

Three.

MAJOR CONSIDERATIONS IN THE DESIGN & CONSTRUCTION OF HYBRID HOUSING

Being a "hybrid," the form of this building type is shaped not only by those economic, structural, regulatory and social factors influencing residential and commercial establishments separately, but by additional factors that impinge on the *joining* of residential and business uses. It is to this unique combination that the material in this chapter is directed.

**OCCUPATIONAL
REQUIREMENTS
AND
SAFETY**

Since hybrid housing includes a myriad of occupations (see below), the functions, equipment and work requirements of the particular occupation need to be considered in designing the home business space. Several books provide specific information on how to establish such areas in the home.¹⁰

OCCUPATIONAL PROFILE OF HOME-BASED WORKERS

*(including company-employed, self-employed,
& contract workers, full and part time)¹¹*

Construction Trades	15.7%
Executive, manager	9.2
Sales	8.7
Engineer, scientist	8.0
Business consultant	6.4
Technician, computer programmer	6.0
Government, public sector	5.0
Arts, music	5.0
Health-care professional	4.0
Precision production	3.0
Lawyer, accountant	2.9
Clerical	2.7
Teacher	2.0
Other manual and skilled occupations	21.4

Special attention must be given to occupational requirements which may impinge on safety, noise and activities in other parts of the home. Listed below are several structural and design issues to consider when the occupation demands non-residential equipment and materials in the home, as well as clients and employees who visit and use the residence for business purposes.¹²

- Large door openings from the street entry to the work space are necessary if large objects are continually passing through the house. If such movement is regular and frequent, a separate street entry to the work space might be more compatible.
- For occupations requiring disposal of major wastes and materials (e.g. photography), wide toilet and industrial drains are necessary.
- In multi-unit hybrid housing, loading docks and/or freight elevators greatly assist tenants in moving materials and equipment to their units.
- A careful study of electrical usage is necessary for those occupations with high equipment usage or technical storage. This should be reflected in amperage and the number of electrical outlets.
- Fireproof and explosion-proof construction of storage areas needs to be provided for flammable work materials (e.g. acids, caustics). In some cases paint spray booths may be mandatory.
- There should be provision made for hazardous waste material.
- Particularly for cases of emergency, exit doors and telephones should be available within both residential and business zones of the home.
- Sprinkler systems should be installed in areas where combustible materials are being used or stored.
- Walls and ceilings between units must be non-combustible or fire retardant if not of bearing wall construction. Floors should be of load bearing capability, with non-fireproof floor surfaces.
- The size and volume of the work space should be sufficient to the appropriate work concerns.
- Unpredictable and uncontrollable noise tends to have more deleterious impact on people than controllable and predictable noise. However, what is predictable and controllable in one area of the home may not be so in the other. Acoustical separation materials (e.g. solid core doors with acoustical seals) and the spatial layout of the home (see

“Privacy and Social Connection” section) are important considerations in maximizing separation of noisy from quiet areas.

- Indoor pollution in homes needs to be considered. If the home does not have adequate ventilation, the longer one stays in the structure — in both living and working there — increases the chances of being exposed to unhealthy pollutants. Potentially dangerous elements in many homes include: asbestos (in insulation, fire retardants), formaldehyde (in insulation and adhesives, such as in carpeting, particleboard, plywood, paneling), radon (found in stone, concrete and brick), and cleaning agents (e.g. trichloroethane in cleaning solvent, potassium hydroxide in oven cleaners, morpholine in furniture polish, ammonium hydroxide in window cleaners).

To rectify and prevent, design considerations include: sufficient ventilation of the home (as appropriate to residential and occupational materials and chemicals in use); indoor-outdoor heat exchangers; air ionizer; and foliage.

PRIVACY AND SOCIAL CONNECTION

Understanding the daily lives of home-based workers is essential in understanding the ways in which to balance privacy and social connection. Through the fluidity and rigidity of the boundaries of business and residential spaces in the hybrid house, desirable privacy and social connections are enhanced.

The sequencing and rhythm of homework is more variable than that of out-of-home work. In fact, flexible scheduling is cited as a major benefit of working at home. Unlike office-based workers, many home-based workers do not keep a rigid and fixed working schedule, but work at more variable times of the day and night (although this variability differs for women and men, and for those individuals with and without children or other adults in the home). Some homeworkers establish rigid boundaries between their residential and business areas; others like the ebb and flow between spaces as they eat, entertain, and read in their offices or shops. Some home-based workers enjoy the presence of other people around while they work; many others do not. However, virtually all studies indicate that child care and home-based work are incompatible.¹³

Homeworkers need *prospect* as well as *separation* to accommodate privacy and social connection in their homes. Prospect is having an extension, an overview of the landscape, in contrast to a refuge, a place to hide, a place from which one can see without being seen. Although many homeworkers express the need for a place to work separate from the residential areas of the home, especially when there are children in the household, they also need to ensure that the home itself does not turn into a cage or prison. The community and landscape context of the home becomes more salient and important to ensure this. Since a major concern of working at home is the feeling of social isolation, the built and natural landscape surrounding the home should be pleasant and filled with service amenities to provide needed “escape” from the home/business.

Although separation of the workspace from other areas of the home is desirable to enhance privacy in the workspace, extreme separation, such as a detached unit on the lot, is often not. Many homeworkers say that having a separate structure would be defeating some of the reasons for working at home. They do not want to slosh in the rain to an office in the back yard. At night they do not want to feel separated from the household while they are working. They do not want to worry about security for two structures. And they do not want to travel any measurable distance from their workspace to go to the kitchen for a snack or to talk to their children.¹⁴

For women in particular, feelings of vulnerability in one's home may be associated with having relative strangers in the home. Many self-employed homeworkers have clients who visit them in the home. Because these women may be living alone or working alone for part of the day, they often must meet unfamiliar clients alone in their homes. Women talk about different strategies they use when an unknown client is coming to visit them and they are alone: having a dog, leaving an item of men's clothing draped around a chair, getting a neighbor to stop by and be seen or at least heard, etc.¹⁵ Establishing greater spatial connection between the occupied areas of the home and the workspace may help to diminish this fear.

Addressing these needs of privacy, social connection, prospect, and separation can be done in the design of hybrid housing through *visual access* and *visual exposure*. Visual access is the ability to visually monitor one's immediate spatial surroundings (e.g. via doors, walls, mirrors, opaque and reflective surfaces). Visual exposure is the degree to which one's behavior can be monitored (through the use of visual barriers, level changes, illumination, etc.).¹⁶

Certain physical arrangements of rooms, doors, windows, and other physical features allow for greater and lesser degrees of visual access and exposure, and hence privacy and social connection. For example, a long thin plan provides the maximum *point-to-point distance* of business space to residential space, minimizing visual exposure. Likewise, through vertical separation, a multi-level plan provides a great psychological distance by diminishing visual access and exposure.

Functional distance, i.e. the likelihood of meeting/viewing another household member as one enters and uses the business space of the home, is another critical factor in providing for privacy and social connection. Privacy can be enhanced by incorporating a *circulation loop* which does not require one to pass through an activity setting on the way to another. Instead one passes through a neutral hall, stairwell or passage in order to reach any other destination. A plan with a private entry which leads first to a neutral space (e.g. foyer) and subsequently provides separate access to all other main activity spaces allows one to control access to each space. Absence of through-circulation prevents intrusion in a setting to reach another setting. A looped circulation with controllable access between rooms provides a considerable degree of choice between privacy and social connection.

Specific physical features based on the concepts of visual access, visual exposure, point-to-point distance, and functional distance, which enhance privacy and social connection in hybrid housing, include:¹⁷

Enhancement of Privacy

- private street entries for both residential and business areas
- a primary street entry leading to a neutral space from which there is separate access to the residential and business areas of the home
- plumbing provisions in each area (business, residential)
- split-level or multi-level floor plans, with each level including either business or residential spaces
- a long thin plan (e.g. one room and one hallway deep) with the business area at one end
- doors
- looped circulation through the rooms with a neutral bypass corridor
- no through-circulation in rooms
- minimal length of common walls between business and residential areas
- sufficient acoustical insulation to block out noise between areas
- provisions for subdividing spaces with wall partitions
- storage accommodations in each area
- heat register locations and thermostats in each area
- interior design distinctions between each area
- noticeably different facades or massings for each area

Enhancement of Social Connection

- a separate gathering space for clients outside the workspace and residential area
- connecting walls between areas expanded to create shared spaces
- workspace shared by two households located between the two residential units: subunits should be of equivalent size, and work suite defined by the space they both share
- lofts or windows that allow visual viewing into other areas of the home or of outdoors

While demographic and employment trends change through the years, our building structures remain more stable. ~~Housing critics have called for flexibility, resiliency, adaptability, and open-ended design in housing to address changing social conditions.~~ While a hybrid house may at one time be occupied by a family with a business at home, at other times it may be occupied by households without home-based businesses, but with extended family members living there. Or residents may wish to use part of the dwelling to rent as an accessory unit. Hybrid housing can be configured to accommodate diverse households, activities and occupants, as these change over time. *The key to designing hybrid housing is to accommodate diverse, sometimes conflicting, activities in the residence.* Doll lists and describes an extensive number of housing design features which provide such flexibility and adaptability.¹⁸

**FLEXIBILITY
AND
ADAPTABILITY**

Home office deductions have been a controversial area of tax laws for years. Deducting a portion of household expenses for a home office often lights a tax audit fuse: people who file a Schedule C are more likely to be audited than the average individual. Even individuals with low incomes filing a Schedule C are 50% more likely than normal to be audited.¹⁹

TAX LAWS

In the case of hybrid housing, tax deductions may depend not only on the nature of the work performed but also on the occupancy and form of the space itself. The Tax Reform Act of 1987 made major changes in the way home office deductions are calculated. Where previously one used to claim an entire room containing office space, now one must measure the business space and compare it to total square footage of the home to come up with a percentage of deductible mortgage and maintenance costs.

To successfully claim a home office deduction, the taxpayer must show that s/he uses the home office *exclusively* and *regularly* for business. If not self-employed, the taxpayer must also show that s/he maintains a home office "at the convenience" of the employer (i.e. that the employer fails to provide adequate space for the employee to do the job). Tax experts say that the taxpayer should spend at least 4 to 6 hours a week in the home office and that the work performed there should be essential to the business.²⁰ The definitions that the Tax Courts and Internal Revenue Service (IRS) have traditionally used for *exclusive use*, *regular use*, and *principal place of business* are listed below:

exclusive use: that portion of the home (may be a room or an alcove; it need not be separated from the room by a partition but must be an identifiable space) claimed for a tax deduction is used only for business. Two exceptions are: (1) for sales/retail businesses, space used to store inventory can be shared with personal activities or the storage of non-business items; and (2) space for a licensed day-care facility can be used for family purposes in the evening.

regular use: use on a continuing basis.

principal place of business: if the taxpayer has more than one place of business, the home must be the principal place. If the home is not the principal place of business but a freestanding structure on the property which is used exclusively and regularly for business, a deduction can be claimed for that structure.

A Tax Court ruling in January 1990 (*Soliman v. Commissioner*) weakened a previous “focal point” requirement devised by the Court in 1980 to determine if the home office was the principal place of business. In the 1980 ruling, the taxpayer had to show that his/her office was the focal point (i.e. “the place where goods and services are provided to customers and revenues are generated”) by his/her business activities.

In the *Soliman v. Commissioner* case, the Tax Court ruled that the home office can be considered a “principal place of business” and hence deductible even if it is *not* the “focal point” where business is done. Applying a “facts and circumstances” test, the Court acknowledged those circumstances in which: the home office is essential to the business, the taxpayer spends substantial time there, and there is no other location available to perform the office functions of the business. A principal place of business, the justices determined, is not necessarily where goods and services are transferred to clients or customers but is frequently the administrative headquarters of a business. Further, taxpayers are not necessarily required to spend most of their business time at home to obtain a home-office deduction. As the Court maintained, “any successful outside salesperson is not going to spend more time in his office than outside selling.”²¹ The Court noted that if the taxpayer in question rented an office to administer his practice, there would be no dispute about his deduction. The current law, the Court said, “was not enacted to compel a taxpayer to rent office space rather than work out of his home.”

The Internal Revenue Service was not pleased with this decision and has filed a motion for the Court to reconsider its opinion.

**ZONING AND
LAND USE
REGULATIONS**

Land use regulations such as zoning establish relations of work, home, retail, and recreation. As Constance Perin claims:

What has been thought of as singularly technical concerns in land use matters I take to be value laden... American land use classifications, definitions and standards . . . name social and cultural categories and define what are believed to be the correct relationships among them.²²

Zoning controls the height and setback of structures (originally done to ensure sufficient air and light), use and density. Zoning establishes the principle that interests of private property owners must yield to interests of the public. But most importantly for the purposes of hybrid housing, zoning keeps incompatible uses separate. The *Village of Euclid v. Ambler Realty Company* decision in 1926 by the Supreme Court established the constitutionality of zoning. The Euclid

decision author, Justice George Sutherland, claimed that “a nuisance may be merely a right thing in the wrong place — like a pig in the parlor instead of the barnyard.”

Or a business in a home?

Home occupation ordinances are common in most localities although the ordinances themselves vary between communities. Some ordinances distinguish between a business and a profession (e.g. “professional” use is allowed in the residence but not “business” use); and what qualifies as a profession may vary between states.

Aside from establishing permissible occupations in the home, community regulations may also regulate or prohibit: (1) noise; (2) odor; (3) employees (may restrict to a maximum number or maintain that only residents and/or relatives can be employees); (4) traffic (including parking, noise, vehicular load, and business-related foot traffic); (5) electronic interference; (6) signs (regulations for size; signs may be prohibited altogether; light or neon signs are usually prohibited); (7) retail shops or sales showrooms (many communities prohibit selling from the home except by phone or mail order; many zoning laws prohibit businesses involving inventories); (8) size or configuration of business space in the home (e.g. business space may be limited to 25% of square footage of home; separate street entry to workspace or separate structure on lot for business may be prohibited); and (9) miscellaneous factors (e.g. number of commercial phone lines).²³

A few examples of such zoning ordinances are described below.

Chicago. In 1985 Chicago’s zoning ordinance prohibited individuals from using mechanical or electronic devices at home for purposes other than home maintenance. The ordinance read: “Home Occupations. A physician, dentist, lawyer, clergyman, or other professional person may use his residence for consultation, emergency treatment, or performance of religious rites, but not for the general practice of his profession and not for the installation or use of any mechanical or electrical equipment customarily incident to the practice of such profession.”²⁴ A couple who had a word processing business in their apartment were issued a formal complaint and ordered to appear at the office of the zoning administrator.

Westport, Connecticut. In Westport, Connecticut, town zoning regulations permitted a psychiatrist to work out of the home but not a psychologist. In one case, a professional writing business (i.e. of Martha Stewart, the food writer) with two employees assisting with the writing, was considered in violation of the zoning ordinance by causing a traffic nuisance.²⁵

White Plains, New York. In 1982 the city of White Plains, New York, tightened its home occupation regulations, causing the Westchester County chapter of the American Institute of Architects (AIA) to protest. The AIA argued that more than half of its 130 members used their homes as their places of business. Architects

~~were eventually included on the list of professionals allowed to operate from their homes, but they were still hampered by regulations that permitted only one employee on the premises.²⁶~~

New York City. In 1964, the New York state legislature amended the New York State Multiple Dwelling Law to accommodate live/work space south of Houston Street district (SoHo), in an effort to discourage artists from leaving New York City. It also established regulations for conversion of commercial and industrial buildings to live/work space. In 1971 this law was amended again to allow artists to coexist with industry in the same structures, and relaxed health and safety codes. Further, the New York Planning Commission created a certification program to prevent non-artists from competing with artists for SoHo loft space. NoHo and Tribeca districts later were also zoned for artists. New York City's policy, even though it made live/work space a legal principal use, failed to reduce negative impacts of gentrification — i.e. displacement — for artists.²⁷

San Francisco. Comprehensive live/work zoning legislation was signed into law in September 1988 with companion code rulings by the Bureau of Building Inspection, Department of Public Health, Fire Department, and Rent Stabilization and Arbitration Board. This linkage of zoning legislation with commitments by numerous agencies sets San Francisco apart from other cities.

The legislation is limited to those engaged in arts activities except in certain areas south of Market Street. Arts activities are defined in the San Francisco planning code (such examples include dance performance, video production and post production, special-effects production, fashion and photography stylists, painting, sculpture, musical rehearsal; those not deemed artistic include architecture and engineering). This clause stresses use or activity rather than occupant.

San Francisco is the first city to revise its zoning codes to allow residential uses in all other non-residential districts. Section 204.4(b) states that dwelling units integrated with working space of arts-related activities shall be permitted as an accessory use to such working space in commercial and manufacturing districts and where the occupancy meets all applicable provisions of the building and housing codes. The living space is limited to no more than 25% of total occupied area.²⁸

Zoning variances or conditional-use permits are often sought by home-based workers, which grant conditional privilege of operating a business on land not zoned for that purpose. A zoning change is less likely — except when a subdivision is going to be exclusively hybrid houses — as it could take six or more months and environmental clearance to pass. A “grandfather clause” may permit business practices in violation of zoning regulations that have existed for years to continue but restrict further development.

However, enforcement of zoning laws is relatively lax in some communities; many inspectors enforce rules only when they receive a complaint.²⁹ Further, home businesses occupying only one room in the house usually do not encounter as many problems as businesses requiring a change in the structure of a home.

Nonetheless, many developers of hybrid houses cite zoning as one of the biggest barriers in developing such units. With good reason. A national survey of community planning departments found that 62% of the communities said that the issue of home occupations had been a recent problem; and 80% regulated home occupations, most moderately to exceptionally restrictive. A follow-up study of attitudes of planners in those communities found that the majority wanted even more stringent regulations of home businesses.³⁰

All building codes incorporate the Federal Housing Administration's *Minimum Property Standards*. Standards from ANSI and ASTM are frequently included as well. Four main nationally recognized codes that apply to general residential construction include: BOCA Basic Building Code; CABO One-and-Two-Family Dwelling Code; Uniform Building Code; and Southern Building Code.

BUILDING CODES

An example of a city's building code that was amended to address hybrid housing concerns is that of San Francisco (#502-1). A few of the provisions from this code include:³¹

- Buildings of one or more stories located within proper zoning districts and constructed of wood, steel or concrete can be used for live/work.
- No minimum or maximum size for live/work units in commercial or manufacturing districts. In RH and RM districts, no more than 1 live/work unit for each 1000 square feet of floor area devoted to live/work within the structure.
- In newly constructed buildings or additions to existing buildings, ceiling heights must be at least 14 feet.
- In buildings with three or more units, sprinklers required above and below lofts; or without such systems, the buildings must have standard separation between living and working portions of a space. All walls and ceilings between live/work units must be one-hour non-combustible or fire-retardant wood if not of bearing wall construction. For buildings with one or two live/work units classified as R-3/B-2, sprinkling systems may not be necessary.
- Artist-residents must obtain permit from San Francisco Department of Public Health if they store hazardous material.
- For buildings with live/work units, a sign must be posted at entry, with lettering 1.5" high at least, stating location of units used for live/work (in order for emergency personnel to know where residents are).

LABOR LAWS

Federal laws that monitor the workplace include: Fair Labor Standards Act, Occupational Safety and Health Act (OSHA), Equal Opportunity Act, and child labor laws. These laws likewise affect businesses in the home.

OSHA considers the employee's home an inspectable location, although it is improbable that OSHA would conduct an inspection unless a request or a complaint was issued or a serious accident occurred. It does not exempt hybrid housing from its rules on safety of the workplace, such as:

- smoke detectors in work area
- an ABC fire extinguisher that can be manipulated by employee
- clear, unobstructed exits
- removal of hazards that can cause falls
- adequate electrical circuitry with equipment preferably on a separate circuit, with three-wire connections and 110 or 120 amperage
- furniture appropriate for equipment

Industrial homework laws of states were primarily passed in the 1920s. They may prohibit certain home businesses. Cigars and tobacco, drugs and poisons, bandages and sanitary goods, fireworks and explosives are prohibited from home manufacturing in most states. These laws also may require employers of certain occupations to get a permit and workers to get certification. For example, talent agents in California can not get a license if business is conducted in rooms used for living purposes.³²

Some state labor laws include:³³

Maryland. Requires that rooms for homework must be licensed and are open for inspection any time work is being performed. Homeworker must have a certificate.

Michigan. Permit granted for homework after inspection to ensure proper working conditions.

Missouri. No room may be used by more than 3 persons for the following occupations: apparel, purses, feathers, artificial flowers.

New York. Permits and licenses are restricted to industries in which the Commissioner determines homework may be permitted without unduly jeopardizing factory workers or unduly injuring the health of homeworkers. All homeworkers must obtain a certificate and may not do any factory work.

Pennsylvania. Homeworkers must obtain a certificate and those are only issued to those unable to leave home to work because of physical handicap, illness, or to care for an invalid.

Tennessee. Restrictions on dwelling.

Wisconsin. Homework may be prohibited to protect health. Also, a license must be obtained from the local health officer after inspection. The license is \$300, good for one year.