarters to Expose Plumbing Pipe Running Along Wall (See Figure C-69).

Figure C-72 Plastic Drain Pipe is Installed in a Distorted Position.

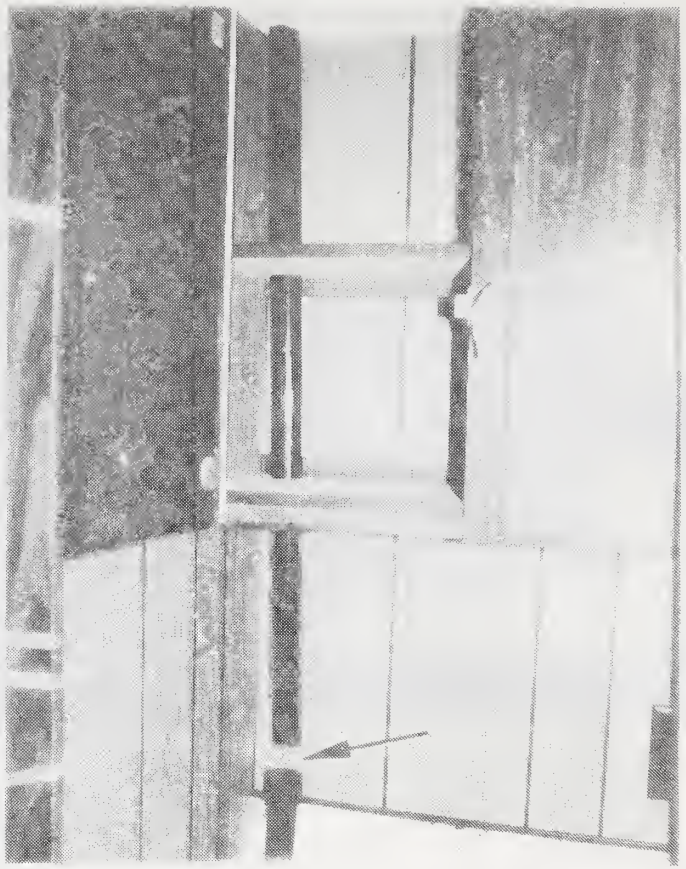


Figure C-71 Plastic Drain Pipe Fitting Has Not Been Properly Adhered with Adhesive.

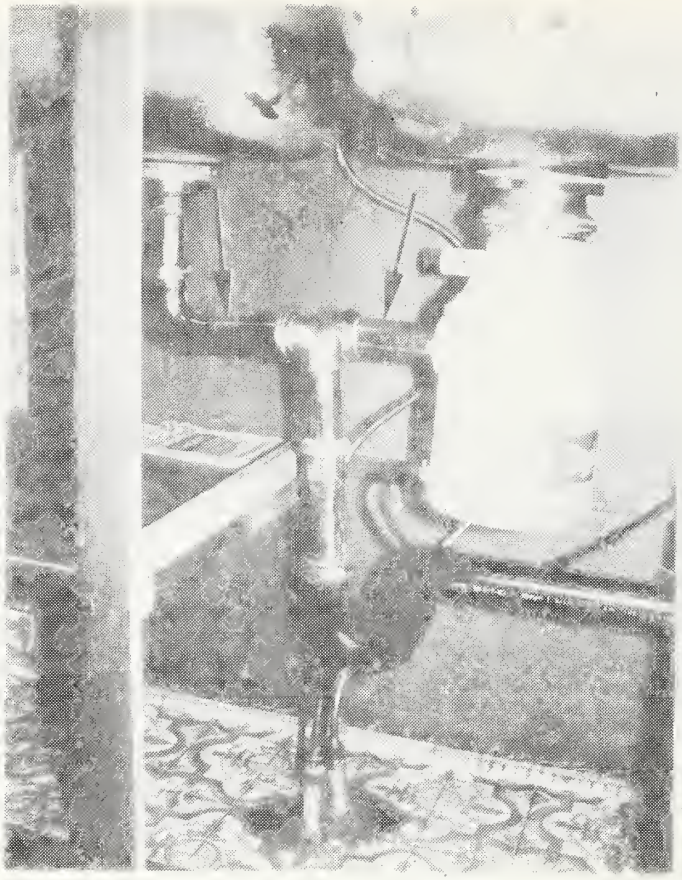


Figure C-73 Negative Slope of Drain Pipe Under Kitchen Sink

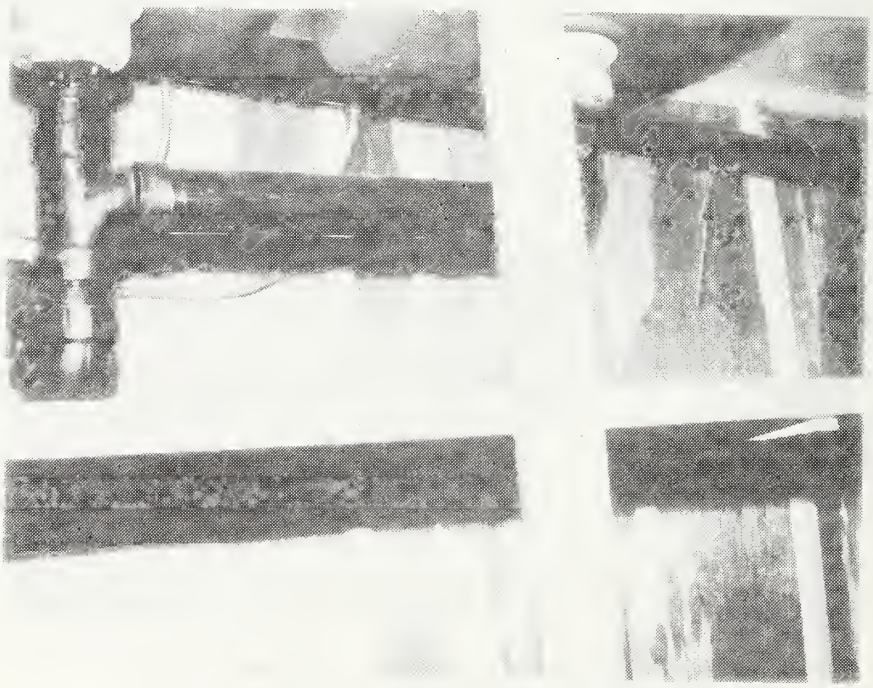


Figure C-74 Negative Slope of Vent Pipe Under Kitchen Sink

Figure C-75 Copper Water Supply Tubing Failure Due to Freezing in Hot Water Heater Compartment

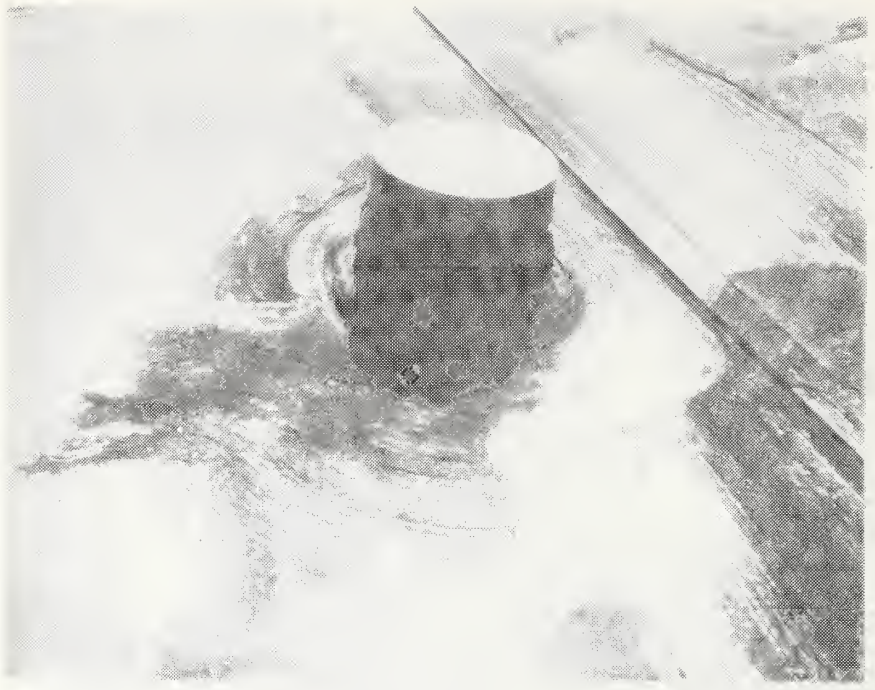


Figure C-76 Vent Cap on Roof Which is Not the Removable Type Required by ANSI A119.1 Standard

Figure C-77 Vent Cap Removal Damaged the Flashing.

Figure C-78 Submerged Valve Flushing Device Which Could Allow Flush Tank Water to Back Flow Into The Potable Water Supply

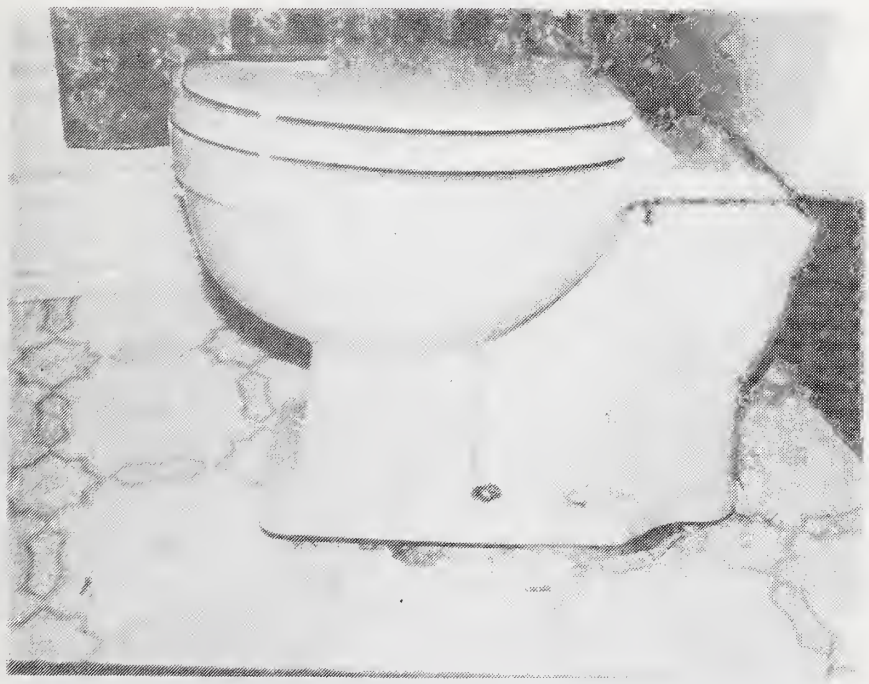


Figure C-79 Loose Toilet at Floor Connection.

Figure C-80 Inadequate Hot Water Heater Access From Within Closet. Wall Paneling Would Have to be Removed to Replace Hot Water Heater

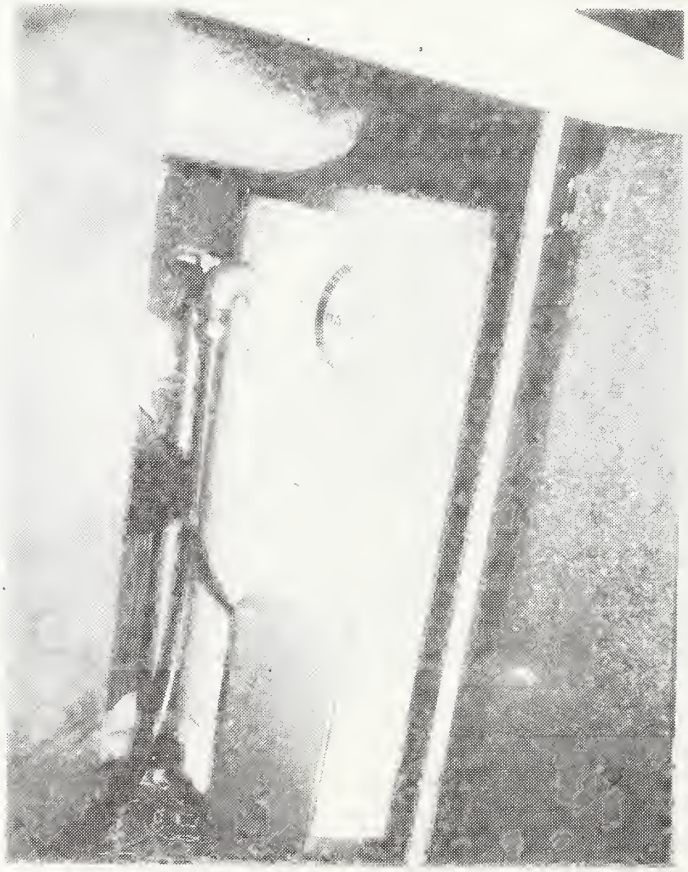


Figure C-81 Hot Water Heater Access Under Kitchen Cabinet. Kitchen Cabinetry would Have to be Removed to Replace Hot Water Heater

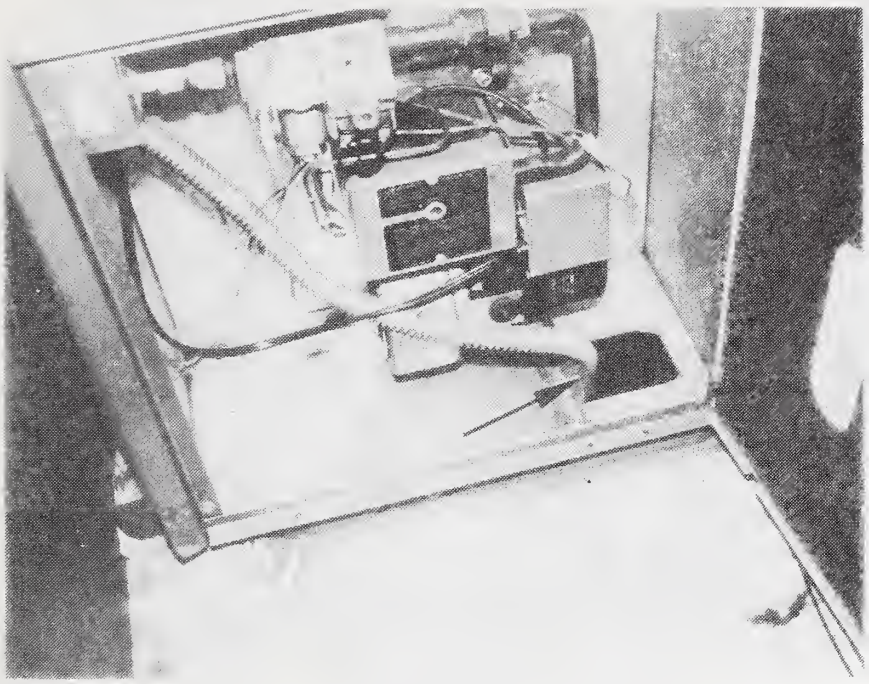


Figure C-82 Flexible Gas Connector on Furnace Through Floor to Gas Supply Piping

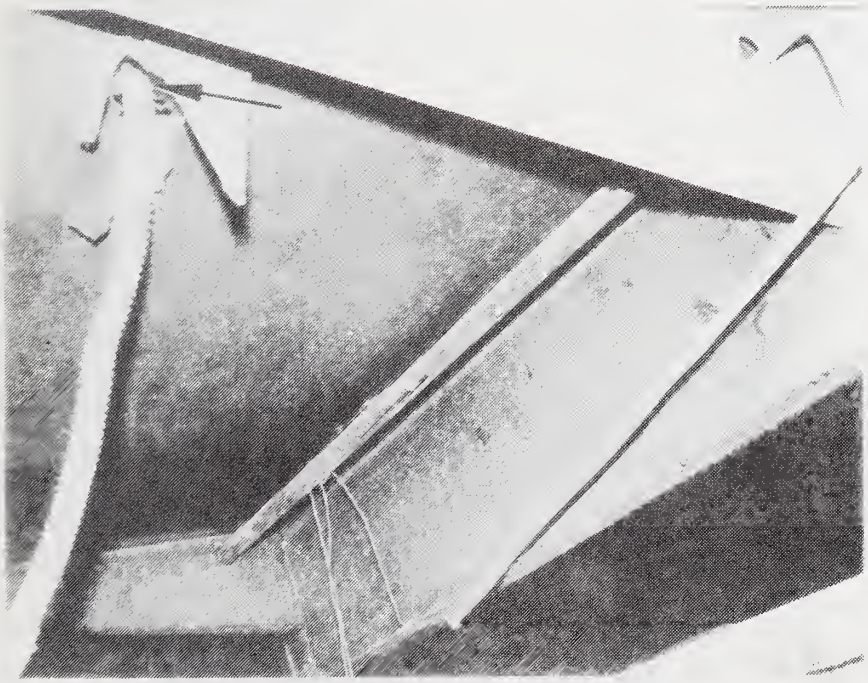


Figure C-83 Flexible Gas Connector Through Floor to Underside of Mobile Home

Figure C-84 Flexible Gas Connector on Furnace with Sharp Radius Bend

Figure C-85 Improper Grounding of Gas Supply Pipe to Mobile Home Frame

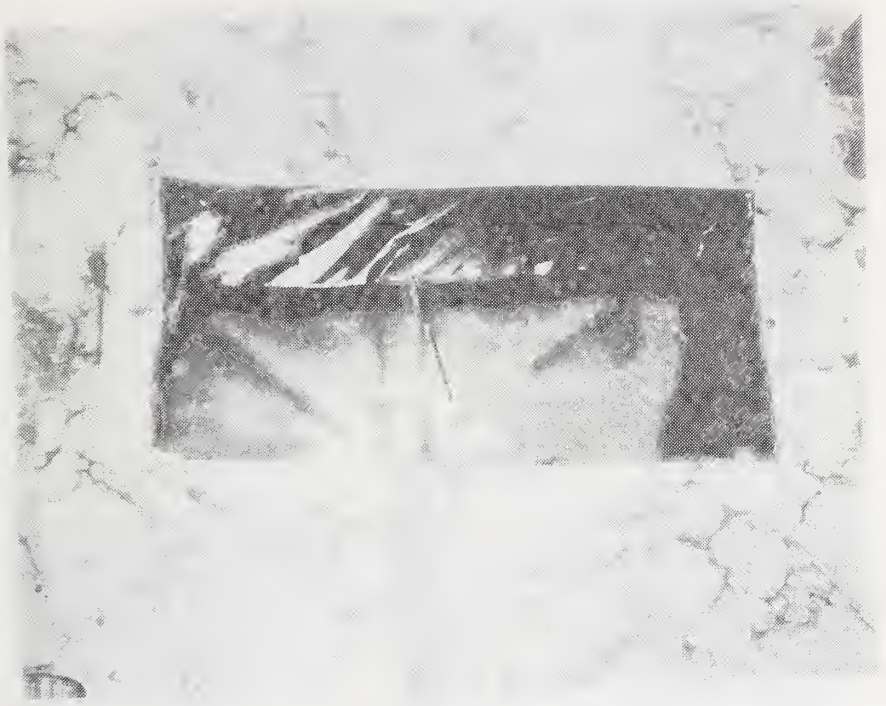


Figure C-86 Riser From Heat Duct in Floor to Register Constructed of Fabric Material.

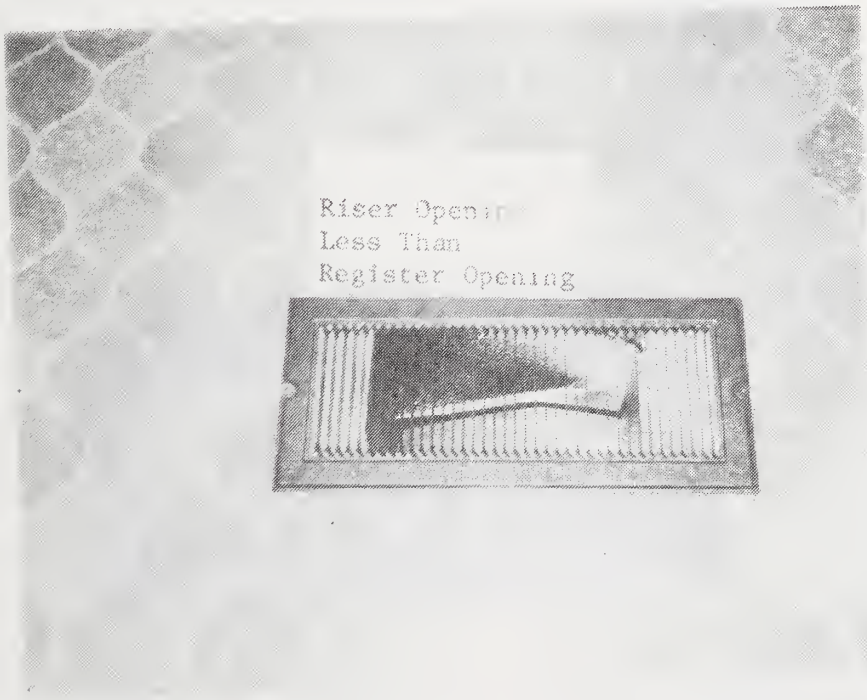


Figure C-87 Air Flow from Heat Duct Blocked by Sheet Metal Tab Which Protrudes into the Air Stream.

Figure C-88 Riser from Heat Duct to Floor Register Missing. Air Supply System Not Tight.

Figure C-89 Dirt and Flooring Material in Heat Duct Blocking Air Flow.

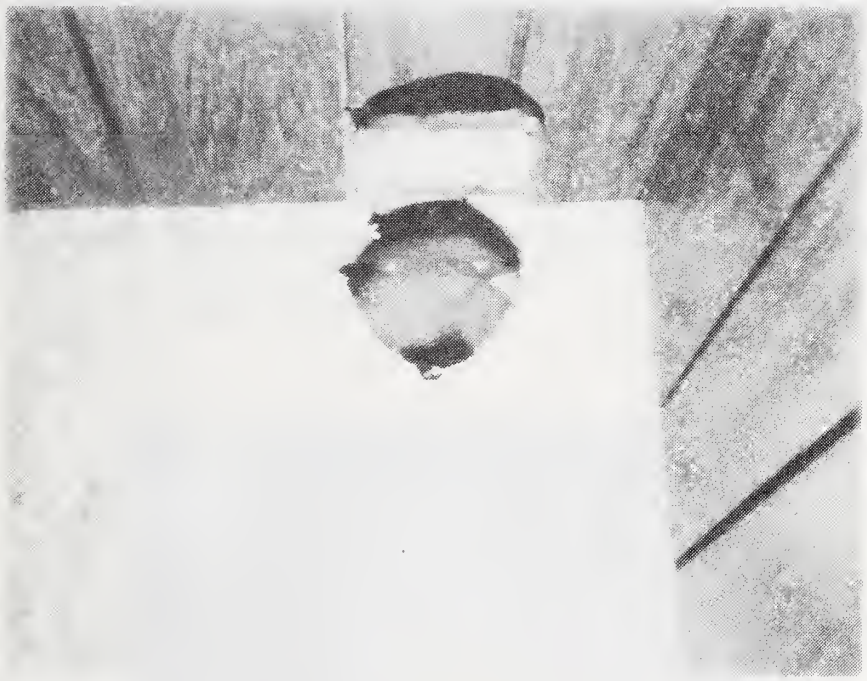


Figure C-90 Clothes Dryer Venting to Underside of Mobile Home (Probably Site Installed)

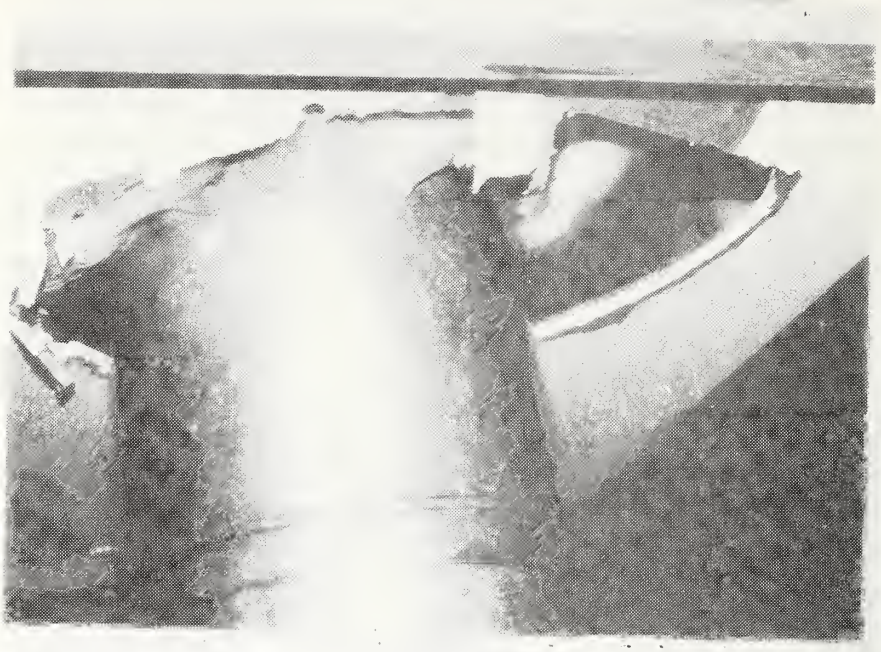


Figure C-91 Example of Poor Workmanship - Hole Cut Through Ceiling for Passage of Furnace Vent

Figure C-92 Furnace Thermostat Located Adjacent to Furnace on Wall Common to Furnace Compartment Causes Problems of Temperature Control.

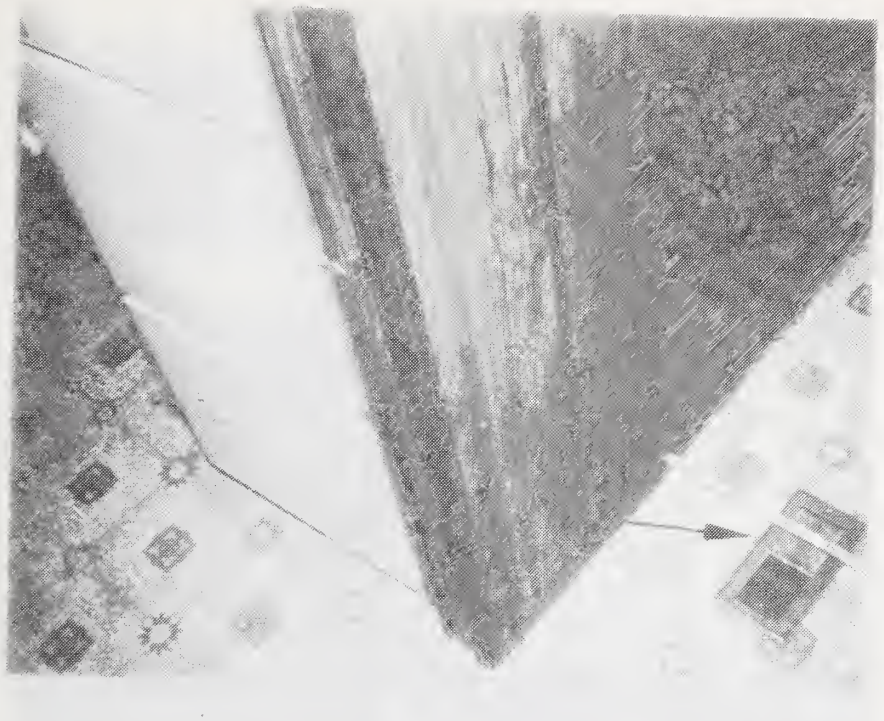


Figure C-93 Floor Register Located Eight Inches From Furnace Compartment Wall in Bedroom Creating Non-Uniform Distribution of Heat.

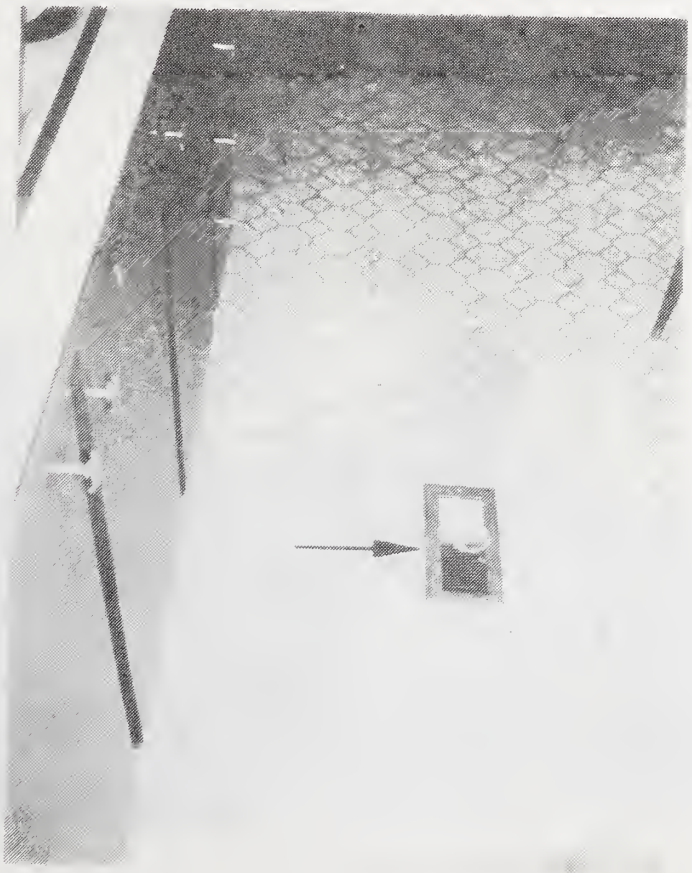


Figure C-94 Floor Register Location Adjacent to Kitchen Cabinets (high traffic area) constituting a Safety Hazard

Figure C-96 Ceiling Fixture Inadequately Attached to Vegetable Fiberboard Ceiling Material.

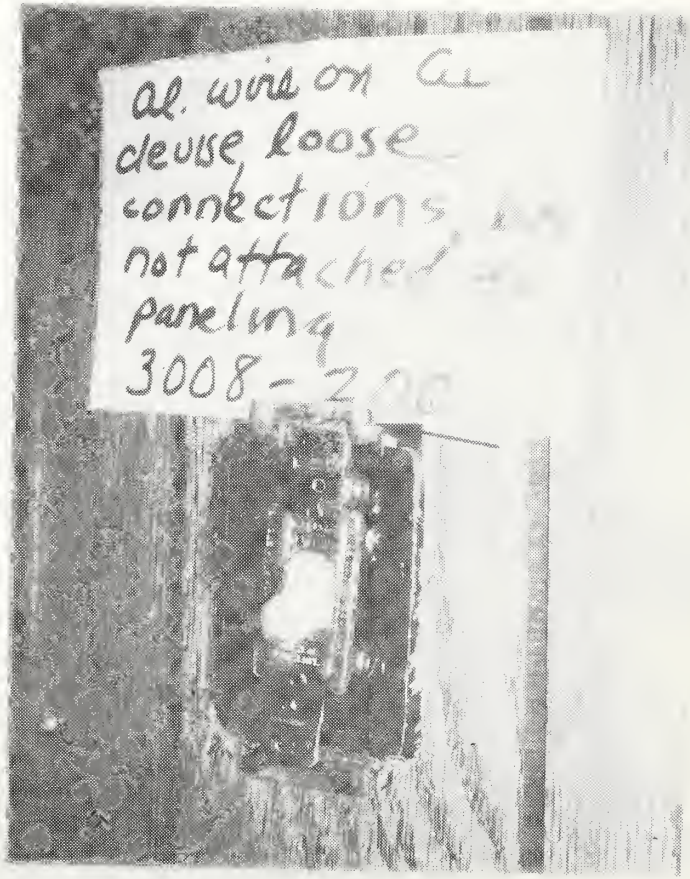


Figure C-95 Aluminum Wire Used With Copper Device

Figure C-97 Loose Receptacle Box Attached Only to Wood Paneling

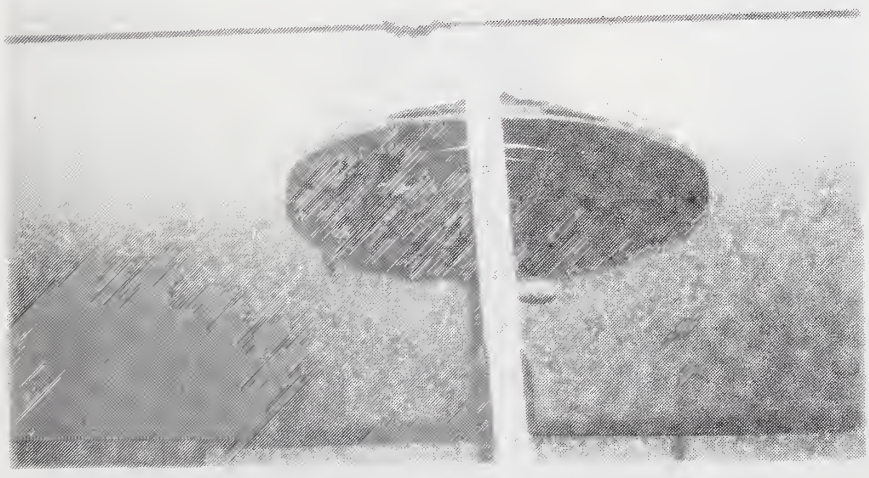


Figure C-98 - Loose Exhaust Fan In Ceiling

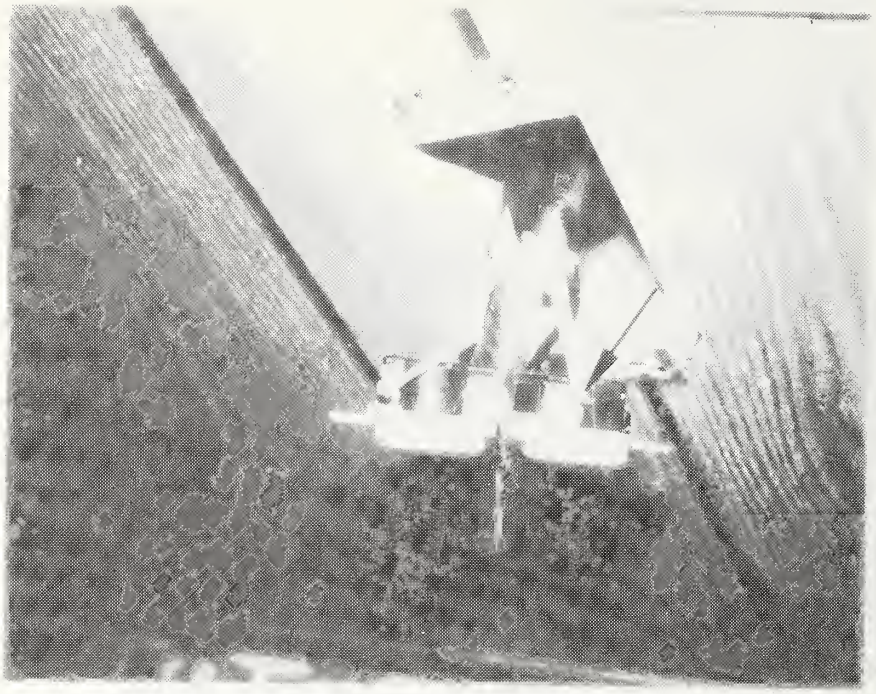


Figure C-99 - Overwrapped Aluminum Wire in Wall Receptacle

Figure C-100 - Loose Connections (Copper Wire) in Wall Switch

Figure C-101 Cable Inadequately Supported and Exposed in Bedroom Closet.

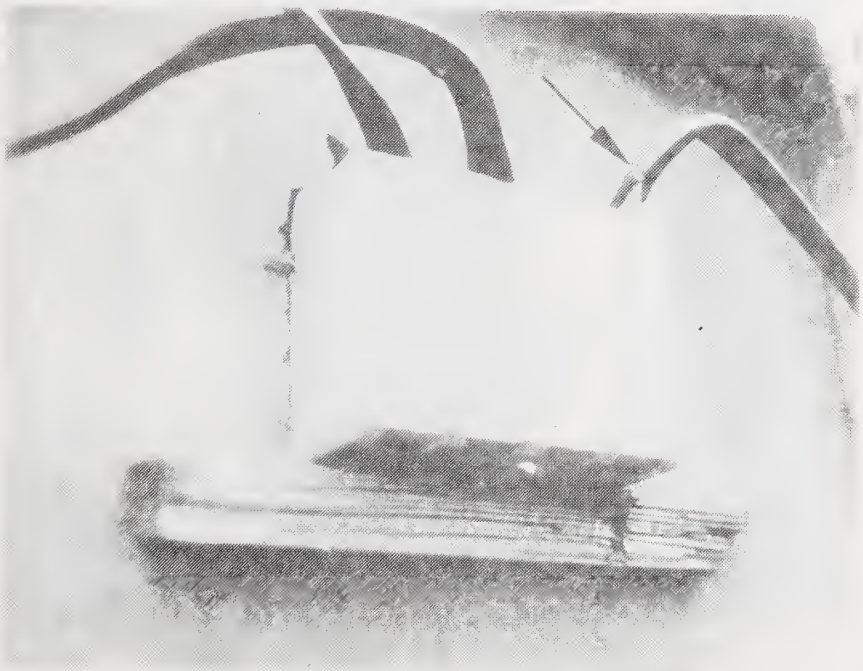


Figure C-102 - Cable Sheath Cut Short of Box

Figure C-103 Inadequate Electrical Cable Protection - Cable Wedged Between Wall Stud and Belt Rail

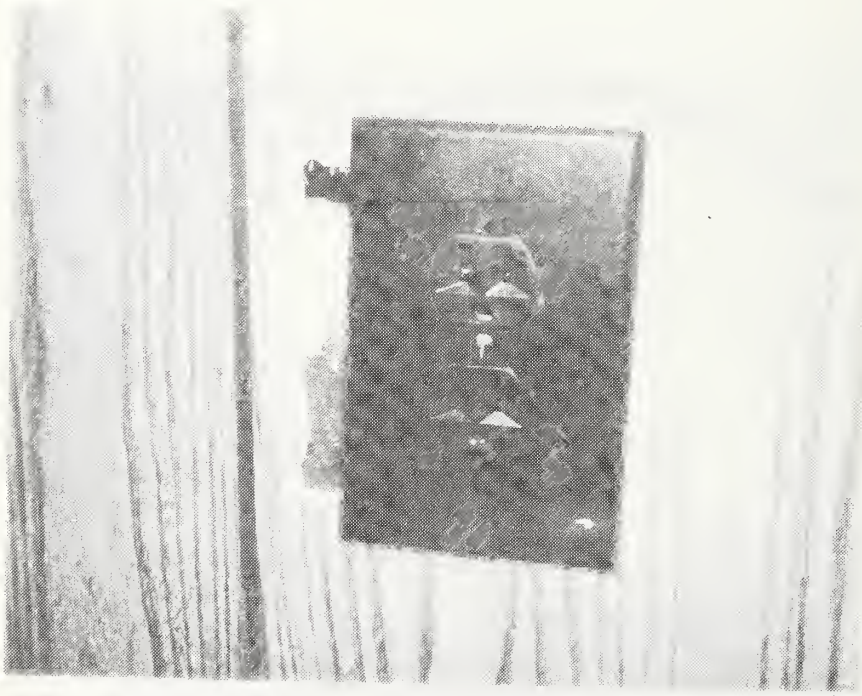


Figure C-104 Oversize Hole Cut for Outlet Box Installation

Figure C-106 Ungrounded Pendant Fixture

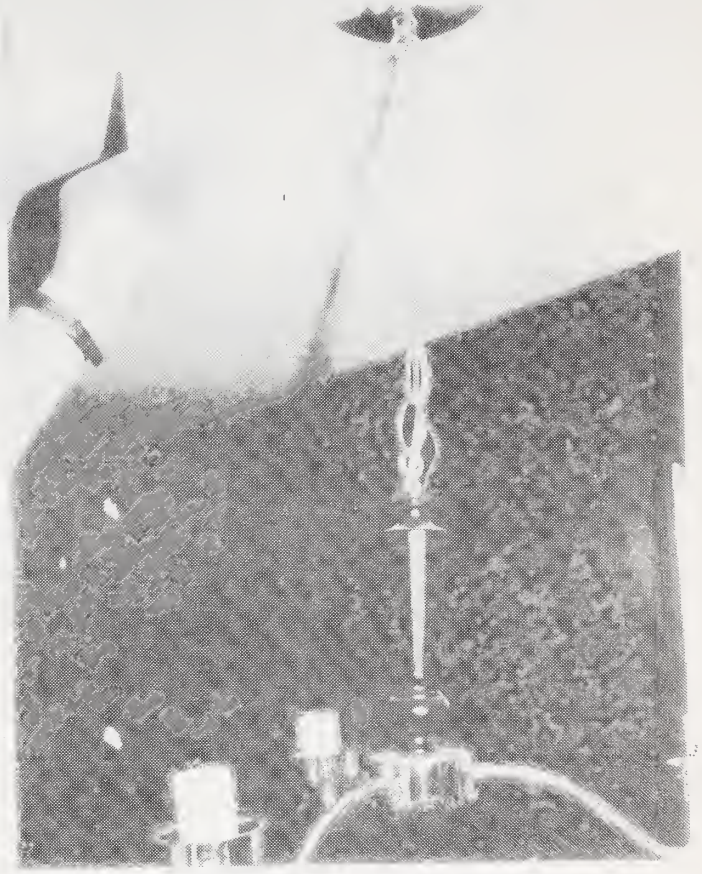


Figure C-105 Grounded Pendant Fixture.

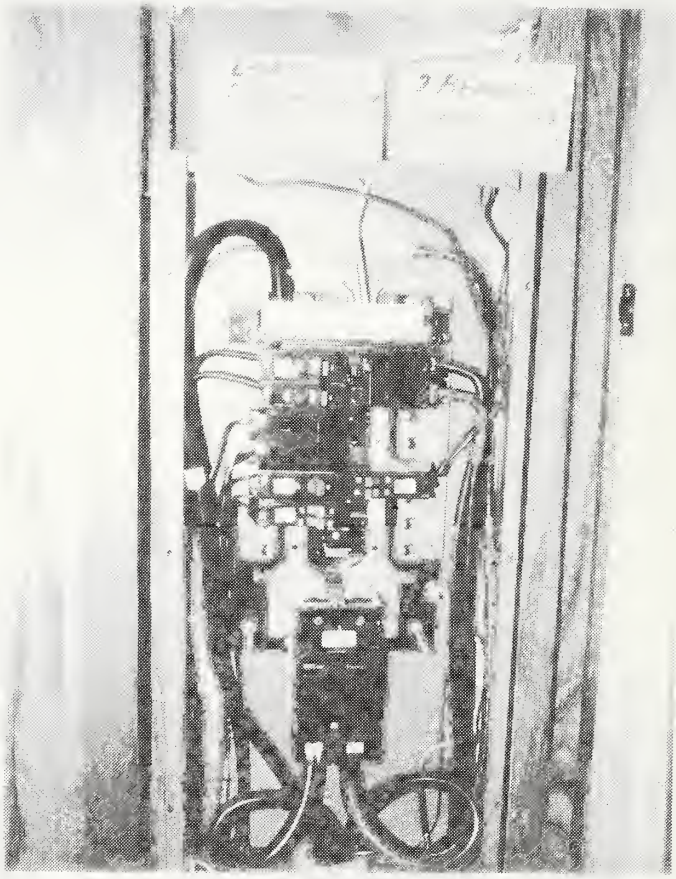


Figure C-107 - Insufficient Number of Branch Circuits

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16. ABSTRACT *(A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here.)*

A field inspection study of mobile homes was conducted for the Department of Housing and Urban Development. The objective of the study was to evaluate the causes of mobile home problems by physically inspecting available units at various locations in the United States. A total of 257 units were inspected consisting mostly of mobile homes purchased by HUD and used as temporary housing for victims of the 1972 Hurricane Agnes disaster. The total number of problems found was 3,528 for the 257 units inspected. Of these problems, 2120 were directly related to inadequacies in the ANSI A119.1 Standard for Mobile Homes or the mobile home enforcement process (plan review, certification of designs, plant inspection), 934 were routine maintenance problems, and 374 were attributed to mechanical/electrical appliances and equipment. This report presents a computer listing of all problems plus photographic examples of observed problems.

The number of mobile homes included in this study is small when compared to the total number of mobile homes now in use in the United States. Additionally, this was a problem oriented study and did not attempt to document the many areas of satisfactory mobile home performance.

17. KEY WORDS *(six to twelve entries; alphabetical order; capitalize only the first letter of the first key word unless a proper name; separated by semicolons)*

Enforcement process; field inspection; house trailers; housing; Hurricane Agnes; mobile homes; performance data; standards.

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