Current state S[3–0]	Op [5–0]					
	000000 (R-format)	000010 (jmp)	000100 (beq)	100011 (lw)	101011 (sw)	Any other value
0000	0001	0001	0001	0001	0001	0001
0001	0110	1001	1000	0010	0010	Illegal
0010	XXXX	XXXX	XXXX	0011	0101	Illegal
0011	0100	0100	0100	0100	0100	Illegal
0100	0000	0000	0000	0000	0000	Illegal
0101	0000	0000	0000	0000	0000	Illegal
0110	0111	0111	0111	0111	0111	Illegal
0111	0000	0000	0000	0000	0000	Illegal
1000	0000	0000	0000	0000	0000	Illegal
1001	0000	0000	0000	0000	0000	Illegal

FIGURE D.3.8 This table contains the lower 4 bits of the control word (the NS outputs), which depend on both the state inputs, S[3–0], and the opcode, Op[5–0], which correspond to the instruction opcode. These values can be determined from Figure D.3.5. Th e opcode name is shown under the encoding in the heading. Th e four bits of the control word whose address is given by the current-state bits and Op bits are shown in each entry. For example, when the state input bits are 0000, the output is always 0001, independent of the other inputs; when the state is 2, the next state is don't care for three of the inputs, 3 for lw, and 5 for sw. Together with the entries in Figure D.3.7, this table specifies the contents of the control unit ROM. For example, the word at address 1000110001 is obtained by fi nding the upper 16 bits in the table in Figure D.3.7 using only the state input bits (0001) and concatenating the lower four bits found by using the entire address (0001 to fi nd the row and 100011 to fi nd the column). The entry from Figure D.3.7 yields 0000000000011000, while the appropriate entry in the table immediately above is 0010. Th us the control word at address 1000110001 is 00000000000110000010. The column labeled "Any other value" applies only when the Op bits do not match one of the specified opcodes.