

# Table of Contents

Table of Figures	iii
Table of Tables	v
Preface	ix
<b>1. Site Planning</b>	<b>1</b>
Changing Times – Professional Advice	1
Surveys	1
Location and Size	2
Drainage	2
Earthwork	2
Views and Access	3
Understanding Solar Position	3
Natural Cooling	4
Natural Ventilation	6
Landscaping and Trees	10
<b>2. The House as a System</b>	<b>13</b>
Concepts	14
Systems in a Home	21
Systems are Interdependent	29
<b>3. Energy Efficient Features</b>	<b>31</b>
Achieving Energy Efficiency	31
Appendix – Energy Star Homes Technical Resources	47
<b>4. Air Leakage Sealing - Materials and Techniques</b>	<b>53</b>
Air Leakage Driving Forces	54
Materials	58
Seal Penetrations and Bypasses	58
Airtight Drywall Method	64
Housewrap Air Barriers	67
<b>5. Insulation Materials and Techniques</b>	<b>73</b>
Insulation Materials	73
Foundation Insulation	77
Basement Wall Insulation	78
Framed Floor Insulation	81
Wall Construction	85
Ceilings and Roofs	98

<b>6. <i>Windows and Doors</i></b>	<b>109</b>
Windows_____	109
Doors_____	121
Overall Window and Door Recommendations_____	122
<b>7. <i>Heating, Ventilation, and Air Conditioning</i></b>	<b>123</b>
Types of HVAC Systems_____	123
Air Conditioning Equipment_____	126
Heating Systems_____	129
Ventilation and Indoor Air Quality_____	137
Overall HVAC Recommendations_____	142
<b>8. <i>Duct Design and Sealing</i></b>	<b>143</b>
Duct Materials_____	143
The Problem of Duct Leakage_____	144
Duct Design_____	151
Conclusion_____	157
<b>9. <i>Water Heating, Appliances and Lighting</i></b>	<b>159</b>
Water Heating_____	159
Appliances_____	165
Lighting_____	168
<b>10. <i>Energy Efficient Roofing</i></b>	<b>173</b>
The Roof Structure (A Good Foundation!)_____	173
Green Roofs_____	184
<b>11. <i>Fingertip Facts</i></b>	<b>187</b>
Abbreviations_____	187
Energy and Fuel Data_____	187
Average Daily Solar Radiation_____	187
Insulating Values_____	188
HVAC Equipment Efficiencies_____	189
Climatic Data for Louisiana_____	189