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New Construction Baseline Survey

Prepared For:
Public Service Electric and Gas Company

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BACKGROUND

Public Service Electric and Gas Company (PSE&G) contracted with Proctor Engineering Group (PEG) to assess the current practices of new residential construction in PSE&G's service territory. The objective of the project was to quantify and document the energy related baseline conditions of current construction practices in an effort to support PSE&G's DSM program for residential new construction. This assessment involved the following:

- create a sample design that meets the criteria of the project and draw a random sample of customers for inclusion in the telephone survey and site visits;
- complete telephone surveys with approximately 200 customers to determine customer eligibility and recruit potential site visit locations;
- perform detailed field testing of a sample of 55 newly built homes in PSE&G's service territory to quantify energy related baseline conditions;
- produce data tabulations and cross-tabulations of parameters useful in determining baseline characteristics needed in the assessment of the current and proposed PSE&G new construction DSM program.

This report describes the activities and results from these items.

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SAMPLE DESIGN AND SELECTION

The data set obtained from PSE&G was intended to contain all the new construction in the study timeline. After the first telephone calls to randomly selected customers from the list it was evident that the sample needed to be limited to those customers that were likely to live in single family detached structures. Potential single family structures were selected by eliminating customers that met any of the following exclusion criteria:

- an entry in the apartment field of the supplied data base
- had a bill mailing address different from the service address
- had other new accounts listed under the same name

This reduced the population and produced a geographic distribution believed to be representative of single family detached new construction in the service area. Four groups of customers were randomly selected from the data base. The surveyors were given three-digit Zip code targets¹ and the first group of customers was released to the surveyors. By adding additional randomly selected customers from three-digit Zip codes that were exhausted by the surveyors, a stratified random sample was obtained.

SURVEY DESIGN

The telephone survey was designed to gather a few critical points of information. The primary purpose of the survey was recruitment of customers for the site visits. The survey quickly determined the following through a customer interview:

- participation in the Energy Efficient Homes Program
- verification of PSE&G information on the home
- determination of eligibility for inclusion in the study.

¹ The targets were based on the geographic distribution of the entire single family detached new construction customers that populated the supplied database.

Table 1 summarizes additional data gathered in the telephone survey.

Table 1
Sample Data Points

| |
|---|
| Month and year house completed |
| Month and year of occupancy |
| Name of general contractor |
| Type of structure (single family, duplex, etc.) |
| Square footage of house |
| Foundation type |
| Number of central air conditioners |
| Number and type of heating systems |
| Space and water heating fuel type |
| Presence of ductwork and location |

SURVEY IMPLEMENTATION

Sampled customers received a letter introducing the survey, giving them a contact within PSE&G to verify the legitimacy of the request, stating that they might be receiving a phone call. Approximately three hundred houses were targeted in each mailing. The mailings were staggered to ensure the customer would not have a long delay between the time they received the mailing and the telephone call.

The surveys were conducted by telephone at Energy Federation Incorporated (EFI) interviewing facilities. The telephone interviewing staff is trained and experienced in conducting surveys and recruitment for energy related programs. EFI attempted contact with each sampled residence a minimum of seven times prior to replacing the sample point. While the majority of the calling was completed during evenings and weekends, calls were also made during the day to capture hard to reach residences.

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SITE SURVEYS AND RESULTS

FIELD DATA COLLECTION PROTOCOL

Vermont Energy Investment Corporation (VEIC) designed an extensive field data collection matrix on all energy related features of the house. The data points gathered (where applicable) are detailed in Appendix A.

Proctor Engineering Group incorporated VEIC's data collection requirements into a previously developed computer spreadsheet. All site data was entered into a laptop computer while the measurement team was on site. The PEG designed software immediately completed error checking. Any data problems discovered were resolved while the investigative team were still on-site.

IMPLEMENTATION

Specially trained field technicians were needed to perform the field work within the project's time and budget constraints. PEG contracted with Conservation Services Group (CSG) to perform the work. The two person teams required an average of half a day per house.

Data on shell leakage rates were gathered using an Energy Conservatory Minneapolis Blower Door™. Data on duct leakage and air flow through the indoor coil of the air conditioner were gathered using an Energy Conservatory Duct Blaster™. All other data gathered was based on physical observation, measurements, or occupant interview.

ANALYSIS

The resulting raw data was analyzed, using STATA™, a powerful statistical software. Data tabulations and cross-tabulations were produced and delivered to VEIC. These tabulations provide means, sample size, and appropriate confidence intervals. In addition, because a mean value provides a limited summary of standard building practice and may be influenced by outliers, the distributions of critical parameters were also presented with medians and quartiles. The resulting tabulations and cross tabulations are presented in Appendix B.

FINDINGS - GENERAL CHARACTERISTICS

The typical house in the study had 4 bedrooms, 2769 square feet of living space, an unconditioned basement containing natural gas forced air furnace/central air conditioner combination and ductwork, natural gas water heater, double glazed vinyl clad wood windows, R-13 wall insulation and R-30 attic insulation. There were 4 one story, 47 two story and 1 three story house.

FINDINGS - INSULATION VALUES

Ceiling

Flat ceiling areas averaged 1395 square foot. R-values ranged from R-19 to R-36 with an average of R-28 nominal and R-22 effective (rating when R-value is adjusted for the quality of the installation and coverage). Sloped ceiling areas averaged 466 square foot for the 28 houses with slope ceilings. R-values ranged from R-19 to R-30 with an average of R-27 nominal and R-21 effective. Kneewall areas averaged 184 square foot for the houses with kneewalls. R-values ranged from R-11 to R-30 with an average of R-15 nominal and R-11 effective.

Walls

Above grade conditioned space net wall areas averaged 2441 square foot. R-values were assumed to have effective R-values of R-13 for walls with 3.5 inch framing and R-19 for walls with 6 inch framing. Only one of the 52 houses had 6 inch wall framing, the remainder of the houses had 3.5 inch framing. The basement wall area averaged 1679 for the 3 houses with conditioned basements. Conditioned basement wall areas had an average R-value of R-11 nominal and R-9 effective. Unconditioned basement wall areas averaged 1160 for the 39 houses in the category. Thirty four of the 39 unconditioned basements had no wall insulation. Four of the remaining five basements had above grade wall insulation with an average R-value of R-9 nominal. Two of the five basements had below grade insulation with an average R-value of R-9 nominal.

Floors

Floor areas above unconditioned basements averaged 1431 square foot. Only one of the 39 houses with unconditioned basements had floor insulation (R-30 nominal). Floor areas above crawl spaces averaged 687 square foot. Three of the 8 houses with crawl spaces had floor insulation (average R-16 nominal) and two had crawl space perimeter wall insulation (average R-9 nominal). It was assumed that none of the slab on grade floor areas were insulated.

FINDINGS - SHELL LEAKAGE

The houses have an average air leakage of 3104 Cubic Feet per Minute at 50 Pascals pressure (CFM50) measured with a blower door with the basement door closed. The average pressure differential from the basement to outdoors during the blower door test was 34 pascals indicating that the unconditioned basements have a lot of communication with the house. The average air leakage of the houses with unconditioned basements went up to 3491 Cubic Feet per Minute at 50 Pascals when the basement door was opened to the house. The American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) standard 62-1989 specifies that residential structures must have 0.35 natural Air Changes per Hour (ACH) or 15 CFM per person whichever is greater. The average natural ACH of the homes in the project, based on blower door measurements and the Lawrence Berkeley Laboratory (LBL) infiltration model was 0.56 in the winter and 0.34 in the summer (with the door to the unconditioned basement closed).

FINDINGS - GLAZING

The typical house had double pane vinyl clad wood windows with no storm window. The average window glazing area was 359 square foot. Window orientation averaged 103 square foot to the north, 80 square foot to the east, 103 square foot to the south and 72 square foot to the west. Eighteen houses had skylights with an average of 12 square foot.

Nine different window manufacturers were represented in the sample. One manufacturer accounted for 50% of the houses. This manufacturer was the only one for which U-values could be obtained on the windows. The average window U-values was 0.31 for the 26 houses. These homes had low-E windows.

FINDINGS - DUCT CHARACTERISTICS

The average house had a single forced air furnace/central air conditioning system located in an unconditioned basement. The typical supply system consists of rigid metal supply runs to 15 individual registers with a surface area of 362 square feet in the basement and 77 square feet in the attic. The supply system plenum operating static pressures averaged 34 pascals. The return systems typically consist of panned joist returns with 4 return grilles, a surface area of 138 square feet in the basement, and 33 square feet in the attic. The return plenum operating static pressures averaged -75 pascals. Most of the systems had the no insulation on the duct systems in the basement and R-4 insulation on supply ducts in the attic. Attic return systems were uninsulated.

FINDINGS - DUCT LEAKAGE

Detailed duct leakage measurements were used to quantify the magnitude of the existing leakage problems and the opportunities for improvement. All duct leakage measurements were performed with the Duct Blaster™ mounted at the air handler blower compartment opening. Duct leakage measurements were made with the door between the house and the unconditioned basement open.

The total duct leakage test establishes the total amount of leakage out of the ducts when all the registers are sealed and the ducts are pressurized to the test pressure (25 Pascals). This test measures both leakage to inside and outside the house. Total duct leakage is a fast and accurate test method that is easily applied to new construction even before the drywall is installed. The average total leakage rate was 1026 CFM25.

Duct leakage to (and from) the exterior is a better measure of duct leakage problems than the total leakage measurement, but involves more difficult and time-consuming tests. In this study, exterior duct leakage was measured using a blower door and a Duct Blaster™ pressurizing both the building and the ducts simultaneously. Having the house and the ducts at the same pressure reduces the duct leakage to inside to a minimum and thus measures the duct leakage to the exterior. The average duct leakage to outside was 299 CFM25.

FINDINGS - HEATING AND AIR CONDITIONING SYSTEMS

Forty four of the houses in the sample had forced air furnaces. Eight of the houses had forced circulation boilers. The houses had a wide variety of makes and models of heating and air conditioning systems. Nine heating equipment and 14 air conditioning equipment manufacturers were represented. The typical system was a split system air conditioner with an induced draft natural gas forced air furnace located in the basement. Heating and air conditioning systems serving an entire house were typically sized at 109,000 Btu/hr in heating capacity with an AFUE of 81.7% and 39,357 Btu/hr in cooling capacity with a SEER rating of 10.4.

Houses with two or more systems usually had one large system for the main living area and a smaller unit for conditioning the bedroom areas. Houses with more than one heating and air conditioning system had systems sized at an average of 194,000 Btu/hr in heating capacity and 72,500 Btu/hr in cooling capacity.

The average percentage of correct sizing of the heating and air conditioning equipment based on the Air Conditioning Contractors of America (ACCA) Manual J calculated loads for the houses and the manufacturers ratings adjusted to ACCA Manual J design conditions are 176% of the heating load and 159% of the cooling load with the sensible sizing of the cooling equipment at 139% and the latent sizing at 315%.

FINDINGS - AIR FLOW RATE

The proper operation of an air conditioning system depends upon providing the correct air flow rate through the indoor coil -- usually listed by the manufacturer as 400 CFM per ton of nominal capacity. All systems were tested for air flow with a clean filter in place and operating at the cooling mode blower speed. The average measured flow rate was 372 CFM per ton for the primary cooling system and 409 CFM per ton for the secondary system.

FINDINGS - ADDITIONAL DATA POINTS

Appendix B contains tabulations of the data presented in section 3 of this report and additional data points, including; foundation types, appliance types, saturations and efficiencies, radon mitigation systems and occupant reported thermostat settings.

| Input Description | Range Parameters |
|---|--|
| Auditor ID | ID number required |
| Date & Time | |
| Address or Control# | Must enter Address or ID |
| Month/Year Built | Range:6/1/95<>7/30/96 |
| House Type | 1 - Single Family 2 - Duplex 3 - Townhouse 4 - Apartment 5 - Other |
| # of Stories | 1, 1.5, 2, 2.5, 3 |
| What Type of Roof | 1 - Composite 2 - Tile 3 - Shake 4 - Other |
| Roof Color | 1 - Light 0 - Dark |
| Attic Ventilation Adequate | 1 - Yes 0 - No |
| Foundation Type | 1 - Slab 2 - vented crawlspace 3 - unvented crawlspace 4 - conditioned basement 5 - unconditioned basement |
| Radon Mitigation System Type | 1 - Yes 0 - No |
| Wall Cavity Insulated | 1 - Yes 0 - No |
| Wall Cavity Manual J Type | Range: A,B,C,D,E,F,G,H,I,J,K,L,M,N,O |
| #of Bedrooms | Range: 0<>10 |
| Living Space 1st | Range: 700<>4000 |
| Living Space 2nd | Range: 0<>3000 |
| Living Space 3rd | Range: 0<>3000 |
| Living Space Total | Range: 700<>12000 |
| Average Ceiling Height | Range: 6<>20 |
| Attic/Flat Ceiling/Kneewall Floor | |
| Source of Information | 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Square Feet (including access) | Range: 0<>4000 |
| Nominal R-value | Range: 0<>60 |
| Effective R-value given the installation quality and coverage | Range: 0<>Nominal R |
| Sloped/Cathedral Ceilings | |

| | |
|--|--|
| Source of Information | 0 - No Sloped Ceilings 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Square Feet | Range: 0<>4000 |
| Nominal R-value | Range: 0<>60 |
| Effective R-value given the installation quality and coverage | Range: 0<>Nominal R |
| Depth of Rafters (inches) | Range: 4"<>16" |
| Kneewall | |
| Source of Information | 0 - No Kneewalls 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Square Feet (including access) | Range: 0<>2000 |
| Insulation Location | 0 - None 1 - Walls 2 - Roofdeck |
| Nominal R-value | Range: 0<>38 |
| Effective R-value given the installation quality and coverage | Range: 0<>Nominal R |
| Total Ceiling Area | Range: 0<>6000 |
| Basement | |
| Source of Information | 0 - No Basement 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Conditioned Basement Area Square Feet | Range: 0<>4000 |
| UnConditioned Basement Ceiling Square Feet | Range: 0<>4000 |
| Ceiling Above Unconditioned Basement Insulated? | 1 - Yes 0 - No |
| Ceiling Nominal R-value | Range: 0<>38 |
| Ceiling Effective Weighted R-value | Range: 0<>Nominal R |
| Area of Carpeting of Ceiling above Unconditioned Area (Ft2) | Carpeted Area <= Total Uncond Area |
| Basement Wall Construction | 0 - Block 1 - Brick & Block |
| Perimeter of Conditioned Basement (lineal ft) | Range: 0<>600 |
| Perimeter of Unconditioned Basement | Range: 0<>600 |

| | |
|---|--|
| Exterior Basement Wall Insulation | 1 - Yes 0 - No |
| Interior Basement Wall Insulation | 1 - Yes 0 - No |
| Above Grade Wall Square Feet (Net) | Range: 0<>800 |
| Above Grade Nominal R-value | Range: 0<>38 |
| Above Grade Effective R-value given the installation quality and coverage | Range: 0<>Nominal R |
| Depth of Bsmt Wall Below Grade (ft) | Range: 0<>15 |
| Below Grade Wall Square Feet | Range: 0<>3000 |
| Below Grade Nominal R-value | Range: 0<>38 |
| Below Grade Effective R-value given the installation quality and coverage | Range: 0<>Nominal R |
| Crawlspac | |
| Source of Information | 0 - No crawlspac 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Crawlspac open or enclosed? | 0 - Open 1 - Enclosed |
| Square Feet of Ceiling | Range: 0<>4000 |
| Ceiling Insulation | 1 - Yes 0 - No |
| Ceiling Nominal R-value | Range: 0<>30 |
| Ceiling Effective Weighted R-value given the installation quality and coverage | Range: 0<>Nominal R |
| Area of Carpeting of Ceiling Above (Ft2) | Carpeted Area < Total Area |
| Perimeter Insulation | 1 - Yes 0 - No |
| Floor Insulation | 1 - Yes 0 - No |
| Square feet of Perimeter Walls | Range:0<>1500 |
| Perimeter Wall Nominal R-value | Range: 0<>30 |
| Perimeter Wall Effective Weighted R-value given the installation quality and coverage | Range: 0<>Nominal R |
| Rimbands/Band Joists | |
| Source of Information | 0 - No rimbands/ band joists 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Rimbands Insulation | 1 - Yes 0 - No |
| Rimband/Band Joist Net Square Feet | Range: 0<>700 |

| | |
|--|--|
| Nominal R-value | Range: 0<>30 |
| Effective Weighted R-value given the installation quality and coverage | Range: 0<>Nominal R |
| Slab On Grade | |
| Source of Information | 0 - No Slab on Grade 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Linear Feet of Slab Edge | |
| Nominal R-value | Range: 0<>30 |
| Effective Weighted R-value | Table/Chart of options provided |
| Perimeter Warm Air Duct System Present? | 1 - Yes 0 - No |
| Exposed Floor: Garage, Cantalever, on Posts | |
| Garage | 0 - No Garage 1 - Attached 2 - detached 3 - tuck under |
| Exposed Floor | 0 - None 1 - Cantalever 2 - On posts 3 - Other |
| Source of Information | 0 - No Exposed Floor 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Square Feet of Exposed Area with Conditioned Living Space Above | Range: 0<>4000 |
| Ceiling Above Insulated? | 1 - Yes 0 - No |
| Ceiling Nominal R-value | Range: 0<>30 |
| Ceiling Effective Weighted R-value given the installation quality and coverage | Range: 0<>Nominal R |
| Area of Carpeting of Ceiling above Garage (Ft2) | Range: <Garage Ceiling below Liv Space |
| Orientation | N or NE |
| LEVEL 1 | |
| Glazing Type | 1 - Single 2 - Double 3 - Triple or Double w/Low-E |
| N Wall Length | Range: 8<>150 |
| N Wall Area | Range: 70<>1250 |
| N Door Area | Range: 0<>200 |
| Code N Door | Door Code = 1, 2, 3, or 4 |

| | |
|------------------|--|
| N GlassDoor Area | Range: 0<>1000 |
| Code N GlassDoor | Value = X.Y where X:Y: 0 <> 6 |
| N Window Area | Range: 0<>625 |
| Code N Window | Value = X.Y where X:Y: 0 <> 6 |
| E Wall Length | Range: 8<>150 |
| E Wall Area | Range: 70<>1250 |
| E Door Area | Range: 0<>200 |
| Code E Door | Door Code = 1, 2, 3, or 4 |
| E GlassDoor Area | Range: 0<>1000 |
| Code E GlassDoor | Value = X.Y where X:Y: 0 <> 6 |
| E Window Area | Range: 0<>625 |
| Code E Window | Value = X.Y where X:Y: 0 <> 6 |
| W Wall Length | Range: 8<>150 |
| W Wall Area | Range: 70<>1250 |
| W Door Area | Range: 0<>200 |
| Code W Door | Door Code = 1, 2, 3, or 4 |
| W GlassDoor Area | Range: 0<>1000 |
| Code W GlassDoor | Value = X.Y where X:Y: 0 <> 6 |
| W Window Area | Range: 0<>625 |
| Code W Window | Value = X.Y where X:Y: 0 <> 6 |
| W/NW %GLazShade | Range: 0<>1; example: 20%=0.2 |
| S Wall Length | Range: 8<>150 |
| S Wall Area | Range: 70<>1250 |
| S Door Area | Range: 0<>200 |
| Code S Door | Door Code = 1, 2, 3, or 4 |
| S GlassDoor Area | Range: 0<>1000 |
| Code S GlassDoor | Value = X.Y where X:Y: 0 <> 6 |
| S Window Area | Range: 0<>625 |
| Code S Window | Value = X.Y where X:Y: 0 <> 6 |
| S/SW %GLazShade | Range: 0<>1; example: 20%=0.2 |
| LEVEL 2 | |
| Glazing Type | 1 - Single 2 - Double 3 - Triple |
| N Wall Length | Range: 8<>150 |
| N Wall Area | Range: 70<>1250 |
| N Door Area | Range: 0<>200 |
| Code N Door | Door Code = 1, 2, 3, or 4 |
| N GlassDoor Area | Range: 0<>1000 |
| Code N GlassDoor | Value = X.Y where X:Y: 0 <> 6 |
| N Window Area | Range: 0<>625 |
| Code N Window | Value = X.Y where X:Y: 0 <> 6 |
| E Wall Length | Range: 8<>150 |
| E Wall Area | Range: 70<>1250 |
| E Door Area | Range: 0<>200 |
| Code E Door | Door Code = 1, 2, 3, or 4 |

| | |
|---|--|
| W GlassDoor Area | Range: 0<>1000 |
| Code W GlassDoor | Value = X.Y where X:Y: 0 <> 6 |
| W Window Area | Range: 0<>625 |
| Code W Window | Value = X.Y where X:Y: 0 <> 6 |
| W/NW %GLazShade | Range: 0<>1; example: 20%=0.2 |
| S Wall Length | Range: 8<>150 |
| S Wall Area | Range: 70<>1250 |
| S Door Area | Range: 0<>200 |
| Code S Door | Door Code = 1, 2, 3, or 4 |
| S GlassDoor Area | Range: 0<>1000 |
| Code S GlassDoor | Value = X.Y where X:Y: 0 <> 6 |
| S Window Area | Range: 0<>625 |
| Code S Window | Value = X.Y where X:Y: 0 <> 6 |
| S/SW %GLazShade | Range: 0<>1; example: 20%=0.2 |
| Sum - Net wall area | |
| SkyLights | |
| Skylight Area | Range: 0<>150 |
| Inclination | Degrees off horizontal, 60, 45, 30, 0 |
| Direction | North = 1 NE & NW =2 E & W=3 SE & SW =4 South = 5 |
| No. of Glass panes | # of Panes = 1 or 2 |
| Type of Glass | 1 = Clear 2 = Tinted 3 = Reflective |
| Style 1 Windows/Sliders (per window style) | |
| Source of Information | 0 - None of this type 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Window Style | 1 - Casement 2 - Double Hung 3 - Patio Slider 4 - Bay 5 - Fixed |
| Frame Type | 1 - Alum with Thermal Break 2 - Alum w/out Thermal Break 3 - Vinyl 4 - Metal Clad Wood 5 - Plastic Clad Wood 6 - Wood |

| | |
|------------------|--|
| E GlassDoor Area | Range: 0<>1000 |
| Code E GlassDoor | Value = X.Y where X:Y: 0 <> 6 |
| E Window Area | Range: 0<>625 |
| Code E Window | Value = X.Y where X:Y: 0 <> 6 |
| W Wall Length | Range: 8<>150 |
| W Wall Area | Range: 70<>1250 |
| W Door Area | Range: 0<>200 |
| Code W Door | Door Code = 1, 2, 3, or 4 |
| W GlassDoor Area | Range: 0<>1000 |
| Code W GlassDoor | Value = X.Y where X:Y: 0 <> 6 |
| W Window Area | Range: 0<>625 |
| Code W Window | Value = X.Y where X:Y: 0 <> 6 |
| W/NW %GLazShade | Range: 0<>1; example: 20%=0.2 |
| S Wall Length | Range: 8<>150 |
| S Wall Area | Range: 70<>1250 |
| S Door Area | Range: 0<>200 |
| Code S Door | Door Code = 1, 2, 3, or 4 |
| S GlassDoor Area | Range: 0<>1000 |
| Code S GlassDoor | Value = X.Y where X:Y: 0 <> 6 |
| S Window Area | Range: 0<>625 |
| Code S Window | Value = X.Y where X:Y: 0 <> 6 |
| S/SW %GLazShade | Range: 0<>1; example: 20%=0.2 |
| LEVEL 3 | |
| Glazing Type | 1 - Single 2 - Double 3 - Triple |
| N Wall Length | Range: 8<>150 |
| N Wall Area | Range: 70<>1250 |
| N Door Area | Range: 0<>200 |
| Code N Door | Door Code = 1, 2, 3, or 4 |
| N GlassDoor Area | Range: 0<>1000 |
| Code N GlassDoor | Value = X.Y where X:Y: 0 <> 6 |
| N Window Area | Range: 0<>625 |
| Code N Window | Value = X.Y where X:Y: 0 <> 6 |
| E Wall Length | Range: 8<>150 |
| E Wall Area | Range: 70<>1250 |
| E Door Area | Range: 0<>200 |
| Code E Door | Door Code = 1, 2, 3, or 4 |
| E GlassDoor Area | Range: 0<>1000 |
| Code E GlassDoor | Value = X.Y where X:Y: 0 <> 6 |
| E Window Area | Range: 0<>625 |
| Code E Window | Value = X.Y where X:Y: 0 <> 6 |
| W Wall Length | Range: 8<>150 |
| W Wall Area | Range: 70<>1250 |
| W Door Area | Range: 0<>200 |
| Code W Door | Door Code = 1, 2, 3, or 4 |

| | |
|---|--|
| Layers of Glass (without storm) | 1 - Single Pane 2 - Double Pane 3 - Triple Pane |
| Air Gap Between Glass Panes | in .10 inches |
| Suspended Plastic Films Between Glass | 0, 1, 2, 3 |
| Warm-Edge Spacers Present | 1 - Yes 0 - No |
| Number of low-E coatings | 0, 1, 2, 3 |
| Argon/Kryton gas present | 1 - Yes 0 - No |
| Storm windows present? | 1 - Yes 0 - No |
| Overall U Value of Window | NFRC rating for whole window or from table provided |
| Solar Heat Gain Coefficient | Calculated NFRC rating for window rating x .7 |
| Window Manufacturer | |
| Low-E Glass Manufacturer | |
| Model Number of Low-E Glass | |
| Style 2 Windows/Sliders (per window style) | |
| Source of Information | 0 - No Style 2 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Window Style | 1 - Casement 2 - Double Hung 3 - Patio Slider 4 - Bay 5 - Fixed |
| Frame Type | 1 - Alum with Thermal Break 2 - Alum w/out Thermal Break 3 - Vinyl 4 - Metal Clad Wood 5 - Plastic Clad Wood 6 - Wood |
| Layers of Glass (without storm) | 1 - Single Pane 2 - Double Pane 3 - Triple Pane |
| Air Gap Between Glass Panes | in .10 inches |
| Suspended Plastic Films Between Glass | 0, 1, 2, 3 |
| Warm-Edge Spacers Present | 1 - Yes 0 - No |
| Number of low-E coatings | 0, 1, 2, 3 |
| Argon/Kryton gas present | 1 - Yes 0 - No |

| | |
|---|--|
| Storm windows present? | 1 - Yes 0 - No |
| Overall U Value of Window | NFRC rating for whole window or from table provided |
| Solar Heat Gain Coefficient | Calculated NFRC rating for window rating x .7 |
| Window Manufacturer | |
| Low-E Glass Manufacturer | |
| Model Number of Low-E Glass | |
| Style 3 Windows/Sliders (per window style) | |
| Source of Information | 0 - No Style 3 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Window Style | 1 - Casement 2 - Double Hung 3 - Patio Slider 4 - Bay 5 - Fixed |
| Frame Type | 1 - Alum with Thermal Break 2 - Alum w/out Thermal Break 3 - Vinyl 4 - Metal Clad Wood 5 - Plastic Clad Wood 6 - Wood |
| Layers of Glass (without storm) | 1 - Single Pane 2 - Double Pane 3 - Triple Pane |
| Air Gap Between Glass Panes | in .10 inches |
| Suspended Plastic Films Between Glass | 0, 1, 2, 3 |
| Warm-Edge Spacers Present | 1 - Yes 0 - No |
| Number of low-E coatings | 0, 1, 2, 3 |
| Argon/Kryton gas present | 1 - Yes 0 - No |
| Storm windows present? | 1 - Yes 0 - No |
| Overall U Value of Window | NFRC rating for whole window or from table provided |
| Solar Heat Gain Coefficient | Calculated NFRC rating for window rating x .7 |
| Window Manufacturer | |
| Low-E Glass Manufacturer | |
| Model Number of Low-E Glass | |
| Skylights | |

| | |
|---------------------------------------|--|
| Source of Information | 0 - No Skylights 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Skylight Style | 1 - Casement 2 - Fixed |
| Frame Type | 1 - Alum with Thermal Break 2 - Alum w/out Thermal Break 3 - Vinyl 4 - Metal Clad Wood 5 - Plastic Clad Wood 6 - Wood |
| Layers of Glass (without storm) | 1 - Single Pane 2 - Double Pane 3 - Triple Pane |
| Air Gap Between Glass Panes | in .10 inches |
| Suspended Plastic Films Between Glass | 0, 1, 2, 3 |
| Warm-Edge Spacers Present | 1 - Yes 0 - No |
| Number of low-E coatings | 0, 1, 2, 3 |
| Argon/Kryton gas present | 1 - Yes 0 - No |
| Storm windows present? | 1 - Yes 0 - No |
| Overall U Value of Skylight | NFRC rating for whole window or from table provided |
| Solar Heat Gain Coefficient | Calculated NFRC rating for window rating x .7 |
| Skylight Manufacturer | |
| Low-E Glass Manufacturer | |
| Model Number of Low-E Glass | |
| Water Heating Measures | |
| Source of Information | 0 - Water heater not inspected 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Location of Water Heater | 1 - Unconditioned basement 2 - garage 3 - conditioned space 4 - other |
| Fuel Type of Water Heater | 1 - Electric 2 - Natural Gas 3 - Oil 4 - Propane 5 - Heat Pump 6 - Solar |

| | |
|---|---|
| Type of Water Heater | 1 - Stand alone 2 - Tankless 3 - Integrated w/Space heat 4 - Other |
| Size of Water Heater | Range 8<>1000 gallons |
| Water Heater Manufacturer | |
| Water Heater Model Number | |
| Water Heater Energy Factor | GAMA rating |
| Tank Insulation Level | Range 0<>30 |
| R-value of added insulation blanket | |
| Water Heater Venting | 1 - Atmospheric 2 - Power vent 3 - Sealed Combustion |
| Piping Insulation (10 ft at water heater) | 1 - Yes 0 - No |
| Low-Flow Showerheads (Max 2.5 GPM) | 1 - Yes 0 - No |
| Heating System #1 | |
| Source of Information | 0 - Heating System not inspected 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Type of System | 1 - Furnace 2 - Air source heat pump 3 - Ground source heat pump 4 - Boiler 5 - Electric Baseboard 6 - Space Heaters |
| System Location | 1 - Basement 2 - Attic 3 - Garage 4 - Conditioned space |
| Fuel Type | 1 - Electric 2 - Natural Gas 3 - Oil 4 - Propane 5 - Coal 6 - Other |
| System Efficiency (AFUE or HSPF) | Gama rating |
| Indoor Unit Manufacturer | |
| Indoor Unit Model Number | |
| Outdoor Unit Manufacturer | |
| Outdoor Unit Model Number | |
| Outdoor Unit Capacity (Btu/hr) | ARI rating Range: 12,000<>60,000 |

| | |
|-----------------------------------|---|
| System Venting | 1 - Atmospheric 2 - Power vent 3 - Sealed Combustion |
| Heating System #2 | |
| Source of Information | 0 - Heating System not inspected 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Type of System | 1 - Furnace 2 - Air source heat pump 3 - Ground source heat pump 4 - Boiler 5 - Electric Baseboard 6 - Space Heaters |
| System Location | 1 - Basement 2 - Attic 3 - Garage 4 - Conditioned space |
| Fuel Type | 1 - Electric 2 - Natural Gas 3 - Oil 4 - Propane 5 - Coal 6 - Other |
| System Efficiency (AFUE or HSPF) | Gama rating |
| Indoor Unit Manufacturer | |
| Indoor Unit Model Number | |
| Outdoor Unit Manufacturer | |
| Outdoor Unit Model Number | |
| Outdoor Unit Capacity (Btu/hr) | ARI rating Range: 12,000->60,000 |
| System Venting | 1 - Atmospheric 2 - Power vent 3 - Sealed Combustion |
| Central Air Conditioner #1 | |
| Source of Information | 0 - No Air Conditioner 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Type of System | 1 - Central AC 2 - Air source heat pump 3 - Ground source heat pump 4 - Room AC |
| System Location | 1 - Basement 2 - Attic 3 - Garage 4 - Conditioned space |

| | |
|--|---|
| Fuel Type | 1 - Electric 2 - Natural gas 3 - Other |
| System Efficiency (SEER) | ARI rating |
| Indoor Unit Manufacturer | |
| Indoor Unit Model Number | |
| Indoor Unit Capacity (Btu/hr) | |
| Outdoor Unit Manufacturer | |
| Outdoor Unit Model Number | |
| Outdoor Unit Capacity (Btu/hr) | ARI rating Range: 12,000->60,000 |
| Central Air Conditioning #2 | |
| Source of Information | 0 - No Air Conditioner #2 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Type of System | 1 - Central AC 2 - Air source heat pump 3 - Ground source heat pump 4 - Room AC |
| System Location | 1 - Basement 2 - Attic 3 - Garage 4 - Conditioned space |
| Fuel Type | 1 - Electric 2 - Natural gas 3 - Other |
| System Efficiency (SEER) | ARI rating |
| Indoor Unit Manufacturer | |
| Indoor Unit Model Number | |
| Indoor Unit Capacity (Btu/hr) | |
| Outdoor Unit Manufacturer | |
| Outdoor Unit Model Number | |
| Outdoor Unit Capacity (Btu/hr) | ARI rating Range: 12,000->60,000 |
| Room Air Conditioners (per Unit) | |
| Total Number of Room Air Conditioners | Range 0->10 |
| Room Air Conditioner #1 Nameplate Rating (BTU/Hour) | ARI rating Range: 00->48,000 |
| Room Air Conditioner #2 Nameplate Rating (BTU/Hour) | ARI rating Range: 00->48,000 |
| Room Air Conditioner #3 Nameplate Rating (BTU/Hour) | ARI rating Range: 00->48,000 |
| Room Air Conditioner #4 Nameplate Rating (BTU/Hour) | ARI rating Range: 00->48,000 |
| Central Air or Heat Pump #1 Operation | |

| | |
|---|---|
| Equipment Airflow Check (CFM/ton) | Measured with Duct Blaster 200<=CFM/Ton<=550 |
| (Heat pumps only) Are resistance back-up heaters set to come on as first phase? | 1 - Yes 0 - No |
| Central Air or Heat Pump #2 Operation | |
| Equipment Airflow Check (CFM/ton) | Measured with Duct Blaster |
| (Heat pumps only) Are resistance back-up heaters set to come on as first phase? | 1 - Yes 0 - No |
| Space Conditioning Controls | |
| Source of Information | 0 - Controls not inspected 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Number of Zones | Up to 4 zones |
| Thermostat Type | 1 - Manual 2 - Clock setback 3 - Programmable 4 - Adaptive Recovery |
| Elec. Baseboard Thermostat Type | 1 - Baseboard Mount 2 - Wall Mount |
| Heating Season Thermostat Setpoint | |
| Temperature Setback Hours | Number of hours temperature is setback each day (heating) |
| Degrees Setback | Amount temperature is setback (heating) |
| Cooling Season Thermostat Setpoint | |
| Temperature Setup Hours | Number of hours temperature is setup each day (cooling) |
| Degrees Setup | Amount temperature is setup (cooling) |
| Appliances | |
| Source of Information | 0 - Appliances not inspected 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Refrigerator Manufactuer | |
| Refrigerator Model Number | |
| Refrigerator Size (cubic feet) | |
| Year Refrigerator Purchased | |
| Refrigerator Type | 1 - Single door 2 - Top-mount freezer 3 - Bottom mount freezer 4 - Side by side 5 - Other |

| | |
|---|--|
| Refrigerator Rating (annual kWh) | AHAM rating |
| Cooking Fuel | 1 - Electric 2 - Natural gas 3 - Propane |
| Dryer Fuel | 1 - Electric 2 - Natural gas 3 - Propane |
| System #1 Ductwork Characteristics | |
| Source of Information | 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Number of Supply Registers | Range: 0<>40 |
| Number of Supply Registers in Basement | Range: 0<>40 |
| Number of Return Grilles | Range: 0<>40 |
| InsulationType | 0 - None 1 - Fiberglass 2 - Ductboard 3 - Other |
| R-#(Sup-Attic) | Effective weighted R-value = 0, 2, 4, 6, 8 |
| Sq Ft Ducts-(Sup-Attic) | |
| R-#(Rtn-Attic) | Effective weighted R-value = 0, 2, 4, 6, 8 |
| Sq Ft Ducts-(Rtn-Attic) | |
| R-#(Sup-Uncond. Bsmt/crawl) | Effective weighted R-value = 0, 2, 4, 6, 8 |
| Sq Ft Ducts-(Sup-Uncond. Bsmt/crawl) | |
| R-#(Rtn-Uncond. Bsmt/crawl) | Effective weighted R-value = 0, 2, 4, 6, 8 |
| Sq Ft Ducts-(Rtn-Uncond. Bsmt/crawl) | |
| R-#(Sup-Slab) | Effective weighted R-value = 0, 2, 4, 6, 8 |
| Sq Ft Ducts-(Sup-Slab) | |
| R-#(Rtn-Slab) | Effective weighted R-value = 0, 2, 4, 6, 8 |
| Sq Ft Ducts-(Rtn-Slab) | |
| R-#(Sup-NoGain) | Effective weighted R-value = 0, 2, 4, 6, 8 |
| Sq Ft Ducts-(Sup-NoGain) | |
| R-#(Rtn-NoGain) | Effective weighted R-value = 0, 2, 4, 6, 8 |
| Sq Ft Ducts-(Rtn-NoGain) | |
| R-#(Sup-Garage) | Effective weighted R-value = 0, 2, 4, 6, 8 |
| Sq Ft Ducts-(Sup-Garage) | |
| R-#(Rtn-Garage) | Effective weighted R-value = 0, 2, 4, 6, 8 |
| Sq Ft Ducts-(Rtn-Garage) | |
| System #1 Ductwork Tests | |
| All zone pressure tests run with air handler fan on and bedroom doors closed on at a time (reference is outside) | |
| Room 1 depressurization | Range: -30<>30 |
| Room 2 depressurization | Range: -30<>30 |
| Room 3 depressurization | Range: -30<>30 |
| Room 4 depressurization | Range: -30<>30 |

| | |
|---|--|
| Room 5 depressurization | Range: -30<>30 |
| Room 6 depressurization | Range: -30<>30 |
| Room 7 depressurization | Range: -30<>30 |
| Room 8 depressurization | Range: -30<>30 |
| Room 9 depressurization | Range: -30<>30 |
| Room 10 depressurization | Range: -30<>30 |
| Duct Leakage to Outside (CFM @ 25 Pa) with basement door open | Measured with Duct Blaster |
| Duct Leakage Total (CFM @ 25 Pa) with basement door open | Measured with Duct Blaster |
| Operating Supply Pressure | |
| Operating Return Pressure | |
| Half Nelson Supply Pressure | |
| Half Nelson Return Pressure | |
| System #2 Ductwork Characteristics | |
| Source of Information | 0 - No Second System 1 - Inspected 2 - Homeowner/Builder 3 - Assumed 4 - Plans |
| Number of Supply Registers | Range: 0<>40 |
| Number of Supply Registers in Basement | Range: 0<>40 |
| Number of Return Grilles | Range: 0<>40 |
| Insulation Type | 0 - None 1 - Fiberglass 2 - Ductboard 3 - Other |
| R-#(Sup-Attic) | Effective weighted R-value = 0, 2, 4, 6, 8 |
| Sq Ft Ducts-(Sup-Attic) | |
| R-#(Rtn-Attic) | Effective weighted R-value = 0, 2, 4, 6, 8 |
| Sq Ft Ducts-(Rtn-Attic) | |
| R-#(Sup-Uncond. Bsmt/crawl) | Effective weighted R-value = 0, 2, 4, 6, 8 |
| Sq Ft Ducts-(Sup-Uncond. Bsmt/crawl) | |
| R-#(Rtn-Uncond. Bsmt/crawl) | Effective weighted R-value = 0, 2, 4, 6, 8 |
| Sq Ft Ducts-(Rtn-Uncond. Bsmt/crawl) | |
| R-#(Sup-Slab) | Effective weighted R-value = 0, 2, 4, 6, 8 |
| Sq Ft Ducts-(Sup-Slab) | |
| R-#(Rtn-Slab) | Effective weighted R-value = 0, 2, 4, 6, 8 |
| Sq Ft Ducts-(Rtn-Slab) | |
| R-#(Sup-NoGain) | Effective weighted R-value = 0, 2, 4, 6, 8 |
| Sq Ft Ducts-(Sup-NoGain) | |
| R-#(Rtn-NoGain) | Effective weighted R-value = 0, 2, 4, 6, 8 |
| Sq Ft Ducts-(Rtn-NoGain) | |
| R-#(Sup-Garage) | Effective weighted R-value = 0, 2, 4, 6, 8 |
| Sq Ft Ducts-(Sup-Garage) | |

| | |
|---|---|
| R-#(Rtn-Garage) | Effective weighted R-value = 0, 2, 4, 6, 8 |
| Sq Ft Ducts-(Rtn-Garage) | |
| System #2 Ductwork Tests | |
| All zone pressure tests run with air handler fan on and bedroom doors closed on at a time (reference is outside) | |
| Room 1 depressurization | Range: -30<>30 |
| Room 2 depressurization | Range: -30<>30 |
| Room 3 depressurization | Range: -30<>30 |
| Room 4 depressurization | Range: -30<>30 |
| Room 5 depressurization | Range: -30<>30 |
| Room 6 depressurization | Range: -30<>30 |
| Room 7 depressurization | Range: -30<>30 |
| Room 8 depressurization | Range: -30<>30 |
| Room 9 depressurization | Range: -30<>30 |
| Room 10 depressurization | Range: -30<>30 |
| Duct Leakage to Outside (CFM @ 25 Pa) with basement door open | Measured with Duct Blaster |
| Duct Leakage Total (CFM @ 25 Pa) with basement door open | Measured with Duct Blaster |
| Operating Supply Pressure | |
| Operating Return Pressure | |
| Half Nelson Supply Pressure | |
| Half Nelson Return Pressure | |
| Combustion Zone Pressure | |
| Zone 1 | |
| Zone 2 | |
| Zone 3 | |
| Zone 4 | |
| Shell Leakage | |
| Press Diff to Basement when air handler on & Basement door closed (WRT House) | |
| Shell leakage of house (CFM @ 50 Pa) basement open | Measured with Blower Door |
| Shell leakage of house (CFM @ 50 Pa) basement closed | Measured with Blower Door |
| Press Diff to Bsmt during Shell Leakage test with Bsmt Door closed | Measured with Manometer (Tube under door; to Outside) |
| Summer N-Factor of house | |
| Winter N-Factor of house | |
| Comments (up to 255 characters) | no requirements |

Proposed Lighting Fixture Data Collection Form

Property Address:

City, State:

| Line | Location of Fixture [1] | Fixture Type [2] | Number of Fixtures per Location | Lighting Type | Lamp Wattage per Fixture | Lighting Controls | Hours Used per Day |
|------|----------------------------|---------------------|---------------------------------|---------------|--------------------------|-------------------|--------------------|
|------|----------------------------|---------------------|---------------------------------|---------------|--------------------------|-------------------|--------------------|

Interior Fixtures

| | | | | | | | |
|-----|--|--|--|--|--|--|--|
| 1. | | | | | | | |
| 2. | | | | | | | |
| 3. | | | | | | | |
| 4. | | | | | | | |
| 5. | | | | | | | |
| 6. | | | | | | | |
| 7. | | | | | | | |
| 8. | | | | | | | |
| 9. | | | | | | | |
| 10. | | | | | | | |
| 11. | | | | | | | |
| 12. | | | | | | | |
| 13. | | | | | | | |
| 14. | | | | | | | |
| 15. | | | | | | | |
| 16. | | | | | | | |
| 17. | | | | | | | |
| 18. | | | | | | | |
| 19. | | | | | | | |
| 20. | | | | | | | |

Exterior Fixtures

| | | | | | | | |
|----|--|--|--|--|--|--|--|
| 1. | | | | | | | |
| 2. | | | | | | | |
| 3. | | | | | | | |
| 4. | | | | | | | |
| 5. | | | | | | | |
| 6. | | | | | | | |
| 7. | | | | | | | |
| 8. | | | | | | | |

Code Key

| Location of Fixture | Code | Fixture Type | Code | Lighting Type | Code | Lighting Controls | Code |
|---------------------------|------|-------------------|------|---------------------------|------|-------------------|------|
| Bathroom/Toilet | T | Ceiling Surface | CS | Incandescent | INC | On/Off Switch | O |
| Bedroom | B | Ceiling Recessed | CR | Fluorescent Tube | FLT | Rheostat/Dimmer | R-D |
| Dining Room | D | Ceiling Hanging | CH | Circline Fluorescent Tube | CIR | Motion Sensor | MS |
| Exterior/Unheated Porch | E | Flood | F | Compact Fluorescent | CFL | Photo Cell | PC |
| Family Room/Sitting/Den | F | Pedestal/Carriage | P | Halogen - Low-Voltage | LVH | Timer | T |
| Hallway | H | Track | T | Halogen - Tubular-shaped | TSH | | |
| Kitchen | K | Under Cabinet | U | Tungsten-Halogen | T-H | | |
| Living Room | L | Walkway | K | High-Pressure Sodium | HPS | | |
| Office/Study | O | Wall Mounted | W | Low-Pressure Sodium | LPS | | |
| Porch (heated)/Mudroom | P | | | Mercury Vapor | M-V | | |
| Unlisted/Other (write-in) | U | | | Metal Halide | M-H | | |
| Work Area/Shop | W | | | | | | |

[1] Do not include closets, attics, unfinished basements or other non-listed locations where lighting is used less than 2 hours/day.

[2] For permanently-installed, hard-wired fixtures only.

-> tabulation of Smultifo

| Smultifo | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| DK | 2 | 3.85 | 3.85 |
| NO | 33 | 63.46 | 67.31 |
| YES | 17 | 32.69 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of Sheatfue

| Sheatfue | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| Gas | 51 | 98.08 | 98.08 |
| Oil | 1 | 1.92 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of Sh20fuel

| Sh20fuel | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| Electric | 2 | 3.85 | 3.85 |
| Gas | 50 | 96.15 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of Scentral

| Scentral | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| 0 | 2 | 3.85 | 3.85 |
| 1 | 33 | 63.46 | 67.31 |
| 2 | 14 | 26.92 | 94.23 |
| 3 | 1 | 1.92 | 96.15 |
| 5 | 2 | 3.85 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of Sheatsys

| Sheatsys | Freq. | Percent | Cum. |
|----------------------|-------|---------|--------|
| Air Soucre Heat Pump | 1 | 1.92 | 1.92 |
| Boiler | 8 | 15.38 | 17.31 |
| DON'T KNOW | 2 | 3.85 | 21.15 |
| Dual intergrated | 1 | 1.92 | 23.08 |
| Gas Forced Air | 40 | 76.92 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of Sducts

| Sducts | Freq. | Percent | Cum. |
|--------|-------|---------|--------|
| DK | 1 | 1.92 | 1.92 |
| NO | 3 | 5.77 | 7.69 |
| YES | 48 | 92.31 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of Sductbas

| Sductbas | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| DK | 1 | 1.92 | 1.92 |
| NO | 15 | 28.85 | 30.77 |
| YES | 36 | 69.23 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of Sductatt

| Sductatt | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| DK | 6 | 11.54 | 11.54 |
| NO | 22 | 42.31 | 53.85 |
| YES | 24 | 46.15 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of Sductcra

| Sductcra | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| DK | 1 | 1.92 | 1.92 |
| NO | 50 | 96.15 | 98.08 |
| YES | 1 | 1.92 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of Sductsla

| Sductsla | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| DK | 1 | 1.92 | 1.92 |
| NO | 49 | 94.23 | 96.15 |
| YES | 2 | 3.85 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of htype

| htype | Freq. | Percent | Cum. |
|-------|-------|---------|--------|
| 1 | 52 | 100.00 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of story

| story | Freq. | Percent | Cum. |
|-------|-------|---------|--------|
| 1 | 4 | 7.69 | 7.69 |
| 2 | 47 | 90.38 | 98.08 |
| 3 | 1 | 1.92 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of rooftyp

| rooftyp | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| 1 | 51 | 98.08 | 98.08 |
| 2 | 1 | 1.92 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of roofcol

| roofcol | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| 0 | 50 | 96.15 | 96.15 |
| 1 | 2 | 3.85 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of aventok

| aventok | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| 0 | 1 | 1.92 | 1.92 |
| 1 | 51 | 98.08 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of radonsys

| radonsys | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| 0 | 44 | 84.62 | 84.62 |
| 1 | 8 | 15.38 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of wallins

| wallins | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| 1 | 52 | 100.00 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of wallmanj

| wallmanj | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| C | 2 | 3.85 | 3.85 |
| D | 49 | 94.23 | 98.08 |
| H | 1 | 1.92 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of beds

| beds | Freq. | Percent | Cum. |
|-------|-------|---------|--------|
| 2 | 2 | 3.85 | 3.85 |
| 3 | 17 | 32.69 | 36.54 |
| 4 | 30 | 57.69 | 94.23 |
| 5 | 2 | 3.85 | 98.08 |
| 7 | 1 | 1.92 | 100.00 |
| Total | 52 | 100.00 | |

. tab Sheatsys ht1type

| Sheatsys | ht1type | | | Total |
|----------------------|---------|--------|--|-------|
| | furnace | boiler | | |
| Air Soucre Heat Pump | 1 | 0 | | 1 |
| Boiler | 1 | 7 | | 8 |
| DON'T KNOW | 2 | 0 | | 2 |
| Dual intergrated | 0 | 1 | | 1 |
| Gas Forced Air | 40 | 0 | | 40 |
| Total | 44 | 8 | | 52 |

. tab Sfoundat fdntype

| Sfoundat | fdntype | | | | | Total |
|-----------|---------|---------|----------|---------|--|-------|
| | slab | crawl-v | bsmt-cnd | bsmt-uc | | |
| Basement | 0 | 0 | 4 | 39 | | 43 |
| Crawlspac | 1 | 2 | 1 | 0 | | 4 |
| Slab | 4 | 0 | 0 | 1 | | 5 |
| Total | 5 | 2 | 5 | 40 | | 52 |

. sumstat areal area2 area3 areatot

| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min | max |
|----------|----|--------|--------|---------|--------|--------|--------|--------|--------|
| areal | 52 | 1460.9 | 78.9 | 132.3 | 1104.0 | 1309.0 | 1705.0 | 519.0 | 4000.0 |
| area2 | 50 | 1336.8 | 73.3 | 122.9 | 1068.0 | 1218.5 | 1482.0 | 557.0 | 4000.0 |
| area3 | 2 | 892.0 | 700.0 | 4419.6 | 192.0 | 892.0 | 1592.0 | 192.0 | 1592.0 |
| areatot | 52 | 2768.6 | 156.8 | 262.6 | 2159.0 | 2500.0 | 3148.5 | 1198.0 | 8000.0 |

. * attics

. sumstat areatotc aarea - areff

| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min | max |
|----------|----|--------|--------|---------|--------|--------|--------|--------|--------|
| areatotc | 52 | 1691.4 | 83.5 | 139.9 | 1236.5 | 1616.0 | 1886.0 | 783.0 | 4000.0 |
| aarea | 52 | 1394.6 | 77.9 | 130.5 | 1092.0 | 1294.0 | 1602.5 | 465.0 | 4000.0 |
| arnom | 52 | 28.25 | 0.56 | 0.93 | 30.00 | 30.00 | 30.00 | 19.00 | 36.00 |
| aunom | 52 | 0.0363 | 0.0009 | 0.0016 | 0.0333 | 0.0333 | 0.0333 | 0.0278 | 0.0526 |
| areff | 52 | 21.60 | 0.49 | 0.81 | 23.00 | 23.00 | 23.00 | 12.00 | 30.00 |

. tab arnom if aarea>0

| arnom | Freq. | Percent | Cum. |
|-------|-------|---------|--------|
| 19 | 7 | 13.46 | 13.46 |
| 25 | 4 | 7.69 | 21.15 |
| 30 | 40 | 76.92 | 98.08 |
| 36 | 1 | 1.92 | 100.00 |
| Total | 52 | 100.00 | |

```

. sumstat slarea - slraftin if slarea>0
variable   N      Mean    StdErr +/-90ci      25%      50%      75%      min      max
slarea     28     466.0    49.6     84.5    261.5    422.5    613.5    84.0    1197.0
slrnomp   28     26.68    0.95     1.62    19.00    30.00    30.00    19.00    30.00
slunom    28     0.0391   0.0017   0.0028   0.0333   0.0333   0.0526   0.0333   0.0526
slreff     28     20.79    0.85     1.44    15.00    23.00    23.00    12.00    30.00
slraftin   28     7.893    0.422   0.719     6.000   8.000    9.500    4.000   12.000

. tab slrnomp if slarea>0

      slrnomp |       Freq.      Percent      Cum.
-----+-----
        19 |          8        28.57        28.57
        25 |          1        3.57        32.14
        30 |         19       67.86       100.00
-----+-----
           Total |        28       100.00

. sumstat kwarea - kwreff if kwarea>0
variable   N      Mean    StdErr +/-90ci      25%      50%      75%      min      max
kwarea     13     183.7    32.7     58.3    126.0    150.0    224.0    36.0    472.0
kwinsloc   13     1.000    0.000    0.000     1.000    1.000    1.000    1.000    1.000
kwrnom    13     15.00    1.94     3.47    11.00    11.00    13.00    11.00    30.00
kwunom    13     0.0759   0.0061   0.0108   0.0769   0.0909   0.0909   0.0333   0.0909
kwreff     13     11.31    1.55     2.76     9.00     9.00    11.00     7.00    23.00

. tab kwrnom if kwarea>0

      kwrnom |       Freq.      Percent      Cum.
-----+-----
        11 |          7        53.85        53.85
        13 |          3        23.08        76.92
        19 |          1        7.69        84.62
        30 |          2        15.38       100.00
-----+-----
           Total |        13       100.00

. * basements
. sumstat bcarea bucarea bcwlper bucwlper
variable   N      Mean    StdErr +/-90ci      25%      50%      75%      min      max
bcarea     4     1186.2   309.3    727.8    694.5   1235.0   1678.0   439.0   1836.0
bucarea    40    1431.1   98.1    165.2   1036.0   1284.5   1665.0   561.0   4000.0
bcwlper    4     153.8    25.0     58.8    118.5   171.0    189.0    83.0    190.0
bucwlper   37    171.1    7.6     12.8    142.0   166.0    183.0    76.0    346.0

. tab bcins if bucarea>0 & bucarea<.

      bcins |       Freq.      Percent      Cum.
-----+-----
        0 |         39       97.50       97.50
        1 |          1        2.50       100.00
-----+-----
           Total |        40       100.00

. sumstat bcrnom bcunom bcreff if bcrnom>0
variable   N      Mean    StdErr +/-90ci      25%      50%      75%      min      max
bcrnom    1     30.00    .        .     30.00    30.00    30.00    30.00    30.00
bcunom    1     0.0333   .        .     0.0333   0.0333   0.0333   0.0333   0.0333
bcreff    1     23.00    .        .     23.00    23.00    23.00    23.00    23.00

```

```
. tab bsmtstat bcrnom
```

| bsmtstat | bcrnom | | | Total |
|----------|--------|----|--|-------|
| | 0 | 30 | | |
| N/A | 9 | 0 | | 9 |
| cond. | 3 | 0 | | 3 |
| uncond. | 39 | 0 | | 39 |
| both | 0 | 1 | | 1 |
| Total | 51 | 1 | | 52 |

```
. sumstat bccrptft if bcarea<. | bucarea<.
```

| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min | max |
|----------|----|-------|--------|---------|-----|-------|-------|-----|--------|
| bccrptft | 43 | 461.9 | 60.0 | 101.0 | 0.0 | 408.0 | 796.0 | 0.0 | 1296.0 |

```
. sumstat bccrptft if bsmtstat>=2
```

| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min | max |
|----------|----|-------|--------|---------|-------|-------|-------|-----|--------|
| bccrptft | 40 | 496.6 | 61.1 | 102.9 | 152.5 | 461.0 | 798.5 | 0.0 | 1296.0 |

```
. tab bxwins if bcwlper<. | bucwlper<.
```

| bxwins | Freq. | Percent | Cum. |
|--------|-------|---------|--------|
| 0 | 37 | 92.50 | 92.50 |
| 1 | 3 | 7.50 | 100.00 |
| Total | 40 | 100.00 | |

```
. tab biwins if bcwlper<. | bucwlper<.
```

| biwins | Freq. | Percent | Cum. |
|--------|-------|---------|--------|
| 0 | 35 | 87.50 | 87.50 |
| 1 | 5 | 12.50 | 100.00 |
| Total | 40 | 100.00 | |

```
. tab bsmtstat bxwins
```

| bsmtstat | bxwins | | | Total |
|----------|--------|---|--|-------|
| | 0 | 1 | | |
| N/A | 9 | 0 | | 9 |
| cond. | 3 | 0 | | 3 |
| uncond. | 36 | 3 | | 39 |
| both | 1 | 0 | | 1 |
| Total | 49 | 3 | | 52 |

```
. tab bsmtstat biwins
```

| bsmtstat | biwins | | | Total |
|----------|--------|---|--|-------|
| | 0 | 1 | | |
| N/A | 9 | 0 | | 9 |
| cond. | 1 | 2 | | 3 |
| uncond. | 37 | 2 | | 39 |
| both | 0 | 1 | | 1 |
| Total | 47 | 5 | | 52 |

```

. tab biwins bxwins
| bxwins
  biwins |      0      1 |    Total
-----+-----+-----+
    0 |     44      3 |     47
    1 |      5      0 |      5
-----+-----+-----+
  Total |     49      3 |     52

. sumstat bagarea bagrnom bagunom bagreff bbght bbgarea bbgrnom bbgunom bbgreff i
> f bsmtstat==1
variable   N      Mean    StdErr +/-90ci      25%      50%      75%      min      max
bagarea    3     612.3    165.5    483.2    282.0    760.0    795.0    282.0    795.0
bagrnom    3     11.33     5.78    16.89     0.00    15.00    19.00     0.00    19.00
bagunom    2     0.0596    0.0070    0.0443    0.0526    0.0596    0.0667    0.0526    0.0667
bagreff    3      8.67     4.48    13.09     0.00    11.00    15.00     0.00    15.00
bbght     3      7.33     1.33     3.89     6.00     6.00    10.00     6.00    10.00
bbgarea   3     1067.3    161.2    470.7    745.0   1222.0   1235.0    745.0   1235.0
bbgrnom   3     11.33     5.78    16.89     0.00    15.00    19.00     0.00    19.00
bbgunom   2     0.0596    0.0070    0.0443    0.0526    0.0596    0.0667    0.0526    0.0667
bbgreff   3      9.33     4.70    13.73     0.00    13.00    15.00     0.00    15.00

. sumstat bagarea bagrnom bagunom bagreff bbght bbgarea bbgrnom bbgunom bbgreff i
> f bsmtstat==2
variable   N      Mean    StdErr +/-90ci      25%      50%      75%      min      max
bagarea   39     272.6     36.6     61.8    124.0    259.0    376.0     0.0    928.0
bagrnom   39      1.05     0.49     0.82     0.00     0.00     0.00     0.00    11.00
bagunom   5      0.185    0.079     0.169     0.091     0.100     0.143     0.091    0.500
bagreff   39      0.90     0.42     0.71     0.00     0.00     0.00     0.00    10.00
bbght    39      5.359    0.428     0.721     6.000     6.000     7.000     0.000    9.000
bbgarea   39     887.3     86.7    146.2    690.0    968.0   1165.0     0.0    2768.0
bbgrnom   39      0.46     0.33     0.56     0.00     0.00     0.00     0.00    11.00
bbgunom   2      0.117    0.026     0.164     0.091     0.117     0.143     0.091    0.143
bbgreff   39      0.359    0.261     0.440     0.000     0.000     0.000     0.000    9.000

. sumstat bagarea bagrnom bagunom bagreff bbght bbgarea bbgrnom bbgunom bbgreff i
> f bsmtstat==1 & (biwins | bxwins)
variable   N      Mean    StdErr +/-90ci      25%      50%      75%      min      max
bagarea    2     538.5    256.5   1619.5    282.0    538.5    795.0    282.0    795.0
bagrnom    2     17.00     2.00    12.63    15.00    17.00    19.00    15.00    19.00
bagunom    2     0.0596    0.0070    0.0443    0.0526    0.0596    0.0667    0.0526    0.0667
bagreff    2     13.00     2.00    12.63    11.00    13.00    15.00    11.00    15.00
bbght     2      8.00     2.00    12.63     6.00     8.00    10.00     6.00    10.00
bbgarea   2     983.5    238.5   1505.8    745.0    983.5   1222.0    745.0   1222.0
bbgrnom   2     17.00     2.00    12.63    15.00    17.00    19.00    15.00    19.00
bbgunom   2     0.0596    0.0070    0.0443    0.0526    0.0596    0.0667    0.0526    0.0667
bbgreff   2     14.00     1.00     6.31    13.00    14.00    15.00    13.00    15.00

. sumstat bagarea bagrnom bagunom bagreff bbght bbgarea bbgrnom bbgunom bbgreff i
> f bsmtstat==2 & (biwins | bxwins)
variable   N      Mean    StdErr +/-90ci      25%      50%      75%      min      max
bagarea    5     475.2    108.0   230.3    390.0    414.0    692.0    146.0    734.0
bagrnom    5      8.20     1.71     3.66     7.00    10.00    11.00     2.00    11.00
bagunom    5      0.185    0.079     0.169     0.091     0.100     0.143     0.091    0.500
bagreff    5     7.000    1.517    3.233    5.000    9.000    9.000    2.000   10.000
bbght     5     6.600    0.678    1.446    5.000    7.000    8.000    5.000    8.000
bbgarea   5    1248.8    383.5   817.6    858.0    906.0   1022.0    690.0   2768.0
bbgrnom   5     3.600    2.293    4.889    0.000    0.000    7.000    0.000   11.000
bbgunom   2     0.117    0.026     0.164     0.091     0.117     0.143     0.091    0.143
bbgreff   5     2.800    1.828    3.896    0.000    0.000    5.000    0.000    9.000

```

```
. sumstat bagarea bbgght bbgarea if bsmtstat==1 & !(biwins | bxwins)
variable      N      Mean    StdErr +/-90ci      25%      50%      75%      min      max
bagarea       1      760.0      .      .      760.0      760.0      760.0      760.0      760.0
bbgght        1      6.000      .      .      6.000      6.000      6.000      6.000      6.000
bbgarea       1     1235.0      .      .     1235.0     1235.0     1235.0     1235.0     1235.0

. sumstat bagarea bbgght bbgarea if bsmtstat==2 & !(biwins | bxwins)
variable      N      Mean    StdErr +/-90ci      25%      50%      75%      min      max
bagarea       34     242.8     36.8      62.3      44.0     218.0     350.0      0.0      928.0
bbgght        34     5.176     0.475      0.804      6.000      6.000      7.000      0.000      9.000
bbgarea       34     834.2     81.5     138.0     688.0     978.0    1165.0      0.0     1446.0

. tab bagrnom if biwins | bxwins

      bagrnom |      Freq.      Percent      Cum.
-----+-----+
         2 |          1          12.50          12.50
         7 |          1          12.50          25.00
         9 |          1          12.50          37.50
        10 |          1          12.50          50.00
        11 |          2          25.00          75.00
        15 |          1          12.50          87.50
        19 |          1          12.50         100.00
-----+-----+
   Total |          8          100.00

. tab bbgrnom if biwins | bxwins

      bbgrnom |      Freq.      Percent      Cum.
-----+-----+
         0 |          3          37.50          37.50
         7 |          1          12.50          50.00
         9 |          1          12.50          62.50
        11 |          1          12.50          75.00
        15 |          1          12.50          87.50
        19 |          1          12.50         100.00
-----+-----+
   Total |          8          100.00

. * crawlspaces
. sumstat  cropen crcarea crcins crcirnom crciunom crcireff crccpta crpins crpare
> a crwrnom crwunom crwreff if crcarea<.
variable      N      Mean    StdErr +/-90ci      25%      50%      75%      min      max
cropen        8      0.750     0.164      0.310      0.500      1.000      1.000      0.000      1.000
crcarea       8     687.5    241.3     457.1     182.0     340.0    1168.0     126.0    1994.0
crcins        8      0.375     0.183      0.347      0.000      0.000      1.000      0.000      1.000
crcirnom      8      6.12     3.11      5.90       0.00       0.00     15.00       0.00     19.00
crciunom      3     0.0654    0.0128     0.0373     0.0526     0.0526     0.0909     0.0526     0.0909
crcireff       8      4.62     2.42      4.58       0.00       0.00     11.00       0.00     15.00
crccpta       8     324.2    124.2     235.2      50.0     203.0     578.0       0.0     932.0
crpins        8      0.500     0.189      0.358      0.000      0.500      1.000      0.000      1.000
crparea       8     222.2     64.2     121.6      80.5     157.0     372.0      31.0     528.0
crwrnom       8      2.250    1.521     2.881      0.000      0.000     3.500      0.000    11.000
crwunom       2      0.117     0.026      0.164      0.091      0.117     0.143      0.091     0.143
crwreff       8      1.750    1.206     2.286      0.000      0.000     2.500      0.000     9.000
```

```
. sumstat cropen crcarea crcins crcirnom crciunom crcireff crccpta crpins crpare
> a crwrnom crwunom crwreff if crcarea<. & crcins==1
```

| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min | max |
|----------|---|--------|--------|---------|--------|--------|--------|--------|--------|
| cropen | 3 | 1.000 | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| crcarea | 3 | 1075.3 | 534.1 | 1559.5 | 144.0 | 1088.0 | 1994.0 | 144.0 | 1994.0 |
| crcins | 3 | 1.000 | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| crcirnom | 3 | 16.33 | 2.67 | 7.79 | 11.00 | 19.00 | 19.00 | 11.00 | 19.00 |
| crciunom | 3 | 0.0654 | 0.0128 | 0.0373 | 0.0526 | 0.0526 | 0.0909 | 0.0526 | 0.0909 |
| crcireff | 3 | 12.33 | 2.67 | 7.79 | 7.00 | 15.00 | 15.00 | 7.00 | 15.00 |
| crccpta | 3 | 310.7 | 310.7 | 907.1 | 0.0 | 0.0 | 932.0 | 0.0 | 932.0 |
| crpins | 3 | 0.333 | 0.333 | 0.973 | 0.000 | 0.000 | 1.000 | 0.000 | 1.000 |
| crparea | 3 | 353.3 | 126.3 | 368.8 | 108.0 | 424.0 | 528.0 | 108.0 | 528.0 |
| crwrnom | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| crwunom | 0 | . | . | . | . | . | . | . | . |
| crwreff | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

```
. sumstat cropen crcarea crcins crcirnom crciunom crcireff crccpta crpins crpare
> a crwrnom crwunom crwreff if crcarea<. & crpins==1
```

| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min | max |
|----------|---|--------|--------|---------|--------|--------|--------|--------|--------|
| cropen | 4 | 0.750 | 0.250 | 0.588 | 0.500 | 1.000 | 1.000 | 0.000 | 1.000 |
| crcarea | 4 | 479.5 | 263.7 | 620.6 | 135.0 | 272.0 | 824.0 | 126.0 | 1248.0 |
| crcins | 4 | 0.250 | 0.250 | 0.588 | 0.000 | 0.000 | 0.500 | 0.000 | 1.000 |
| crcirnom | 4 | 4.750 | 4.750 | 11.178 | 0.000 | 0.000 | 9.500 | 0.000 | 19.000 |
| crciunom | 1 | 0.0526 | . | . | 0.0526 | 0.0526 | 0.0526 | 0.0526 | 0.0526 |
| crcireff | 4 | 3.750 | 3.750 | 8.825 | 0.000 | 0.000 | 7.500 | 0.000 | 15.000 |
| crccpta | 4 | 320.5 | 167.5 | 394.1 | 63.0 | 263.0 | 578.0 | 0.0 | 756.0 |
| crpins | 4 | 1.000 | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| crparea | 4 | 152.8 | 61.1 | 143.8 | 69.5 | 130.0 | 236.0 | 31.0 | 320.0 |
| crwrnom | 4 | 4.500 | 2.723 | 6.409 | 0.000 | 3.500 | 9.000 | 0.000 | 11.000 |
| crwunom | 2 | 0.117 | 0.026 | 0.164 | 0.091 | 0.117 | 0.143 | 0.091 | 0.143 |
| crwreff | 4 | 3.500 | 2.179 | 5.129 | 0.000 | 2.500 | 7.000 | 0.000 | 9.000 |

-> tabulation of cropen if crcarea<.

| cropen | Freq. | Percent | Cum. |
|--------|-------|---------|--------|
| 0 | 2 | 25.00 | 25.00 |
| 1 | 6 | 75.00 | 100.00 |
| Total | 8 | 100.00 | |

-> tabulation of crcins if crcarea<.

| crcins | Freq. | Percent | Cum. |
|--------|-------|---------|--------|
| 0 | 5 | 62.50 | 62.50 |
| 1 | 3 | 37.50 | 100.00 |
| Total | 8 | 100.00 | |

-> tabulation of crpins if crcarea<.

| crpins | Freq. | Percent | Cum. |
|--------|-------|---------|--------|
| 0 | 4 | 50.00 | 50.00 |
| 1 | 4 | 50.00 | 100.00 |
| Total | 8 | 100.00 | |

-> tabulation of crfins if crcarea<.

| crfins | Freq. | Percent | Cum. |
|--------|-------|---------|--------|
| 0 | 8 | 100.00 | 100.00 |
| Total | 8 | 100.00 | |

. tab crcins crpins

| crcins | crpins | | Total |
|--------|--------|---|-------|
| | 0 | 1 | |
| 0 | 46 | 3 | 49 |
| 1 | 2 | 1 | 3 |
| Total | 48 | 4 | 52 |

. *band joist

. sumstat bjins - bjreff if bjarea>0

| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min | max |
|----------|----|--------|--------|---------|--------|--------|--------|--------|--------|
| bjins | 45 | 0.978 | 0.022 | 0.037 | 1.000 | 1.000 | 1.000 | 0.000 | 1.000 |
| bjarea | 45 | 174.5 | 6.8 | 11.3 | 146.0 | 174.0 | 190.0 | 83.0 | 346.0 |
| bjrnom | 45 | 11.22 | 0.38 | 0.65 | 11.00 | 11.00 | 13.00 | 0.00 | 19.00 |
| bjunom | 44 | 0.0904 | 0.0034 | 0.0057 | 0.0769 | 0.0909 | 0.0909 | 0.0526 | 0.2000 |
| bjreff | 45 | 8.467 | 0.334 | 0.562 | 9.000 | 9.000 | 9.000 | 0.000 | 15.000 |

. tab bjrnom if bjarea>0

| bjrnom | Freq. | Percent | Cum. |
|--------|-------|---------|--------|
| 0 | 1 | 2.22 | 2.22 |
| 5 | 1 | 2.22 | 4.44 |
| 6 | 1 | 2.22 | 6.67 |
| 11 | 29 | 64.44 | 71.11 |
| 13 | 12 | 26.67 | 97.78 |
| 19 | 1 | 2.22 | 100.00 |
| Total | 45 | 100.00 | |

. * slab

. sumstat sledgeft slrnomb slunomb slreffl if sledgeft>0

| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min | max |
|----------|---|-------|--------|---------|-------|-------|-------|-------|--------|
| sledgeft | 6 | 154.3 | 12.0 | 24.3 | 146.0 | 153.0 | 158.0 | 112.0 | 204.0 |
| slrnomb | 6 | 4.50 | 2.57 | 5.17 | 0.00 | 1.00 | 11.00 | 0.00 | 14.00 |
| slunomb | 4 | 0.541 | 0.265 | 0.624 | 0.081 | 0.545 | 1.000 | 0.071 | 1.000 |
| slreffl | 6 | 4.333 | 2.362 | 4.759 | 1.000 | 1.000 | 9.000 | 0.000 | 14.000 |

. tab slrnomb if sledgeft>0

| slrnomb | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| 0 | 2 | 33.33 | 33.33 |
| 19 | 2 | 33.33 | 66.67 |
| 30 | 2 | 33.33 | 100.00 |
| Total | 6 | 100.00 | |

```

. * misc, ext floors, garage
. sumstat periduct extflr
variable   N      Mean    StdErr +/-90ci      25%     50%     75%     min     max
periduct   52       0        0        0        0        0        0        0        0
extflr    52       0        0        0        0        0        0        0        0

. tab garage

  garage |      Freq.      Percent      Cum.
-----+-----+-----+-----+
    None |         4        7.69        7.69
  attach |        11       21.15       28.85
  detach |         1        1.92       30.77
tuckund |        36       69.23      100.00
-----+-----+
  Total |        52      100.00

. tab garage gflr

  garage | Exp Floor of Grg
          |      None      Cantlvr      Other |      Total
-----+-----+-----+-----+
    None |         4        0        0 |        4
  attach |        10       1        0 |       11
  detach |         1        0        0 |        1
tuckund |        28       7        1 |       36
-----+-----+
  Total |        43       8        1 |       52

. sumstat gflrins gflrrnom gflrunom gflrreff gflrcpta if gflrarea>0
variable   N      Mean    StdErr +/-90ci      25%     50%     75%     min     max
gflrins   37     1.000    0.000    0.000    1.000    1.000    1.000    1.000    1.000
gflrrnom  37    24.51    0.93     1.58    19.00    25.00    30.00    13.00    30.00
gflrunom  37    0.0432   0.0018   0.0030   0.0333   0.0400   0.0526   0.0333   0.0769
gflrreff   37    18.86    0.74     1.25    15.00    19.00    23.00    9.00    25.00
gflrcpta  37   258.2    39.9    67.3    100.0    220.0    380.0    0.0    1368.0

. * areas & exposures / areas
. sumstat wintota winpct walltota wallnat - winwat
variable   N      Mean    StdErr +/-90ci      25%     50%     75%     min     max
wintota   52    359.0    21.8    36.6    247.5    324.5    437.5    107.0    902.0
winpct   52    0.129    0.005   0.009   0.105    0.116    0.151    0.077    0.260
walltota  52   2800.2   130.1   217.9   2224.0   2655.0   3052.0   1216.0   6686.0
wallnat   52    709.4    39.1    65.5    544.0    650.0    824.0    224.0    1852.0
doornat   52     8.92    1.91    3.20    0.00    0.00    21.00    0.00    52.00
drglnat   52    16.33    5.87    9.83    0.00    0.00    21.00    0.00    282.00
winnat    52    103.5    10.7    18.0    56.0    98.0    123.0    0.0    357.0
walleteat 52    680.2    33.3    55.9    514.0    636.0    796.0    368.0   1476.0
drgleat   52    12.23    3.89    6.51    0.00    0.00    12.00    0.00   160.00
wineat    52     80.0     8.7    14.6    26.0    67.5    123.5    0.0    245.0
wallsat   52    716.6    41.3    69.2    544.0    663.0    808.0    224.0   1852.0
drglsat   52    11.48    2.49    4.17    0.00    0.00    25.50    0.00    72.00
winsat    52    102.9     8.4    14.1    58.0    119.5    140.5    0.0    294.0
wallwat   52    694.0    34.4    57.7    522.0    640.0    843.5    368.0   1570.0
drglwat   52   10.519   3.278   5.491   0.000   0.000    8.500    0.000  120.000
winwat    52     72.5     8.4    14.2    13.0    66.0    119.5    0.0    217.0

```

```
* windows
. sumstat skyarea if skyarea>0
variable      N      Mean    StdErr +/-90ci      25%      50%      75%      min      max
skyarea      18     12.22     2.46     4.28      6.00     8.00    16.00     1.00    45.00
```

-> tabulation of w1style

| w1style | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| casement | 13 | 25.00 | 25.00 |
| dbl hung | 35 | 67.31 | 92.31 |
| slider | 1 | 1.92 | 94.23 |
| fixed | 3 | 5.77 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of w2style

| w2style | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| casement | 5 | 9.62 | 9.62 |
| dbl hung | 11 | 21.15 | 30.77 |
| slider | 12 | 23.08 | 53.85 |
| fixed | 24 | 46.15 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of w3style

| w3style | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| casement | 8 | 18.18 | 18.18 |
| slider | 20 | 45.45 | 63.64 |
| fixed | 16 | 36.36 | 100.00 |
| Total | 44 | 100.00 | |

-> tabulation of w1frtype

| w1frtype | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| Al w/Brk | 1 | 1.92 | 1.92 |
| Vinyl | 25 | 48.08 | 50.00 |
| Wood-pc | 3 | 5.77 | 55.77 |
| Wood | 23 | 44.23 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of w2frtype

| w2frtype | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| Al w/Brk | 2 | 3.85 | 3.85 |
| Al noBrk | 2 | 3.85 | 7.69 |
| Vinyl | 27 | 51.92 | 59.62 |
| Wood-pc | 2 | 3.85 | 63.46 |
| Wood | 19 | 36.54 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of w3frtype

| w3frtype | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| Al w/Brk | 4 | 9.09 | 9.09 |
| Al noBrk | 2 | 4.55 | 13.64 |
| Vinyl | 19 | 43.18 | 56.82 |
| Wood-mc | 2 | 4.55 | 61.36 |
| Wood-pc | 2 | 4.55 | 65.91 |
| Wood | 15 | 34.09 | 100.00 |
| Total | 44 | 100.00 | |

-> tabulation of skstyle

| skstyle | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| 1 | 2 | 11.11 | 11.11 |
| 2 | 16 | 88.89 | 100.00 |
| Total | 18 | 100.00 | |

-> tabulation of skfrtype

| skfrtype | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| Al noBrk | 1 | 5.56 | 5.56 |
| Wood-pc | 1 | 5.56 | 11.11 |
| Wood | 16 | 88.89 | 100.00 |
| Total | 18 | 100.00 | |

-> tabulation of sklayer

| sklayer | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| 2 | 18 | 100.00 | 100.00 |
| Total | 18 | 100.00 | |

```
. sumstat w1layer - wluval w2layer - w2storm w3layer - w3storm
variable   N      Mean    StdErr +/-90ci      25%     50%     75%     min      max
w1layer    52     1.962   0.027   0.045   2.000   2.000   2.000   1.000   2.000
w1gap      52     0.423   0.012   0.019   0.400   0.445   0.445   0.000   0.600
w1film     52     0       0       0       0       0       0       0       0       0
w1spacr    52     0       0       0       0       0       0       0       0       0
w1lowe     52     0.212   0.057   0.096   0.000   0.000   0.000   0.000   1.000
w1gas      52     0.500   0.070   0.117   0.000   0.500   1.000   0.000   1.000
w1storm    52     0       0       0       0       0       0       0       0       0
w1shgc     26     0.434   0.001   0.001   0.435   0.435   0.435   0.426   0.435
w1luval    26     0.310   0.002   0.003   0.300   0.310   0.320   0.300   0.320
w2layer    52     2.000   0.000   0.000   2.000   2.000   2.000   2.000   2.000
w2gap      52     0.440   0.011   0.018   0.400   0.445   0.445   0.200   0.600
w2film     52     0.019   0.019   0.032   0.000   0.000   0.000   0.000   1.000
w2spacr    52     0       0       0       0       0       0       0       0       0
w2lowe     52     0.173   0.053   0.089   0.000   0.000   0.000   0.000   1.000
w2gas      52     0.462   0.070   0.117   0.000   0.000   1.000   0.000   1.000
w2shgc     24     0.430   0.001   0.002   0.426   0.426   0.435   0.426   0.435
w2uval     24     0.306   0.002   0.003   0.300   0.300   0.320   0.300   0.320
w2storm    52     0       0       0       0       0       0       0       0       0
w3layer    44     1.932   0.038   0.065   2.000   2.000   2.000   1.000   2.000
w3gap      44     0.446   0.020   0.034   0.400   0.445   0.571   0.000   0.700
w3film     44     0       0       0       0       0       0       0       0       0
w3spacr    44     0       0       0       0       0       0       0       0       0
w3lowe     44     0.159   0.056   0.094   0.000   0.000   0.000   0.000   1.000
w3gas      44     0.455   0.076   0.128   0.000   0.000   1.000   0.000   1.000
w3shgc     20     0.427   0.000   0.001   0.426   0.426   0.426   0.426   0.435
w3uval     20     0.300   0.000   0.000   0.300   0.300   0.300   0.300   0.300
w3storm    44     0       0       0       0       0       0       0       0       0
```

```
. sumstat sklayer skgap skfilm skspacr sklowe skgas skstorm if skstyle>0
variable   N      Mean    StdErr +/-90ci      25%     50%     75%     min      max
sklayer    18     2.000   0.000   0.000   2.000   2.000   2.000   2.000   2.000
skgap      18     0.553   0.044   0.077   0.400   0.500   0.750   0.400   1.000
skfilm     18     0       0       0       0       0       0       0       0       0
skspacr    18     0       0       0       0       0       0       0       0       0
sklowe     18     0.278   0.109   0.189   0.000   0.000   1.000   0.000   1.000
skgas      18     0.056   0.056   0.097   0.000   0.000   0.000   0.000   1.000
skstorm    18     0       0       0       0       0       0       0       0       0
```

* water heater

-> tabulation of hwloc

| hwloc | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| bsmtuc | 37 | 71.15 | 71.15 |
| garage | 1 | 1.92 | 73.08 |
| cond sp | 14 | 26.92 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of hwfuel

| hwfuel | Freq. | Percent | Cum. |
|--------|-------|---------|--------|
| gas | 52 | 100.00 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of hwtype

| hwtype | Freq. | Percent | Cum. |
|--------|-------|---------|--------|
| std | 50 | 96.15 | 96.15 |
| other | 2 | 3.85 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of hwradd

| hwradd | Freq. | Percent | Cum. |
|--------|-------|---------|--------|
| 0 | 48 | 92.31 | 92.31 |
| 2 | 1 | 1.92 | 94.23 |
| 5 | 1 | 1.92 | 96.15 |
| 7 | 1 | 1.92 | 98.08 |
| 11 | 1 | 1.92 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of hwvent

| hwvent | Freq. | Percent | Cum. |
|--------|-------|---------|--------|
| 0 | 2 | 3.85 | 3.85 |
| atmo | 40 | 76.92 | 80.77 |
| power | 9 | 17.31 | 98.08 |
| sealed | 1 | 1.92 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of hwpipei

| hwpipei | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| 0 | 50 | 96.15 | 96.15 |
| 1 | 2 | 3.85 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of shwrlowf

| shwrlowf | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| 0 | 12 | 23.08 | 23.08 |
| 1 | 40 | 76.92 | 100.00 |
| Total | 52 | 100.00 | |

. sumstat hwsize hwef hwradd

| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min | max |
|----------|----|-------|--------|---------|-------|-------|-------|-------|--------|
| hwsize | 52 | 57.67 | 2.66 | 4.46 | 47.00 | 50.00 | 75.00 | 40.00 | 150.00 |
| hwef | 41 | 0.530 | 0.006 | 0.010 | 0.490 | 0.540 | 0.560 | 0.480 | 0.620 |
| hwradd | 52 | 0.48 | 0.27 | 0.44 | 0.00 | 0.00 | 0.00 | 0.00 | 11.00 |

. * heater
-> tabulation of ht1type

| ht1type | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| furnace | 44 | 84.62 | 84.62 |
| boiler | 8 | 15.38 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of ht1loc

| ht1loc | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| 0 | 1 | 1.92 | 1.92 |
| basement | 38 | 73.08 | 75.00 |
| attic | 1 | 1.92 | 76.92 |
| garage | 1 | 1.92 | 78.85 |
| inside | 11 | 21.15 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of ht1fuel

| ht1fuel | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| gas | 51 | 98.08 | 98.08 |
| oil | 1 | 1.92 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of ht1vent

| ht1vent | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| 0 | 3 | 5.77 | 5.77 |
| atmo | 6 | 11.54 | 17.31 |
| power | 41 | 78.85 | 96.15 |
| sealed | 2 | 3.85 | 100.00 |
| Total | 52 | 100.00 | |

. tab ht1loc fdntype

| ht1loc | fdntype | | | | Total |
|----------|---------|---------|----------|---------|-------|
| | slab | crawl-v | bsmt-cnd | bsmt-uc | |
| 0 | 0 | 0 | 0 | 1 | 1 |
| basement | 0 | 0 | 1 | 37 | 38 |
| attic | 1 | 0 | 0 | 0 | 1 |
| garage | 1 | 0 | 0 | 0 | 1 |
| inside | 3 | 2 | 4 | 2 | 11 |
| Total | 5 | 2 | 5 | 40 | 52 |

-> tabulation of ht2type if ht2type!= 0

| ht2type | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| furnace | 16 | 100.00 | 100.00 |
| Total | 16 | 100.00 | |

-> tabulation of ht2loc if ht2type!= 0

| ht2loc | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| basement | 3 | 18.75 | 18.75 |
| attic | 12 | 75.00 | 93.75 |
| inside | 1 | 6.25 | 100.00 |
| Total | 16 | 100.00 | |

-> tabulation of ht2fuel if ht2type!= 0

| ht2fuel | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| gas | 16 | 100.00 | 100.00 |
| Total | 16 | 100.00 | |

-> tabulation of ht2vent if ht2type!= 0

| ht2vent | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| power | 15 | 93.75 | 93.75 |
| sealed | 1 | 6.25 | 100.00 |
| Total | 16 | 100.00 | |

. sumstat ht1afue ht2afue ht1capi ht2capi

| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min | max |
|----------|----|-------|--------|---------|-------|-------|-------|-------|-------|
| ht1afue | 47 | 0.817 | 0.006 | 0.009 | 0.800 | 0.800 | 0.821 | 0.780 | 0.926 |
| ht2afue | 14 | 0.810 | 0.009 | 0.016 | 0.800 | 0.800 | 0.801 | 0.800 | 0.924 |
| ht1capi | 48 | 108.6 | 3.9 | 6.6 | 80.0 | 112.5 | 125.0 | 45.0 | 180.0 |
| ht2capi | 14 | 84.9 | 5.6 | 9.9 | 75.0 | 77.5 | 100.0 | 50.0 | 125.0 |

. tab ht1type, sum(ht1afue)

| ht1type | Summary of ht1afue | | |
|---------|--------------------|-----------|-------|
| | Mean | Std. Dev. | Freq. |
| furnace | .81550001 | .04112271 | 40 |
| boiler | .82300001 | .01144552 | 7 |
| Total | .81661703 | .03818522 | 47 |

```
. tab ht2type, sum(ht2afue)
```

| ht2type | Summary of ht2afue | | |
|---------|--------------------|-----------|-------|
| | Mean | Std. Dev. | Freq. |
| furnace | .80978572 | .03292224 | 14 |
| Total | .80978572 | .03292224 | 14 |

```
. *air conditioner
```

```
. tab1 ac1type ac1loc ac1fuel ac2type ac2loc ac2fuel
```

-> tabulation of ac1type

| ac1type | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| 1 | 50 | 100.00 | 100.00 |
| Total | 50 | 100.00 | |

-> tabulation of ac1loc

| ac1loc | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| basement | 38 | 76.00 | 76.00 |
| attic | 7 | 14.00 | 90.00 |
| garage | 1 | 2.00 | 92.00 |
| inside | 4 | 8.00 | 100.00 |
| Total | 50 | 100.00 | |

-> tabulation of ac1fuel

| ac1fuel | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| 1 | 50 | 100.00 | 100.00 |
| Total | 50 | 100.00 | |

-> tabulation of ac2type

| ac2type | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| 1 | 18 | 100.00 | 100.00 |
| Total | 18 | 100.00 | |

-> tabulation of ac2loc

| ac2loc | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| basement | 3 | 16.67 | 16.67 |
| attic | 15 | 83.33 | 100.00 |
| Total | 18 | 100.00 | |

-> tabulation of ac2fuel

| ac2fuel | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| 1 | 18 | 100.00 | 100.00 |
| Total | 18 | 100.00 | |

. sumstat ac1seer ac1ocap ac2seer ac2ocap ac1cfm ac2cfm ac1cfmpt ac2cfmpt
variable N Mean StdErr +/-90ci 25% 50% 75% min max
ac1seer 49 10.39 0.11 0.19 10.00 10.00 10.40 10.00 13.25
ac1ocap 49 39357 1343 2252 35000 39000 45500 21600 58000
ac2seer 17 10.44 0.19 0.33 10.00 10.00 10.40 10.00 12.05
ac2ocap 18 33144 1464 2547 28600 35400 36000 21600 42000
ac1cfm 34 1164.6 47.7 80.8 894.0 1193.0 1439.0 664.0 1670.0
ac2cfm 9 1024.9 80.3 149.3 783.0 1046.0 1153.0 717.0 1472.0
ac1cfmpt 32 371.9 15.5 26.3 317.2 371.4 435.8 168.0 565.0
ac2cfmpt 7 409.0 39.9 77.6 369.2 401.5 432.8 241.7 598.3

. *controls

. tabl nzones tstattyp tsbbtyp

-> tabulation of nzones

| nzones | Freq. | Percent | Cum. |
|--------|-------|---------|--------|
| 1 | 27 | 52.94 | 52.94 |
| 2 | 18 | 35.29 | 88.24 |
| 3 | 3 | 5.88 | 94.12 |
| 4 | 3 | 5.88 | 100.00 |
| Total | 51 | 100.00 | |

-> tabulation of tstattyp

| tstattyp | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| 0 | 1 | 1.92 | 1.92 |
| Manual | 15 | 28.85 | 30.77 |
| ClockSB | 28 | 53.85 | 84.62 |
| Progrmbl | 8 | 15.38 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of tsbbtyp

| tsbbtyp | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| 0 | 48 | 92.31 | 92.31 |
| 2 | 4 | 7.69 | 100.00 |
| Total | 52 | 100.00 | |

. sumstat thset thsbhrs thsbdeg tcset tcsuhrs tcsudeg

variable N Mean StdErr +/-90ci 25% 50% 75% min max
thset 51 69.31 0.33 0.55 68.00 70.00 70.00 62.00 76.00
thsbhrs 51 7.01 0.57 0.96 6.00 8.00 10.00 0.00 15.00
thsbdeg 51 4.275 0.446 0.747 2.000 4.000 6.000 0.000 12.000
tcset 49 72.12 0.56 0.94 70.00 70.00 75.00 65.00 80.00
tcsuhrs 49 3.469 0.853 1.431 0.000 0.000 8.000 0.000 24.000
tcsudeg 49 1.714 0.435 0.730 0.000 0.000 3.000 0.000 10.000

```
. sumstat thset thsbhrs thsbdeg if thsbdeg>0 & thsbhrs>0
variable N Mean StdErr +/-90ci 25% 50% 75% min max
thset 40 69.35 0.39 0.67 68.00 70.00 70.00 62.00 76.00
thsbhrs 40 8.94 0.31 0.53 8.00 8.00 10.00 4.00 15.00
thsbdeg 40 5.450 0.400 0.674 4.000 5.000 8.000 2.000 12.000
```

```
. sumstat tcset tcsuhrs tcsudeg if tcsuhrs>0 & tcsudeg>0
variable N Mean StdErr +/-90ci 25% 50% 75% min max
tcset 13 71.62 1.02 1.82 68.00 70.00 75.00 67.00 78.00
tcsuhrs 13 10.62 1.12 2.00 8.00 9.00 12.00 6.00 20.00
tcsudeg 13 6.462 0.550 0.981 5.000 7.000 8.000 3.000 10.000
```

. * fridges & appliances
-> tabulation of reftype

| reftype | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| 0 | 1 | 1.92 | 1.92 |
| 1door | 2 | 3.85 | 5.77 |
| topmount | 18 | 34.62 | 40.38 |
| botmount | 1 | 1.92 | 42.31 |
| SBS | 30 | 57.69 | 100.00 |
| Total | 52 | 100.00 | |

```
. sumstat refsize refyear refrate
variable N Mean StdErr +/-90ci 25% 50% 75% min max
refsize 49 22.33 0.36 0.60 21.20 22.00 23.60 18.00 30.00
refyear 51 1995.3 0.2 0.4 1995.0 1996.0 1996.0 1986.0 1996.0
refrate 32 840.3 27.1 46.0 758.5 821.5 942.0 533.0 1296.0
```

. tab reftype, sum(refrate)

| reftype | Summary of refrate | | |
|----------|--------------------|-----------|-------|
| | Mean | Std. Dev. | Freq. |
| 1door | 953 | 0 | 1 |
| topmount | 718.7 | 116.10058 | 10 |
| botmount | 594 | 0 | 1 |
| SBS | 907.8 | 124.67034 | 20 |
| Total | 840.3125 | 153.34768 | 32 |

-> tabulation of cookfuel

| cookfuel | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| electric | 8 | 15.38 | 15.38 |
| gas | 44 | 84.62 | 100.00 |
| Total | 52 | 100.00 | |

-> tabulation of dryfuel

| dryfuel | Freq. | Percent | Cum. |
|----------|-------|---------|--------|
| electric | 8 | 15.38 | 15.38 |
| gas | 44 | 84.62 | 100.00 |
| Total | 52 | 100.00 | |

```
. * duct system 1 areas & r-values
. tab disupbn if disupn<.
```

| disupbn | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| 0 | 43 | 89.58 | 89.58 |
| 1 | 1 | 2.08 | 91.67 |
| 2 | 2 | 4.17 | 95.83 |
| 4 | 1 | 2.08 | 97.92 |
| 6 | 1 | 2.08 | 100.00 |
| Total | 48 | 100.00 | |

```
. sumstat disupn - dlaretg if disupn<.
```

| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min | max |
|----------|----|-------|--------|---------|-------|-------|-------|-------|--------|
| disupn | 48 | 15.48 | 0.62 | 1.04 | 12.50 | 15.00 | 19.50 | 7.00 | 26.00 |
| disupbn | 48 | 0.312 | 0.158 | 0.265 | 0.000 | 0.000 | 0.000 | 0.000 | 6.000 |
| diretn | 48 | 4.479 | 0.363 | 0.610 | 2.000 | 4.500 | 7.000 | 1.000 | 10.000 |
| dlinstyp | 48 | 0.312 | 0.068 | 0.113 | 0.000 | 0.000 | 1.000 | 0.000 | 1.000 |
| dirsupa | 48 | 0.917 | 0.245 | 0.411 | 0.000 | 0.000 | 0.000 | 0.000 | 4.000 |
| diasupa | 48 | 77.0 | 22.7 | 38.0 | 0.0 | 0.0 | 0.0 | 0.0 | 607.0 |
| dirreta | 48 | 1.167 | 0.265 | 0.445 | 0.000 | 0.000 | 4.000 | 0.000 | 4.000 |
| dlareta | 48 | 32.69 | 9.99 | 16.76 | 0.00 | 0.00 | 39.00 | 0.00 | 296.00 |
| dirsupc | 48 | 0.167 | 0.117 | 0.196 | 0.000 | 0.000 | 0.000 | 0.000 | 4.000 |
| diasupc | 48 | 362.2 | 40.8 | 68.4 | 0.0 | 386.0 | 515.0 | 0.0 | 1150.0 |
| dirretc | 48 | 0.167 | 0.117 | 0.196 | 0.000 | 0.000 | 0.000 | 0.000 | 4.000 |
| dlaretc | 48 | 138.5 | 18.3 | 30.7 | 0.0 | 136.5 | 226.5 | 0.0 | 398.0 |
| dirsups | 48 | 0.083 | 0.083 | 0.140 | 0.000 | 0.000 | 0.000 | 0.000 | 4.000 |
| diasups | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| dirrets | 48 | 0.083 | 0.083 | 0.140 | 0.000 | 0.000 | 0.000 | 0.000 | 4.000 |
| dlarets | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| dirsupi | 48 | 0.083 | 0.083 | 0.140 | 0.000 | 0.000 | 0.000 | 0.000 | 4.000 |
| diasupi | 48 | 55.9 | 24.4 | 41.0 | 0.0 | 0.0 | 0.0 | 0.0 | 818.0 |
| dirreti | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| dlareti | 48 | 32.2 | 14.6 | 24.6 | 0.0 | 0.0 | 0.0 | 0.0 | 487.0 |
| dirsupg | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| diasupg | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| dirretg | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| dlaretg | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

.

| sumstat disupn - diaretg if disupn<. & dlinstyp>0 | | | | | | | | |
|---|----|-------|--------|---------|-------|-------|-------|-------------|
| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min max |
| d1supn | 15 | 15.47 | 1.23 | 2.16 | 12.00 | 16.00 | 20.00 | 7.00 21.00 |
| d1supbn | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| diretn | 15 | 3.733 | 0.714 | 1.257 | 1.000 | 4.000 | 7.000 | 1.000 7.000 |
| dlinstyp | 15 | 1.000 | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 1.000 1.000 |
| dirsupa | 15 | 2.933 | 0.473 | 0.833 | 0.000 | 4.000 | 4.000 | 0.000 4.000 |
| diasupa | 15 | 246.3 | 50.4 | 88.7 | 0.0 | 295.0 | 366.0 | 0.0 607.0 |
| dirreta | 15 | 3.467 | 0.363 | 0.640 | 4.000 | 4.000 | 4.000 | 0.000 4.000 |
| diareta | 15 | 101.5 | 23.9 | 42.1 | 34.0 | 71.0 | 169.0 | 0.0 296.0 |
| dirsupc | 15 | 0.267 | 0.267 | 0.470 | 0.000 | 0.000 | 0.000 | 0.000 4.000 |
| diasupc | 15 | 244.4 | 73.0 | 128.6 | 0.0 | 0.0 | 527.0 | 0.0 675.0 |
| dirretc | 15 | 0.267 | 0.267 | 0.470 | 0.000 | 0.000 | 0.000 | 0.000 4.000 |
| diaretc | 15 | 75.5 | 29.7 | 52.4 | 0.0 | 0.0 | 158.0 | 0.0 398.0 |
| dirsups | 15 | 0.267 | 0.267 | 0.470 | 0.000 | 0.000 | 0.000 | 0.000 4.000 |
| diasups | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| dirrets | 15 | 0.267 | 0.267 | 0.470 | 0.000 | 0.000 | 0.000 | 0.000 4.000 |
| diarets | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| dirsupi | 15 | 0.267 | 0.267 | 0.470 | 0.000 | 0.000 | 0.000 | 0.000 4.000 |
| diasupi | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| dirreti | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| diareti | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| dirsupg | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| diasupg | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| dirretg | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| diaretg | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |

| . sumstat disupn - diaretg if disupn<. & dlinstyp==0 | | | | | | | | |
|--|----|-------|--------|---------|-------|-------|-------|--------------|
| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min max |
| d1supn | 33 | 15.48 | 0.72 | 1.22 | 13.00 | 15.00 | 18.00 | 8.00 26.00 |
| d1supbn | 33 | 0.455 | 0.227 | 0.384 | 0.000 | 0.000 | 0.000 | 0.000 6.000 |
| diretn | 33 | 4.818 | 0.412 | 0.697 | 3.000 | 5.000 | 7.000 | 1.000 10.000 |
| dlinstyp | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| dirsupa | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| diasupa | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| dirreta | 33 | 0.121 | 0.121 | 0.205 | 0.000 | 0.000 | 0.000 | 0.000 4.000 |
| diareta | 33 | 1.42 | 1.42 | 2.41 | 0.00 | 0.00 | 0.00 | 0.00 47.00 |
| dirsupc | 33 | 0.121 | 0.121 | 0.205 | 0.000 | 0.000 | 0.000 | 0.000 4.000 |
| diasupc | 33 | 415.7 | 47.0 | 79.5 | 305.0 | 436.0 | 511.0 | 0.0 1150.0 |
| dirretc | 33 | 0.121 | 0.121 | 0.205 | 0.000 | 0.000 | 0.000 | 0.000 4.000 |
| diaretc | 33 | 167.1 | 21.4 | 36.2 | 60.0 | 153.0 | 252.0 | 0.0 382.0 |
| dirsups | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| diasups | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| dirrets | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| diarets | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| dirsupi | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| diasupi | 33 | 81.3 | 34.8 | 58.9 | 0.0 | 0.0 | 0.0 | 0.0 818.0 |
| dirreti | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| diareti | 33 | 46.9 | 20.9 | 35.4 | 0.0 | 0.0 | 0.0 | 0.0 487.0 |
| dirsupg | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| diasupg | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| dirretg | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |
| diaretg | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |

-> tab d1rsupa if d1asupa>0 & d1asupa<., sum(d1asupa)

| | | Summary of d1asupa | | |
|---------|--|--------------------|-----------|-------|
| d1rsupa | | Mean | Std. Dev. | Freq. |
| 4 | | 335.90909 | 142.013 | 11 |
| Total | | 335.90909 | 142.013 | 11 |

-> tab d1rreta if d1areta>0 & d1areta<., sum(d1areta)

| | | Summary of d1areta | | |
|---------|--|--------------------|-----------|-------|
| d1rreta | | Mean | Std. Dev. | Freq. |
| 4 | | 112.07143 | 87.944444 | 14 |
| Total | | 112.07143 | 87.944444 | 14 |

-> tab d1rsupc if d1asupc>0 & d1asupc<., sum(d1asupc)

| | | Summary of d1asupc | | |
|---------|--|--------------------|-----------|-------|
| d1rsupc | | Mean | Std. Dev. | Freq. |
| 0 | | 511.6875 | 190.61453 | 32 |
| 4 | | 505 | 179.60512 | 2 |
| Total | | 511.29412 | 187.38173 | 34 |

-> tab d1rretc if d1aretc>0 & d1aretc<., sum(d1aretc)

| | | Summary of d1aretc | | |
|---------|--|--------------------|-----------|-------|
| d1rretc | | Mean | Std. Dev. | Freq. |
| 0 | | 195.75 | 98.655804 | 32 |
| 4 | | 382 | 0 | 1 |
| Total | | 201.39394 | 102.37185 | 33 |

-> tab d1rsupi if d1asupi>0 & d1asupi<., sum(d1asupi)

| | | Summary of d1asupi | | |
|---------|--|--------------------|-----------|-------|
| d1rsupi | | Mean | Std. Dev. | Freq. |
| 0 | | 447 | 242.97654 | 6 |
| Total | | 447 | 242.97654 | 6 |

-> tab d1rreti if d1areti>0 & d1areti<., sum(d1areti)

| | | Summary of d1areti | | |
|---------|--|--------------------|-----------|-------|
| d1rreti | | Mean | Std. Dev. | Freq. |
| 0 | | 257.83333 | 164.39272 | 6 |
| Total | | 257.83333 | 164.39272 | 6 |

```
. * duct system 1 leakage rates, operating pressures, and % of total lkg in return
> n
. sumstat dlx1 dlt1 dlx1bdc dlx1bdo dltx1bdc dltx1bdo psupop1 pretop1 dirf1
variable    N      Mean   StdErr +/-90ci     25%     50%     75%   min   max
dlx1       40    299.4    43.5    73.3    83.0   188.5   498.0   23.0 1010.0
dlt1       40   1026.1    94.6   159.4   568.5   989.5  1355.8  181.0 2300.0
dlx1bdc     8    368.1   116.1   219.9   149.0   217.5   580.5   41.0 1010.0
dlx1bdo    32    282.2    46.6    78.9    78.5   184.5   414.5   23.0  938.0
dlt1bdc     9    463.7   125.4   233.1   187.0   347.0   660.0  181.0 1295.0
dltx1bdo   31   1189.4    99.2   168.4   735.0  1105.0  1559.9  467.0 2300.0
psupop1    45    34.16    2.39    4.02    24.00   30.00   45.00    5.00  81.00
pretop1    45   -75.29    4.81    8.09   -91.00  -73.00  -50.00  -147.00 -10.00
dirf1      44    0.430    0.021   0.036    0.358   0.445   0.539   0.044  0.634
```

-> tab ht1loc, sum(dlx1)

| ht1loc | Summary of dlx1 | | |
|----------|-----------------|-----------|-------|
| | Mean | Std. Dev. | Freq. |
| 0 | 150 | 0 | 1 |
| basement | 255.71429 | 237.54717 | 28 |
| attic | 562 | 0 | 1 |
| garage | 599 | 0 | 1 |
| inside | 389.33333 | 374.3097 | 9 |
| Total | 299.375 | 275.10853 | 40 |

-> tab ht1loc, sum(dlt1)

| ht1loc | Summary of dlt1 | | |
|----------|-----------------|-----------|-------|
| | Mean | Std. Dev. | Freq. |
| 0 | 181 | 0 | 1 |
| basement | 1052.6962 | 518.86539 | 28 |
| attic | 660 | 0 | 1 |
| garage | 746 | 0 | 1 |
| inside | 1109.1739 | 842.59353 | 9 |
| Total | 1026.1264 | 598.22992 | 40 |

```

. * duct system 2 areas & r-values
. sumstat d2supn - d2aretg if d2supn<.
variable   N    Mean   StdErr +/-90ci      25%     50%     75%     min     max
d2supn    16   11.94   0.74    1.29   10.00   11.00   14.00   8.00   18.00
d2supbn   16     0     0     0     0     0     0     0     0     0
d2retn    16   4.812   0.614   1.076   3.500   5.000   6.000   1.000  10.000
d2insttyp 16   0.812   0.101   0.177   1.000   1.000   1.000   0.000   1.000
d2rsupa   16   3.250   0.403   0.707   4.000   4.000   4.000   0.000   4.000
d2asupa   16  329.2   54.3   95.2   256.5  322.0  446.5   0.0   823.0
d2rreta   16   3.250   0.403   0.707   4.000   4.000   4.000   0.000   4.000
d2areta   16  119.5   23.3   40.8   54.0  113.5  180.0   0.0   319.0
d2rsupc   16     0     0     0     0     0     0     0     0     0
d2asupc   16   52.1   38.4   67.3   0.0     0.0     0.0     0.0   575.0
d2rretc   16     0     0     0     0     0     0     0     0     0
d2aretc   16   14.8   10.7   18.7   0.0     0.0     0.0     0.0   155.0
d2rsups   16     0     0     0     0     0     0     0     0     0
d2asups   16     0     0     0     0     0     0     0     0     0
d2rrets   16     0     0     0     0     0     0     0     0     0
d2arets   16     0     0     0     0     0     0     0     0     0
d2rsupi   16     0     0     0     0     0     0     0     0     0
d2asupi   16   32.6   32.6   57.2   0.0     0.0     0.0     0.0   522.0
d2rreti   16     0     0     0     0     0     0     0     0     0
d2areti   16   12.8   12.8   22.4   0.0     0.0     0.0     0.0   204.0
d2rsupg   16     0     0     0     0     0     0     0     0     0
d2asupg   16     0     0     0     0     0     0     0     0     0
d2rretg   16     0     0     0     0     0     0     0     0     0
d2aretg   16     0     0     0     0     0     0     0     0     0

. sumstat d2supn - d2aretg if d2supn<. & d2insttyp>0
variable   N    Mean   StdErr +/-90ci      25%     50%     75%     min     max
d2supn    13   11.92   0.80    1.42   10.00   10.00   14.00   9.00   18.00
d2supbn   13     0     0     0     0     0     0     0     0     0
d2retn    13   4.615   0.738   1.316   2.000   5.000   6.000   1.000  10.000
d2insttyp 13   1.000   0.000   0.000   1.000   1.000   1.000   1.000   1.000
d2rsupa   13   4.000   0.000   0.000   4.000   4.000   4.000   4.000   4.000
d2asupa   13  405.2   44.4   79.1   302.0  322.0  449.0  243.0  823.0
d2rreta   13   4.000   0.000   0.000   4.000   4.000   4.000   4.000   4.000
d2areta   13  147.1   22.3   39.7   77.0  139.0  180.0  33.0   319.0
d2rsupc   13     0     0     0     0     0     0     0     0     0
d2asupc   13     0     0     0     0     0     0     0     0     0
d2rretc   13     0     0     0     0     0     0     0     0     0
d2aretc   13     0     0     0     0     0     0     0     0     0
d2rsups   13     0     0     0     0     0     0     0     0     0
d2asups   13     0     0     0     0     0     0     0     0     0
d2rrets   13     0     0     0     0     0     0     0     0     0
d2arets   13     0     0     0     0     0     0     0     0     0
d2rsupi   13     0     0     0     0     0     0     0     0     0
d2asupi   13     0     0     0     0     0     0     0     0     0
d2rreti   13     0     0     0     0     0     0     0     0     0
d2areti   13     0     0     0     0     0     0     0     0     0
d2rsupg   13     0     0     0     0     0     0     0     0     0
d2asupg   13     0     0     0     0     0     0     0     0     0
d2rretg   13     0     0     0     0     0     0     0     0     0
d2aretg   13     0     0     0     0     0     0     0     0     0

```

```
. sumstat d2supn - d2aretg if d2supn<. & d2instyp==0
variable   N      Mean    StdErr +/-90ci      25%     50%     75%      min      max
d2supn     3      12.00    2.31     6.74     8.00    12.00    16.00     8.00    16.00
d2supbn    3       0       0       0       0       0       0       0       0       0
d2retn     3      5.667   0.667    1.947    5.000   5.000    7.000    5.000   7.000
d2instyp   3       0       0       0       0       0       0       0       0       0
d2rsupa    3       0       0       0       0       0       0       0       0       0
d2asupa    3       0       0       0       0       0       0       0       0       0
d2rreta    3       0       0       0       0       0       0       0       0       0
d2areta    3       0       0       0       0       0       0       0       0       0
d2rsupc    3       0       0       0       0       0       0       0       0       0
d2asupc    3     278.0   166.3    485.5     0.0    259.0    575.0     0.0    575.0
d2rretc    3       0       0       0       0       0       0       0       0       0
d2aretc    3     79.0    44.8    130.7     0.0    82.0    155.0     0.0    155.0
d2rsups    3       0       0       0       0       0       0       0       0       0
d2asups    3       0       0       0       0       0       0       0       0       0
d2rrets    3       0       0       0       0       0       0       0       0       0
d2arets    3       0       0       0       0       0       0       0       0       0
d2rsupi    3       0       0       0       0       0       0       0       0       0
d2asupi    3     174.0   174.0    508.1     0.0     0.0    522.0     0.0    522.0
d2rreti    3       0       0       0       0       0       0       0       0       0
d2areti    3     68.0    68.0    198.6     0.0     0.0    204.0     0.0    204.0
d2rsupg    3       0       0       0       0       0       0       0       0       0
d2asupg    3       0       0       0       0       0       0       0       0       0
d2rretg    3       0       0       0       0       0       0       0       0       0
d2aretg    3       0       0       0       0       0       0       0       0       0
```

-> tab d2rsupa if d2asupa>0 & d2asupa<., sum(d2asupa)

| Summary of d2asupa | | | |
|--------------------|-----------|-----------|-------|
| d2rsupa | Mean | Std. Dev. | Freq. |
| 4 | 405.23077 | 160.04591 | 13 |
| Total | 405.23077 | 160.04591 | 13 |

-> tab d2rreta if d2areta>0 & d2areta<., sum(d2areta)

| Summary of d2areta | | | |
|--------------------|-----------|-----------|-------|
| d2rreta | Mean | Std. Dev. | Freq. |
| 4 | 147.07692 | 80.356976 | 13 |
| Total | 147.07692 | 80.356976 | 13 |

-> tab d2rsupc if d2asupc>0 & d2asupc<., sum(d2asupc)

| Summary of d2asupc | | | |
|--------------------|------|-----------|-------|
| d2rsupc | Mean | Std. Dev. | Freq. |
| 0 | 417 | 223.44574 | 2 |
| Total | 417 | 223.44574 | 2 |

-> tab d2rretc if d2aretc>0 & d2aretc<., sum(d2aretc)

| | | Summary of d2aretc | | |
|--|-------|--------------------|-----------|-------|
| | | Mean | Std. Dev. | Freq. |
| | 0 | 118.5 | 51.618795 | 2 |
| | Total | 118.5 | 51.618795 | 2 |

-> tab d2rsupi if d2asupi>0 & d2asupi<., sum(d2asupi)

| | | Summary of d2asupi | | |
|--|-------|--------------------|-----------|-------|
| | | Mean | Std. Dev. | Freq. |
| | 0 | 522 | 0 | 1 |
| | Total | 522 | 0 | 1 |

-> tab d2rreti if d2areti>0 & d2areti<., sum(d2areti)

| | | Summary of d2areti | | |
|--|-------|--------------------|-----------|-------|
| | | Mean | Std. Dev. | Freq. |
| | 0 | 204 | 0 | 1 |
| | Total | 204 | 0 | 1 |

. * duct sys 2 lkg rates, operating p, and % total lkg in return
 . sumstat dlx2 dlt2 dlx2bdc dlx2bdo dlt2bdc dlt2bdo psupop2 pretop2 d2rf1

| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min | max |
|----------|----|--------|--------|---------------|--------|--------|---------|--------|-----|
| dlx2 | 11 | 263.3 | 43.0 | 78.0 - 319.0 | 313.0 | 400.0 | 24.0 | 461.0 | |
| dlt2 | 11 | 644.4 | 132.8 | 240.6 - 362.0 | 461.0 | 836.0 | 153.0 | 1567.0 | |
| dlx2bdc | 6 | 318.8 | 45.5 | 91.7 - 266.0 | 323.0 | 401.0 | 139.0 | 461.0 | |
| dlx2bdo | 5 | 196.6 | 71.0 | 151.5 - 71.0 | 175.0 | 313.0 | 24.0 | 400.0 | |
| dlt2bdc | 6 | 406.7 | 60.2 | 121.3 - 343.0 | 446.0 | 461.0 | 153.0 | 591.0 | |
| dlt2bdo | 5 | 929.6 | 232.9 | 496.4 - 525.0 | 836.0 | 1358.0 | 362.0 | 1567.0 | |
| psupop2 | 16 | 45.12 | 5.21 | 9.13 - 32.00 | 39.00 | 48.50 | 23.00 | 93.00 | |
| pretop2 | 16 | -61.31 | 8.02 | 14.06 - 76.50 | -52.50 | -39.00 | -132.00 | -15.00 | |
| d2rf1 | 14 | 0.419 | 0.044 | 0.077 - 0.339 | 0.398 | 0.571 | 0.149 | 0.735 | |

-> tab ht2loc, sum(dlx2)

| | | Summary of dlx2 | | |
|----------|-------|-----------------|-----------|-------|
| | | Mean | Std. Dev. | Freq. |
| | 0 | 139 | 0 | 1 |
| basement | | 298.66667 | 114.15049 | 3 |
| attic | | 298.33333 | 151.14982 | 6 |
| inside | | 71 | 0 | 1 |
| | Total | 263.27273 | 142.77191 | 11 |

-> tab ht2loc, sum(dlt2)

| ht2loc | Summary of dlt2 | | | |
|----------|-----------------|-----------|-------|--|
| | Mean | Std. Dev. | Freq. | |
| 0 | 153 | 0 | 1 | |
| basement | 884 | 451.91592 | 3 | |
| attic | 452.66667 | 94.90346 | 6 | |
| inside | 1567 | 0 | 1 | |
| Total | 644.36364 | 440.33493 | 11 | |

. * duct imbalance / door closure room depress.- avg absval & #>3pascal

. sumstat d1depAav d2depAav d1depgt3 d2depgt3

| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min | max |
|----------|----|-------|--------|---------|-------|-------|-------|-------|-------|
| d1depAav | 48 | 1.848 | 0.143 | 0.241 | 1.187 | 1.500 | 2.329 | 0.378 | 5.325 |
| d2depAav | 16 | 2.383 | 0.228 | 0.399 | 1.713 | 2.281 | 3.012 | 0.767 | 3.867 |
| d1depgt3 | 48 | 1.104 | 0.246 | 0.413 | 0.000 | 0.000 | 2.000 | 0.000 | 7.000 |
| d2depgt3 | 16 | 1.875 | 0.407 | 0.713 | 0.000 | 2.000 | 3.000 | 0.000 | 5.000 |

. * combustion zone depress.

. sumstat czp*

| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min | max |
|----------|----|--------|--------|---------|--------|--------|--------|---------|-------|
| czp1 | 52 | -4.575 | 0.551 | 0.924 | -4.950 | -4.150 | -2.900 | -26.100 | 1.700 |
| czp2 | 40 | -4.607 | 0.676 | 1.139 | -5.000 | -3.800 | -2.650 | -27.000 | 0.900 |
| czp3 | 23 | -4.617 | 1.128 | 1.936 | -4.800 | -3.400 | -2.600 | -27.000 | 1.700 |

. * basement/house dP with a/h on, both absolute value and as is stats

. sumstat Apbhahon pbhahon

| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min | max |
|----------|----|--------|--------|---------|--------|--------|-------|--------|-------|
| Apbhahon | 44 | 1.355 | 0.232 | 0.391 | 0.200 | 0.650 | 2.100 | 0.000 | 5.900 |
| pbhahon | 44 | -0.927 | 0.277 | 0.466 | -1.850 | -0.200 | 0.200 | -5.900 | 2.200 |

. sumstat Apbhahon pbhahon if ht1loc==1 | ht2loc==1

| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min | max |
|----------|----|--------|--------|---------|--------|--------|-------|--------|-------|
| Apbhahon | 38 | 1.363 | 0.257 | 0.433 | 0.200 | 0.600 | 2.200 | 0.000 | 5.900 |
| pbhahon | 38 | -0.937 | 0.304 | 0.513 | -1.900 | -0.150 | 0.200 | -5.900 | 2.200 |

. * shell leakage

. sumstat qhbo qhbc pb50bdc dqbdmc nsummer nwinter volume ach*

| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min | max |
|----------|----|--------|--------|---------|--------|--------|--------|--------|--------|
| qhbo | 44 | 3491.3 | 180.7 | 303.7 | 2623.5 | 3256.0 | 4146.0 | 1450.0 | 6177.0 |
| qhbc | 51 | 3104.6 | 152.3 | 255.2 | 2311.0 | 3000.0 | 3892.0 | 1277.0 | 6000.0 |
| pb50bdc | 46 | 33.68 | 1.67 | 2.80 | 28.80 | 36.50 | 42.00 | 6.00 | 50.00 |
| dqbdmc | 43 | 291.5 | 56.1 | 94.3 | 83.0 | 225.0 | 345.0 | -178.0 | 1824.0 |
| nsummer | 52 | 25.61 | 0.10 | 0.16 | 25.70 | 25.70 | 25.70 | 22.00 | 27.60 |
| nwinter | 52 | 15.66 | 0.06 | 0.11 | 15.70 | 15.70 | 15.70 | 13.30 | 17.50 |
| volume | 52 | 22378 | 1296 | 2172 | 17272 | 20000 | 25188 | 9584 | 64000 |
| achbos | 44 | 0.377 | 0.017 | 0.028 | 0.304 | 0.358 | 0.428 | 0.203 | 0.642 |
| achbow | 44 | 0.616 | 0.027 | 0.046 | 0.487 | 0.587 | 0.701 | 0.332 | 1.051 |
| achbcw | 51 | 0.559 | 0.020 | 0.033 | 0.453 | 0.536 | 0.634 | 0.332 | 0.979 |
| achbcs | 51 | 0.342 | 0.012 | 0.020 | 0.277 | 0.327 | 0.388 | 0.203 | 0.598 |

```

. sumstat qhbo qhbc pb50bdc dqbdock nsummer nwinter volume ach* if qhbo<. & qhbc<
> .
variable N Mean StdErr +/-90ci 25% 50% 75% min max
qhbo 43 3450.4 180.1 302.9 2612.0 3256.0 4146.0 1450.0 6177.0
qhbc 43 3158.9 162.7 273.7 2386.0 3000.0 3892.0 1450.0 6000.0
pb50bdc 43 33.77 1.61 2.70 28.80 36.00 42.00 8.00 48.00
dqbdock 43 291.5 56.1 94.3 83.0 225.0 345.0 -178.0 1824.0
nsummer 43 25.66 0.10 0.16 25.70 25.70 25.70 22.00 27.60
nwinter 43 15.71 0.05 0.09 15.70 15.70 15.70 14.40 17.50
volume 43 22360 1399 2352 17016 20272 24544 9584 64000
achbos 43 0.378 0.017 0.029 0.300 0.358 0.434 0.203 0.642
achbow 43 0.618 0.028 0.047 0.484 0.587 0.710 0.332 1.051
achbcw 43 0.563 0.023 0.038 0.453 0.536 0.676 0.332 0.979
achbcs 43 0.344 0.014 0.023 0.277 0.327 0.413 0.203 0.598

. sumstat qhbo qhbc pb50bdc dqbdock nsummer nwinter volume achbos achbow achbcw a
> chbcs if bxiwins | biwins
variable N Mean StdErr +/-90ci 25% 50% 75% min max
qhbo 8 3747.5 452.6 857.5 2958.0 3258.0 4714.5 2119.0 6000.0
qhbc 8 3615.2 465.5 882.0 2741.5 3190.0 4531.5 1996.0 6000.0
pb50bdc 8 35.84 4.00 7.58 32.35 37.25 43.75 12.00 48.00
dqbdock 8 132.2 45.7 86.7 44.0 91.5 218.5 0.0 350.0
nsummer 8 25.70 0.00 0.00 25.70 25.70 25.70 25.70 25.70
nwinter 8 15.70 0.00 0.00 15.70 15.70 15.70 15.70 15.70
volume 8 25589 5680 10761 17080 20216 25924 14272 64000
achbos 8 0.372 0.025 0.047 0.353 0.385 0.420 0.219 0.443
achbow 8 0.609 0.041 0.077 0.577 0.631 0.687 0.358 0.726
achbcw 8 0.584 0.040 0.076 0.528 0.614 0.657 0.358 0.718
achbcs 8 0.357 0.024 0.046 0.322 0.375 0.401 0.219 0.439

. * result from pressure diagnostics calcs on basement
. * cfm50 bsmt/house, bsmt/out, bsmt tot, bsmt% of full CFM50 (door closed&open)
. sumstat qbhdq qbopd qbtpd qbpccto qbpcctc if qbopd>0
variable N Mean StdErr +/-90ci 25% 50% 75% min max
qbhdq 30 3274.7 664.8 1129.5 1447.8 2119.7 3314.6 196.7 16690.1
qbopd 30 1612.4 145.0 246.4 1082.4 1450.3 2066.0 458.2 3412.0
qbtpd 30 1208.9 123.6 210.0 823.8 1022.6 1401.1 168.2 3232.0
qbpccto 30 0.492 0.049 0.083 0.306 0.401 0.549 0.130 1.295
qbpcctc 30 0.431 0.053 0.089 0.252 0.330 0.452 0.052 1.316

. sumstat qbhdq qbopd qbtpd qbpccto qbpcctc if qbopd>0 & dqbdock>=200
variable N Mean StdErr +/-90ci 25% 50% 75% min max
qbhdq 22 2358.0 301.5 518.8 1447.8 1963.3 3179.7 196.7 6291.8
qbopd 22 1647.0 146.3 251.7 1173.8 1488.1 2066.0 458.2 3385.2
qbtpd 22 1147.1 103.9 178.8 850.4 1040.5 1391.6 168.2 2314.0
qbpccto 22 0.468 0.042 0.073 0.339 0.420 0.546 0.130 0.939
qbpcctc 22 0.392 0.046 0.079 0.257 0.342 0.438 0.052 0.931

```

. * Manual J & Equip Sizing

. sumstat mj* htcaptot htsize

| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min | max |
|-----------|----|--------|--------|---------|--------|--------|--------|--------|---------|
| mjcinfil | 52 | 1770.0 | 102.9 | 172.4 | 1231.3 | 1538.7 | 2094.8 | 592.1 | 3580.2 |
| mjcattic | 52 | 2465.1 | 152.8 | 256.0 | 1816.8 | 2226.5 | 2721.4 | 1259.4 | 6567.8 |
| mjcfloor | 52 | 145.6 | 26.1 | 43.8 | 0.0 | 95.2 | 188.7 | 0.0 | 1093.1 |
| mjcwall | 52 | 4518.5 | 236.9 | 396.8 | 3180.3 | 4265.1 | 5616.6 | 1698.5 | 8813.8 |
| mjcwin | 52 | 12720 | 1098 | 1840 | 7948 | 11470 | 15433 | 3173 | 48457 |
| mjcdoor | 52 | 331.6 | 18.3 | 30.7 | 244.0 | 346.1 | 385.6 | 0.0 | 586.1 |
| mjcdrg | 52 | 1712.8 | 323.9 | 542.7 | 664.0 | 1144.2 | 2445.6 | 0.0 | 16336.8 |
| mjcincn | 52 | 2607.7 | 32.5 | 54.4 | 2400.0 | 2700.0 | 2700.0 | 2100.0 | 3600.0 |
| mjcductg | 52 | 3079.3 | 259.5 | 434.7 | 1891.3 | 3035.2 | 4260.0 | 0.0 | 8864.3 |
| mjctots | 52 | 29351 | 1712 | 2867 | 21473 | 26649 | 34212 | 12446 | 72006 |
| mjlatp | 52 | 1079.2 | 24.9 | 41.7 | 920.0 | 1150.0 | 1150.0 | 690.0 | 1840.0 |
| mjlatinf | 52 | 2580.0 | 130.2 | 218.1 | 1928.1 | 2488.1 | 3129.8 | 686.3 | 5027.4 |
| mjtottlat | 52 | 3659.3 | 146.1 | 244.7 | 2840.6 | 3634.6 | 4279.8 | 1606.3 | 6867.4 |
| mjttotal | 52 | 33010 | 1832 | 3070 | 24972 | 30150 | 38563 | 14052 | 78873 |
| mjhinfil | 52 | 17320 | 905 | 1517 | 12319 | 16492 | 21202 | 5224 | 31589 |
| mjhattic | 52 | 5326.8 | 318.0 | 532.7 | 3865.3 | 4787.3 | 5772.1 | 2819.5 | 13401.4 |
| mjhffloor | 52 | 11647 | 867 | 1452 | 8473 | 10905 | 14014 | 1915 | 38030 |
| mjhwall | 52 | 19727 | 1264 | 2117 | 10931 | 18763 | 25703 | 5160 | 41978 |
| mjhwin | 52 | 11554 | 725 | 1214 | 7455 | 10364 | 14282 | 3537 | 29820 |
| mjhdoor | 52 | 1082.2 | 59.6 | 99.8 | 785.8 | 1184.4 | 1184.4 | 0.0 | 1987.2 |
| mjhdrog | 52 | 1568.1 | 278.6 | 466.8 | 743.9 | 1190.2 | 1743.9 | 0.0 | 13290.1 |
| mjhingn | 52 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| mjhductg | 52 | 11272 | 1111 | 1861 | 2359 | 12544 | 18045 | 0 | 23822 |
| mjhtots | 52 | 79498 | 3751 | 6284 | 60854 | 77583 | 95070 | 28974 | 157442 |
| htcaptot | 49 | 130694 | 6210 | 10416 | 100000 | 125000 | 150000 | 60000 | 250000 |
| htsize | 49 | 1.756 | 0.092 | 0.155 | 1.349 | 1.630 | 1.999 | 0.611 | 4.718 |

. sumstat accaptot acd* mjctots mjtottlat mjtotal, cw

| variable | N | Mean | StdErr | +/-90ci | 25% | 50% | 75% | min | max |
|-----------|----|--------|--------|---------|--------|--------|--------|--------|--------|
| accaptot | 46 | 50733 | 2373 | 3986 | 39000 | 46000 | 58400 | 28200 | 93100 |
| adcaps | 46 | 37542 | 1756 | 2950 | 28860 | 34040 | 43216 | 20868 | 68894 |
| adcapl | 46 | 11161 | 522 | 877 | 8580 | 10120 | 12848 | 6204 | 20482 |
| adcapt | 46 | 48703 | 2278 | 3827 | 37440 | 44160 | 56064 | 27072 | 89376 |
| acdsizet | 46 | 1.589 | 0.050 | 0.083 | 1.282 | 1.571 | 1.786 | 1.160 | 2.871 |
| acdsizel | 46 | 3.146 | 0.108 | 0.181 | 2.595 | 2.981 | 3.517 | 1.908 | 5.001 |
| acdsizes | 46 | 1.393 | 0.046 | 0.077 | 1.106 | 1.381 | 1.581 | 0.982 | 2.575 |
| acdsztbn | 46 | 1.451 | 0.052 | 0.088 | 1.250 | 1.500 | 1.750 | 1.000 | 2.750 |
| acdszln | 46 | 3.027 | 0.113 | 0.190 | 2.500 | 2.750 | 3.500 | 1.750 | 5.000 |
| acdszsbn | 46 | 1.293 | 0.046 | 0.078 | 1.000 | 1.250 | 1.500 | 0.750 | 2.500 |
| mjctots | 46 | 27990 | 1543 | 2592 | 21410 | 26649 | 33459 | 12446 | 67959 |
| mjtottlat | 46 | 3584.6 | 128.9 | 216.4 | 2877.4 | 3634.6 | 4156.4 | 1606.3 | 5529.7 |
| mjttotal | 46 | 31575 | 1640 | 2753 | 24925 | 30150 | 37444 | 14052 | 72888 |

. * Binned Sizing Fractions, each figure is bottom of bin:

. tab htzbm

| htzbm | Freq. | Percent | Cum. |
|-------|-------|---------|--------|
| .5 | 1 | 2.04 | 2.04 |
| 1 | 8 | 16.33 | 18.37 |
| 1.25 | 10 | 20.41 | 38.78 |
| 1.5 | 8 | 16.33 | 55.10 |
| 1.75 | 10 | 20.41 | 75.51 |
| 2 | 6 | 12.24 | 87.76 |
| 2.25 | 2 | 4.08 | 91.84 |
| 2.5 | 1 | 2.04 | 93.88 |
| 2.75 | 2 | 4.08 | 97.96 |
| 4.5 | 1 | 2.04 | 100.00 |
| Total | 49 | 100.00 | |

-> tabulation of acdsztn

AC t-cap

sizing,

binned

| | Freq. | Percent | Cum. |
|-------|-------|---------|--------|
| 1 | 8 | 17.39 | 17.39 |
| 1.25 | 14 | 30.43 | 47.83 |
| 1.5 | 10 | 21.74 | 69.57 |
| 1.75 | 10 | 21.74 | 91.30 |
| 2 | 3 | 6.52 | 97.83 |
| 2.75 | 1 | 2.17 | 100.00 |
| Total | 46 | 100.00 | |

-> tabulation of acdszln

AC l-cap

sizing,

binned

| | Freq. | Percent | Cum. |
|-------|-------|---------|--------|
| 1.75 | 1 | 2.17 | 2.17 |
| 2 | 2 | 4.35 | 6.52 |
| 2.25 | 7 | 15.22 | 21.74 |
| 2.5 | 4 | 8.70 | 30.43 |
| 2.75 | 10 | 21.74 | 52.17 |
| 3 | 4 | 8.70 | 60.87 |
| 3.25 | 6 | 13.04 | 73.91 |
| 3.5 | 4 | 8.70 | 82.61 |
| 3.75 | 1 | 2.17 | 84.78 |
| 4 | 3 | 6.52 | 91.30 |
| 4.5 | 1 | 2.17 | 93.48 |
| 4.75 | 2 | 4.35 | 97.83 |
| 5 | 1 | 2.17 | 100.00 |
| Total | 46 | 100.00 | |

-> tabulation of acdszsbn

| AC s-cap sizing, binned | Freq. | Percent | Cum. |
|-------------------------------|-------|---------|--------|
| .75 | 1 | 2.17 | 2.17 |
| 1 | 16 | 34.78 | 36.96 |
| 1.25 | 10 | 21.74 | 58.70 |
| 1.5 | 15 | 32.61 | 91.30 |
| 1.75 | 3 | 6.52 | 97.83 |
| 2.5 | 1 | 2.17 | 100.00 |
| Total | 46 | 100.00 | |