

# INDUSTRIAL MIXED-USE ZONING

## An analysis of design considerations

AsianNeighborhoodDesign  
Draft: 02.23.07



Apartments over a working window and glass shop, Mission District

## INDUSTRIAL MIXED-USE

Development which mixes residential and light industrial (called “PDR” by San Francisco’s Planning Department, for production, distribution and repair) is a predominant use in large parts of the Eastern Neighborhoods, including areas which include significant low-income residents, community of color, and which have been adversely affected by gentrification over the last few years. These industrial mixed land uses have evolved as a common pattern in older working class neighborhoods, creating diverse and lively neighborhoods, in many ways the heart and soul of the Eastern Neighborhoods. A fundamental characteristic of existing neighborhoods which successfully combine living space with industrial work space is that they are characterized by a built “fabric” which provides for *flexibility* of use and are not prescriptive in their design.

In areas of the Eastern Neighborhoods, primarily transitional areas between core industry and adjacent residential neighborhoods, new zoning categories are currently being proposed to promote new development that mixes industrial and residential uses. Developing new industrial/residential environments represents an opportunity to extend and strengthen an existing and largely successful San Francisco neighborhood pattern while preserving industrial jobs for local residents. Additionally, the city’s Housing Element has identified these areas as priority sites for locating new affordable housing developments.

Nevertheless, combining residential uses with industrial uses presents certain challenges. New residents in historically industrial neighborhoods often see industrial noise, fumes, late night operations, and delivery traffic as nuisances. Resident complaints about nuisances inhibit local businesses from conducting their work. Residential uses are already encroaching into areas previously set aside for industrial use. Rising land costs set by the higher profit margins of these new developments impact rents on industrial land. Thus we see these two pressures – conflicts with

residential uses and escalating land costs – forcing industrial uses to lower-cost locations, often out of San Francisco. It is one of the city’s Priority Policies to maintain a balance of jobs within the city, both in terms of the relatively higher pay scale of industrial jobs, and the competitive advantage of maintaining certain industries in close proximity to the financial center of the city. Industrial sector jobs are important to the city, and once the land is developed as residential it would likely not be converted back to industrial use again. If these new zoning proposals are to be successful, care must be taken to both design living and working spaces that maximize work functionality while minimizing disruption of nearby residential activities, and to find ways of mitigating the economic impacts on industrial land.

Goals for an industrial mixed-use district could include 1.) Retain and incentivize production of new space for light industrial activities in appropriate areas of the city; 2.) provide flexible incubator space for a variety of small business enterprises; and 3.) Guide residential development within areas currently characterized by industrial uses such that: industrial displacement is avoided while new mixed use housing opportunities are created, future land-use conflicts (nuisance complaints) are minimized, and an active working/living environment develops over time which retains its industrial character.

Key elements to achieving these goals would include:

1. Policies which support the development of a built environment whose configuration (dimensions, points of access, relationship to streets and corridors, etc.) allows for flexibility and integration of uses (live/work streets and neighborhoods), including necessary street improvements and right-of-way requirements including appropriate access routes, entry points, and drop-off zones.
2. Covenants which ensure a reasonable level of compatibility between disparate uses and minimize noise and nuisance complaints.
3. Incentives/restrictions which encourage/require specific uses at specific locations; uses which would not otherwise be developed through market forces but which are considered important community assets, i.e. light industrial. These may include displacement/replacement mitigations, incentive bonuses, etc. which can support industrial mixed-use typologies.

**Mitigations and Incentives.** A key to creating mixed-use industrial and residential districts will be enforcing strong mitigations to deal with displacement and replacement of industrial uses. Even if one-for-one replacement space is provided where an existing industrial use is located, that use will have to move, either temporarily or permanently, during construction. A developer would be required to provide relocation expenses, including location search services, transportation, moving and storage costs, equipment disconnection and reassembly, licensing and fees required at new location, signage, and legal services. All residential uses would have covenants, and new residents would need to sign a “notice of special restrictions” where they acknowledge to living in a mixed-use area with adjacent industrial uses, waiving a right to claim nuisances on these uses. These notices were already required for new live/work units and residential uses in industrial areas where residential is a conditional use. An important question is whether such a notice is sufficiently strong to avoid lawsuits and nuisance complaints.



“ActivSpace” locations in Berkeley and Seattle

**Financial Feasibility.** Affordable developers, unless they are developing in a strong retail market area, rarely factor in ground floor rents into their financials; this would probably also apply to industrial ground floors. Note that current industrial rents are relatively marginal compared to retail or office, with lease prices ranging from \$0.75/sf to \$2.00/sf in 2006. The lower end rents typically apply to larger unimproved warehouse spaces (over 10,000 sf). The design considerations discussed below add some cost to construction. Since the purpose of this zoning is to promote marginal-rent industrial uses, the increased costs (for example, for ventilation and waste disposal) may likely be borne by the developer rather than as part of the industrial users tenant improvement costs. An emerging market for small “incubator spaces” (as small as 300 sf) is appearing at the higher end of the light industrial market. One example is “ActivSpace,” a west coast developer of small industrial spaces, currently building at 18<sup>th</sup> and Treat in the Mission District (<http://www.activespace.com/>). While these kinds of “hobby industry” spaces may be appropriate for vertically integrated buildings, they may not be what’s desired to mitigate the displacement issues in the transitioning mixed-use industrial areas.

## INTEGRATING INDUSTRIAL AND RESIDENTIAL USES

In discussing guidelines for a mixed-use Industrial/Residential neighborhood, a key question is how to guide the *integration* of different types of use such that conflicts and nuisances avoided, and a vibrant healthy neighborhood is encouraged. Thus, the recommendations listed below are grouped around types of integration, “horizontal” and “vertical,” and are based on observed patterns in successful living/working environments in San Francisco.



Horizontal integration in a South of Market street

**Horizontal Integration.** Horizontal integration refers to residential and industrial uses occupying adjacent parcels. These areas are characterized by a diversity of uses including housing and industry, with integration happens in plan and across lot lines rather than within a single building or on a single lot. San Francisco has several neighborhoods where the successful integration of light industry and housing is evident. In the South of Market, industrial and residential uses are closely intermingled, with large blocks separated by wide thoroughfares, and smaller alleys (often with narrow sidewalks) providing an intimately scaled environment of “residential enclaves.” The narrow alleys include a mix of housing types as well as industrial or warehouse buildings often located at the corners, with smaller design offices, photo studios, or production areas within the depth of the block. In many successful existing Industrial/Residential neighborhoods, purely residential buildings sit comfortable next to light industrial buildings without a residential component. Thus, an active and vibrant mixed-use neighborhood is not reliant on every building including the integration of uses, but rather that there is compatibility between buildings with distinct programs. A cohesive street character is maintained through a consistent pattern of access, orientation, and scale. Physical elements (such as patterns of ground floor points of entry/access, ground floor apertures and heights, and building scale) contribute to a compatible neighborhood fabric despite disparate, adjacent uses. Guidelines may be proposed that preserve and extend this pattern, taking into account loading and parking requirements.

**Vertical Integration.** Vertical integration refers to residential uses existing above industrial uses at ground floor. This can be seen in Victorian flats and apartment buildings on corridors and residential areas have carpentry shops, window repair shops, etc., occupying ground floor garage space, common in South Park area. In Chinatown, apartment buildings commonly have garment factories and food processing on the ground floor and basements. Artist warehouses, such as Project Artaud and Developing Environments, are also examples; these spaces keep rents affordable for artists. “Live/Work lofts” claimed to provide integration of residential and light industry, but have on the whole been unsuccessful due to inappropriate design and high expense. There are either no uses on the ground floor, or office-sized spaces which are maintained “blank.” Important spatial relationships need to be established within the same building or structure allow for integration of different uses and flexibility of use. Guidelines might be proposed for certain sectional requirements and recommendations for street to building relationships, including minimum ground floor heights and depths, parking access, and location, loading/unloading requirements, and location of uses.



Vertical integration in Citizens Housing's proposal for 18<sup>th</sup> & Alabama, designed by Solomon ETC

## DESIGN CONSIDERATIONS

### Dimensions

- Consider minimum amount of industrial space needed for viable use, e.g., 2,000 s.f.; need to investigate average use sizes for different types of “PDR” industry; too small a space will only be appropriate for high-end boutique-type businesses
- Generous work spaces are key, and allow for flexibility of uses; provide minimum depth for industrial uses, including accessory uses (office, bathrooms, etc.)
- Beyond delivery needs, industrial uses may require less street frontage, and so could be narrower than other commercial uses; but consider needs for flow of industrial activities
- Flexibility in size. Can ground floor areas be separated or combined over time to accommodate different tenant needs?

### Access

- Roll-up doors and curb cuts are key to ground floor industrial
- Openings should be large enough for delivery of goods and equipment, such as roll-up doors with a height of 12’ and width of 8’-10’
- Note that roll-up doors and curb cuts conflict with other Planning priorities, such as pedestrian streets with minimal curb cuts, so street location is important; when possible, orient primary industrial delivery/loading access to sides and rear of site, or along industrial alleys where residential entrance occurs along more commercial street; conversely, orient housing along small-scale residential alleys where children can play, and orient industry towards truck-heavy industrial streets
- Encourage high glazing, glazed roll-up doors, and skylights through podium (where courtyards occur above) to allow light through depth of ground level

### Delivery/Loading

- Larger uses may benefit from loading dock; loading docks will likely require up to 50’ setback area, such as at Rainbow grocery or Foods Co
- If loading dock is not provided, does frontage street have sufficiently large yellow zone, or is it an industrial street where trucks can double-park comfortably?
- Consider “teaser” turnouts for quick customer pick-ups and staging areas
- Prototype: Citizens Housing proposal for 18<sup>th</sup> and Alabama, which is on a large block site, includes an internal alley for loading and access to industrial spaces; live/work lofts at ground level line the more pedestrian streets

### Parking

- Note that a building will have parking requirements both for residential tenants and for staff and customers of industrial uses; parking competes with industrial uses for ground floor space
- Consider lowering requirements for residential parking to .5 spaces per residential unit
- Some co-mingling of parking between industrial and residential could be allowed, but note that industrial workers often arrive before office commuters leave

### Ground Floor Height

- In vertically integrated buildings, the typical construction method is a “concrete podium” over the ground floor industrial and parking uses, with wood-framed residential uses above the podium
- Minimum ground floor height for podium should be 15’ to 18’ to allow industrial machinery, venting, etc.
- 18’ height allows two floors of parking at rear, under podium; 14’ or 15’ height can allow usable mezzanine spaces for office or storage within the industrial space

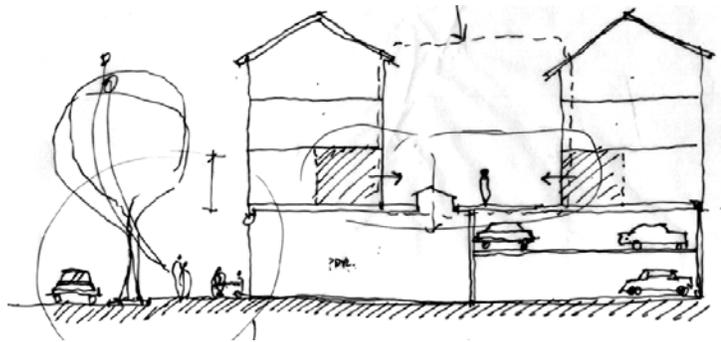


Diagram showing high-ceiling industrial space to the front, with two floors of parking at rear, and three floors of residential above

## Building Heights

- Note standard types of construction allowed by Building Code
  - Type V is most common and least expensive, wood-frame over concrete podium; maximum height of 50’ allowed by Building Code for wood-framed buildings
  - Type III, must have fire-resistive perimeter walls (metal-framed, concrete or block), and is about 15% more expensive per square foot than Type V (verify with construction companies); maximum height is 65’ (note that many developers avoid this type because they say that one additional floor of residential does not justify the additional cost, but we are starting to see more of these in SF)
  - Type I is all fire-resistive construction, and most expensive; no height limits, but there is an increase in cost above 80’ due to additional fire-safety needs
  - Note that typical floor-to-floor heights for affordable residential floors vary from 9’ (allowing an 8’ ceiling plus floor framing) to 9’-6” (sometimes necessary to allow ventilation and plumbing and more generous ceilings in some areas)
- 50’ height limit with Type V construction allows:
  - 14’ podium (13’ ground floor ceiling) for both industrial uses and parking, with four 9’ residential floors above the podium, 50’ total height
  - 21’-6” podium (20’-6” ground floor ceiling) for high industrial spaces and two floors of parking, with three 9’ residential floors above the podium, 50’ total height
  - Large sites may allow combinations of above
- 55’ height limit, with more expensive Type III construction allows:
  - 19’ podium (18’ ground floor ceiling) for high industrial spaces and two floors of parking, with four 9’ residential floors above the podium, 55’ total height
- 65’ height limit, with Type III construction allows:
  - 17’-6” podium (16’-6” ground floor ceiling) for both industrial uses and parking, with five 9’-6” residential floors above the podium, 65’ total height

### **Noise and Air Separation**

- Between residential and industrial uses, provide sound insulation and resilient channels at walls and ceilings
- At residential units, provide super insulated windows, and Z-vents to replace windows as primary air intake
- If horizontally integrated, may provide “buffer” space of intermediate uses; for example, a multi-story parking garage between residential side and industrial side
- Ensure that air cannot travel from industrial uses into residential areas or residential open spaces (see Ventilation, below)
- Will restrictions on hours of operation, especially hours of trucking/delivery, negatively affect industrial uses?

### **Mechanical Ventilation, Electrical, Plumbing, and Waste Disposal**

- Require proper ventilation for industrial uses
- In vertically integrated buildings, provide vent chases for necessary ducts through residential floors
- Provide proper plumbing and sewer hookups, utility sinks, traps, vent hoods, etc., for industrial cleanup needs
- Provide sufficient trash and disposal areas for industrial needs, including disposal of solvents and hazardous wastes
- Provide sufficient power for industrial equipment needs