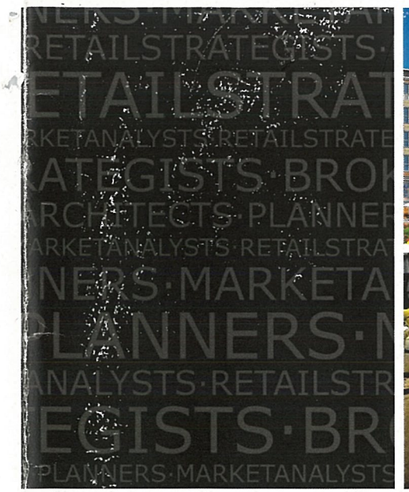
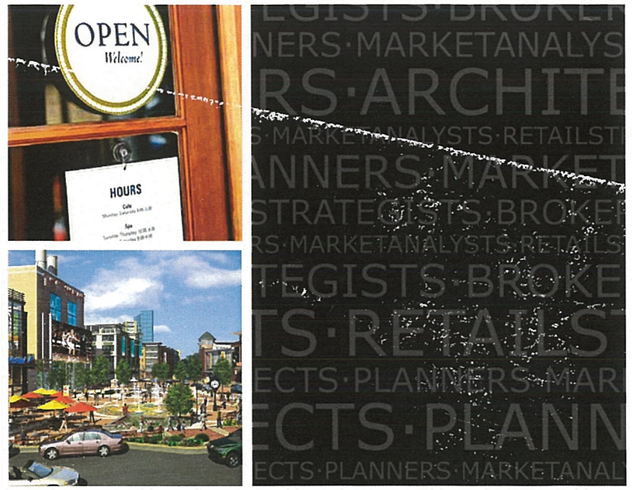
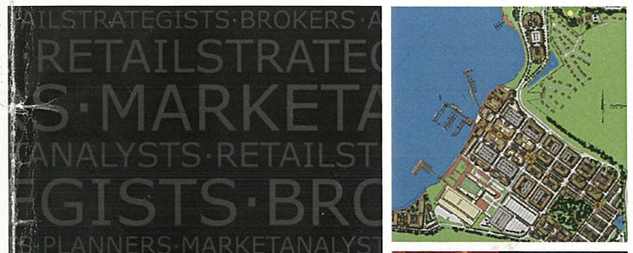


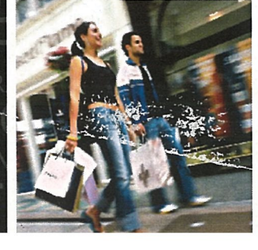


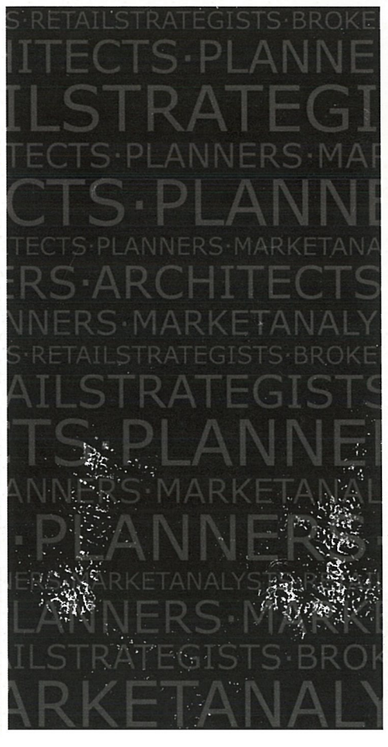
Development Thresholds by Construction Type

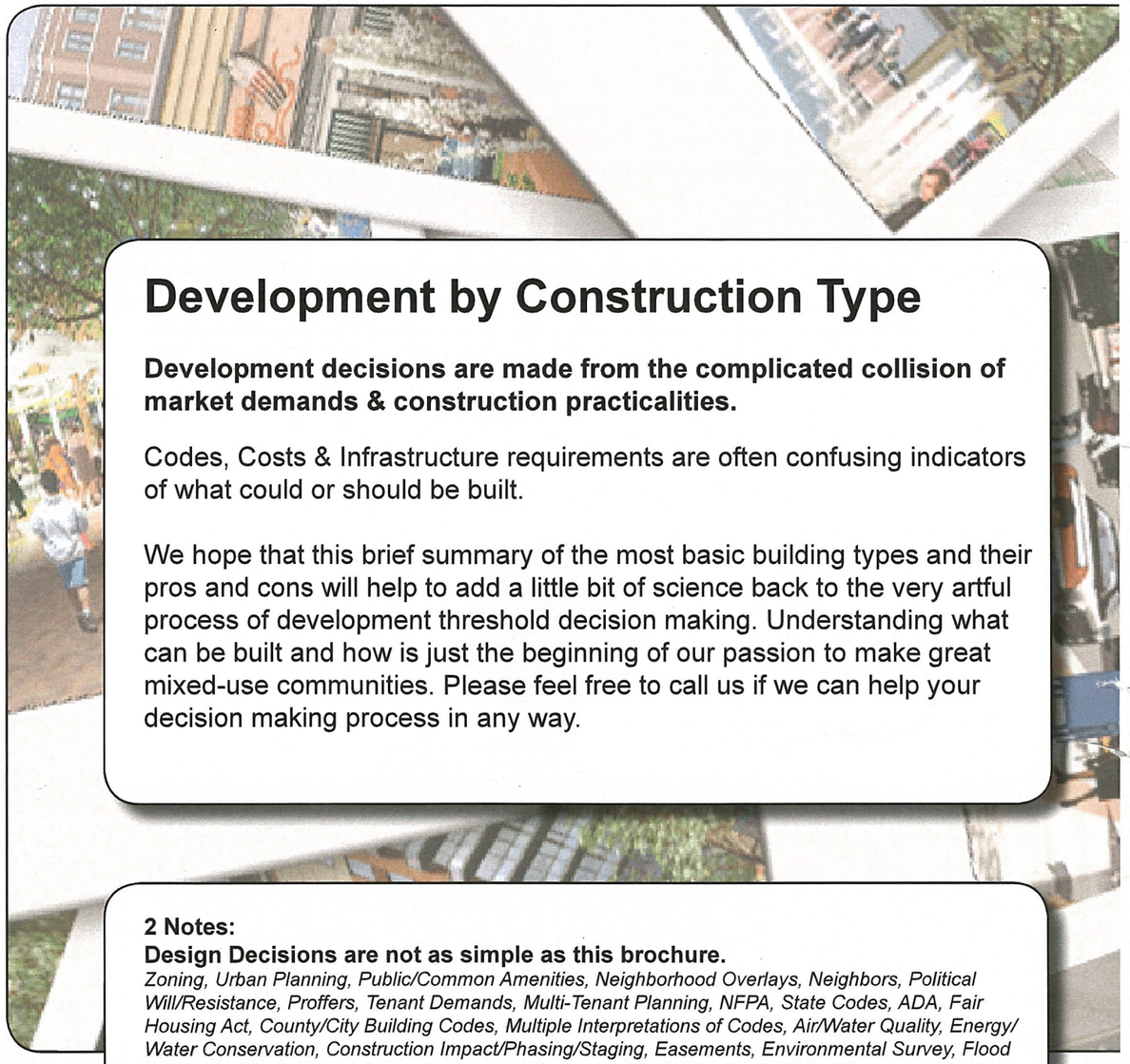
streetsense

ARCHITECTS
PLANNERS
BROKERS
MARKET ANALYSTS
RETAIL STRATEGISTS









Development by Construction Type

Development decisions are made from the complicated collision of market demands & construction practicalities.

Codes, Costs & Infrastructure requirements are often confusing indicators of what could or should be built.

We hope that this brief summary of the most basic building types and their pros and cons will help to add a little bit of science back to the very artful process of development threshold decision making. Understanding what can be built and how is just the beginning of our passion to make great mixed-use communities. Please feel free to call us if we can help your decision making process in any way.

2 Notes:

Design Decisions are not as simple as this brochure.

Zoning, Urban Planning, Public/Common Amenities, Neighborhood Overlays, Neighbors, Political Will/Resistance, Proffers, Tenant Demands, Multi-Tenant Planning, NFPA, State Codes, ADA, Fair Housing Act, County/City Building Codes, Multiple Interpretations of Codes, Air/Water Quality, Energy/ Water Conservation, Construction Impact/Phasing/Staging, Easements, Environmental Survey, Flood Plains, Wetlands, Forest Conservation, Aforestation, Reforestation, Storm Water Management, Health Codes, Utility Authorities, Utility Capacity, Traffic, Transit, Transportation Planning, Schools, Public Safety, Soils, Loading, Trash, Egress, Construction Costs, Upfront costs vs Long Term Savings, Property Management, Durability, Available Trades, Site Constraints, Air Rights, Market Analysis, Mass/Aesthetic Context, Parking, Parking and more Parking.

Things Change.

Building Codes are updated every 4-6 years, Zoning Codes are updated continuously and Masterplans every 10 years, Construction Costs, Energy Costs, Built/Approved Competition, Economic Indicators, Public Priorities, Elected Officials, Staff Members and, of course, Lending Markets.

1 Solution: Hire a Good Design Team.

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BETHESDA, MARYLAND 20814

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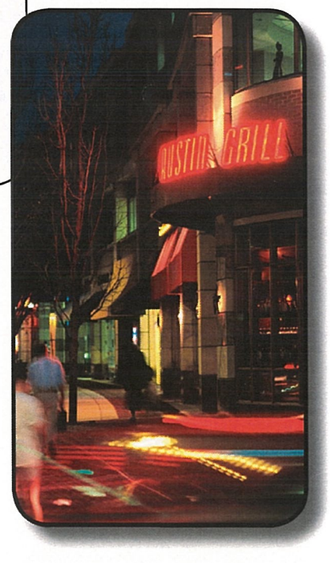
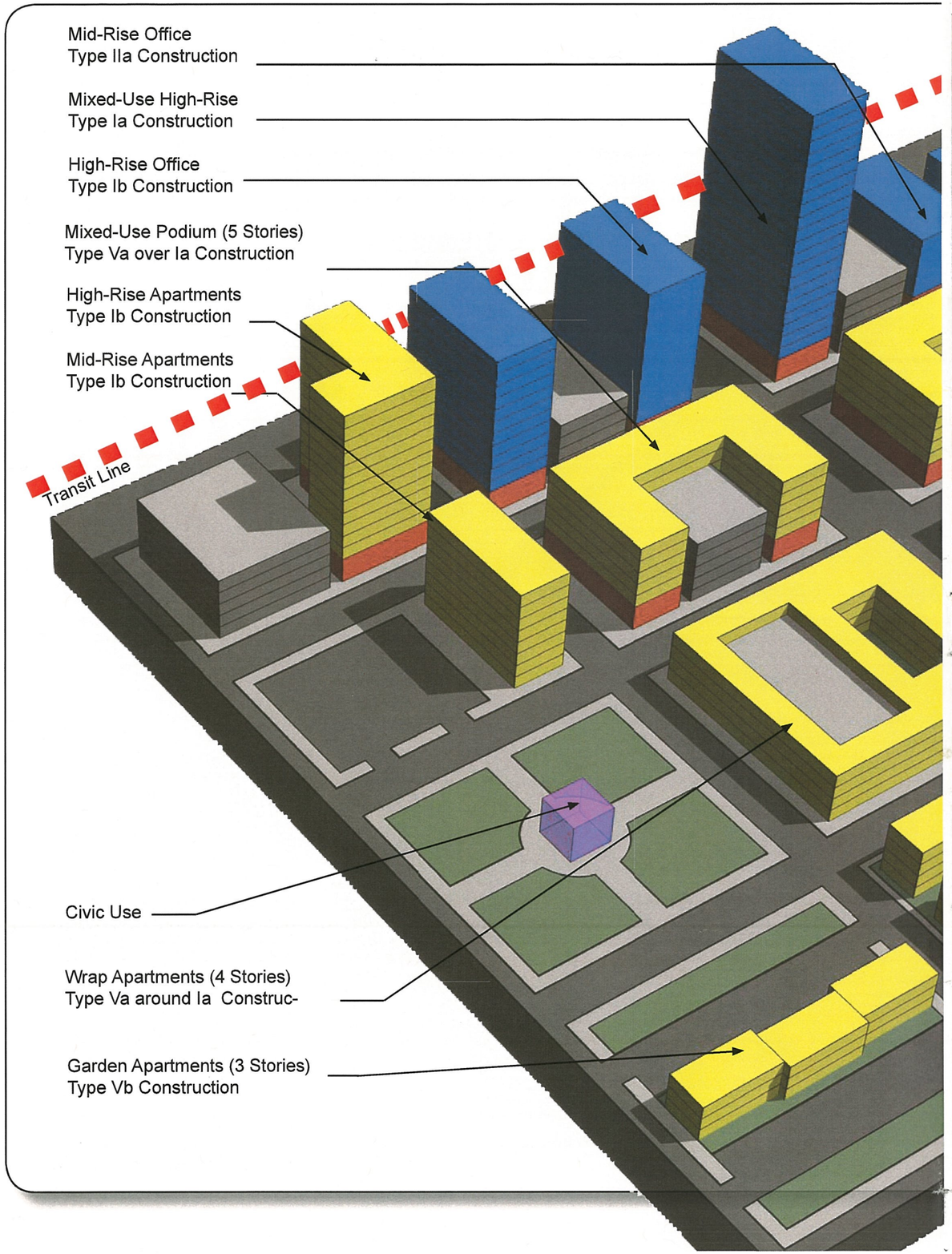
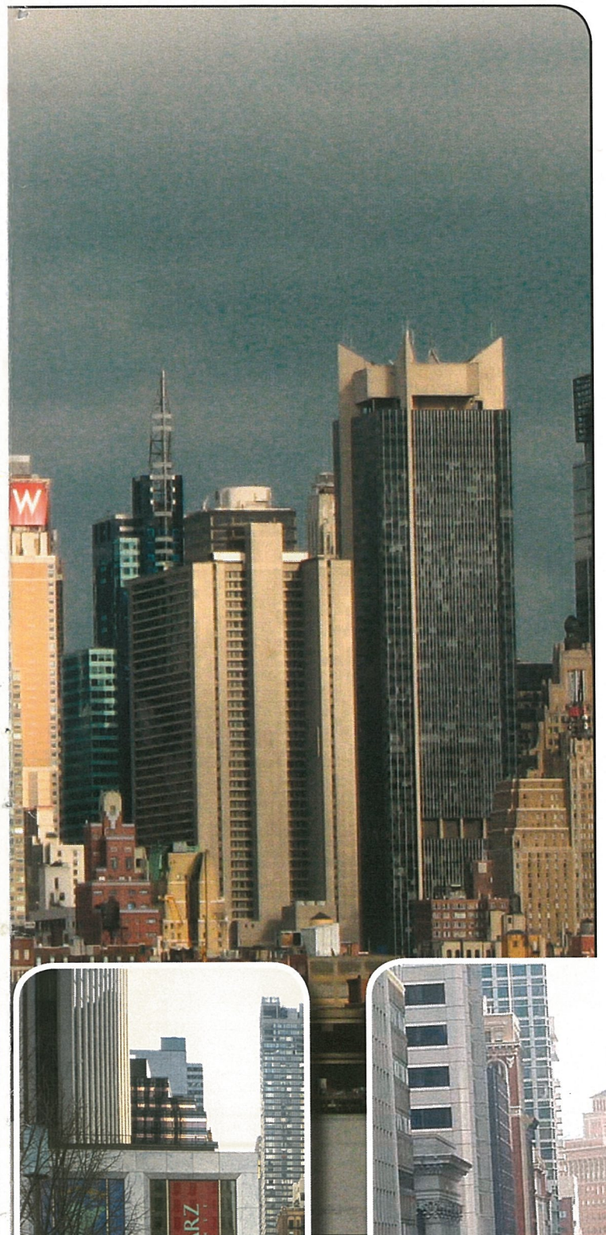
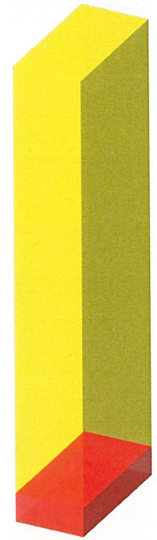






Using the IBC construction High-Rise Type Ia (1a) R-2, M, B and/or S-2 garage will raise the height allowed above 14 stories with no maximum limit beyond the practical aspects of tower construction. This is a challenging large city building type, when reaching 20, 30 and 40 stories, with high demand on a general contractor's ability to organize the construction site.

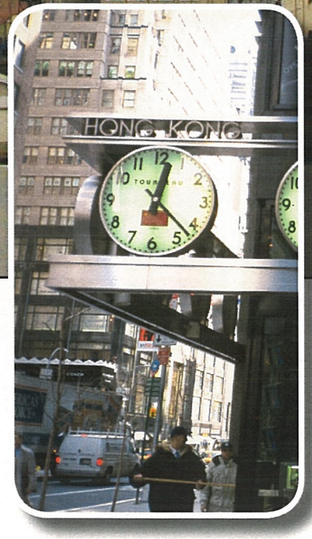


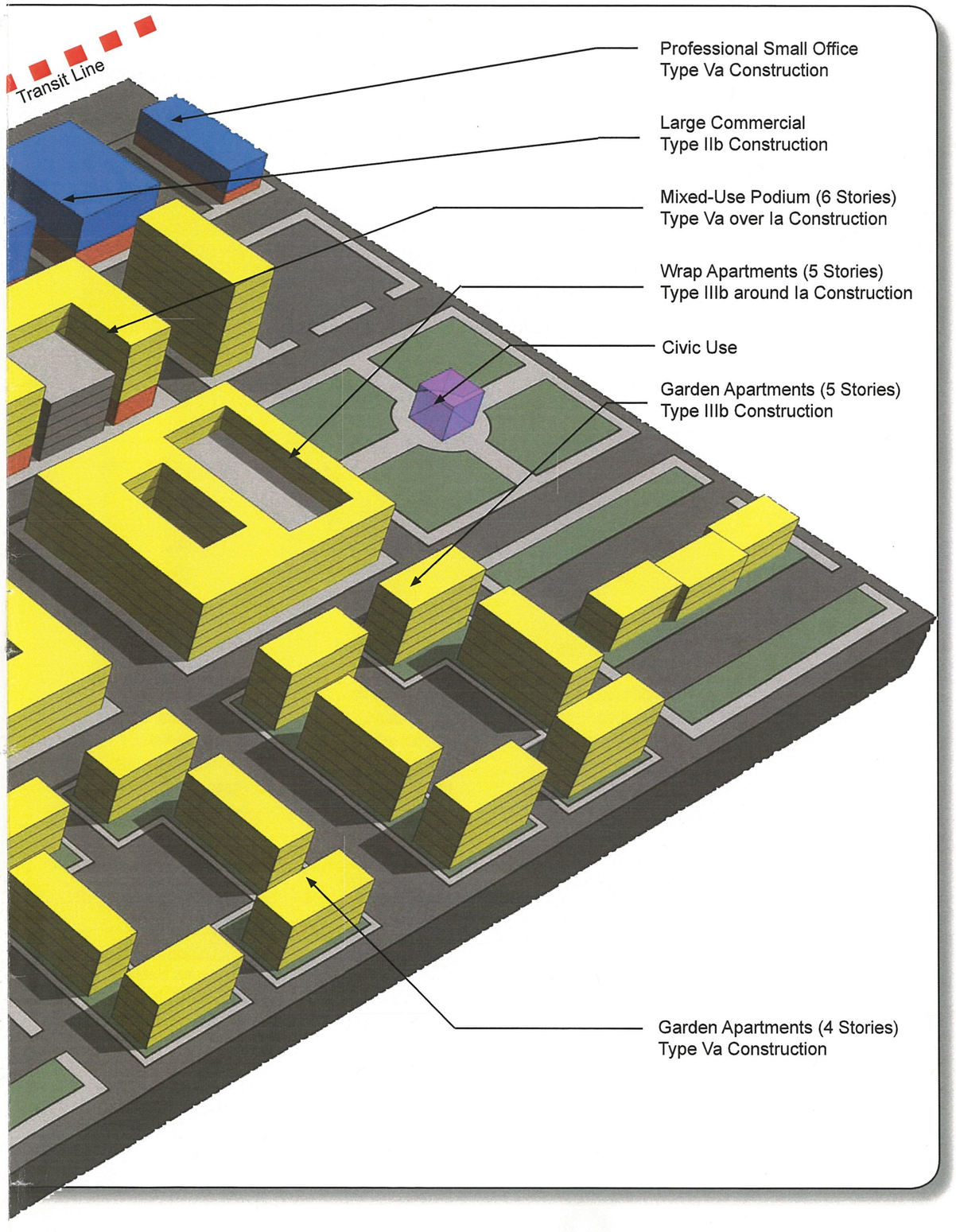
Bldg Description:	<u>Mixed-Use High-Rise</u>
	14+ stories
	Residential/Retail/Office
	urban / transit
	urban market
	hard codes & approvals
	separated verticals
	complicated egress
Utilities/Trash/SWM	difficult / management
Density:	6.0+ FAR (250+u/a)
Parking Supported:	Structured / Underground
Cost $/sf:	$180-250
Construction Type:	<u>Type Ia</u>
Description	concrete or steel
Fire Rating	non-com / highrise
	highly difficult fire ratings
IBC Chart 503	unlimited
Sprinkler Increase	unlimited
Podium Exception	**unlimited**
Typical Flr Heights	unlimited

Mixed-Use High-Rise is an expensive and highly dense building type for residential, retail and/or office use. The highly restrictive building components of Type Ia construction allow an unlimited height, area and most every use. Elevators, emergency power, and stair towers all have very strict requirements that increase the design and construction costs. The need for daylighting to the entire floorplate typically restricts these tall buildings to 20,000-30,000 square foot areas, thus creating a slender tower. Tower construction has many safety, wind load and egress concerns that will be the focus of the design efforts. This product type is very dense which can provide high levels of support for amenities and common areas. HVAC and vertical transportation issues become difficult to solve in the taller buildings with very high demand on property management services.

The size and massing of these high-rise apartments is imposing if not iconic. Special attention and design efforts will be required as these buildings will make a strong visual impact and require a unique identity to justify the expense. Large urban environments are able to accommodate these towers or considerable setbacks and screening will be required. Parking will require private or public structured parking and an urban transit component. This is the highest and most flexible construction type.

Mixed-Use High-Rise

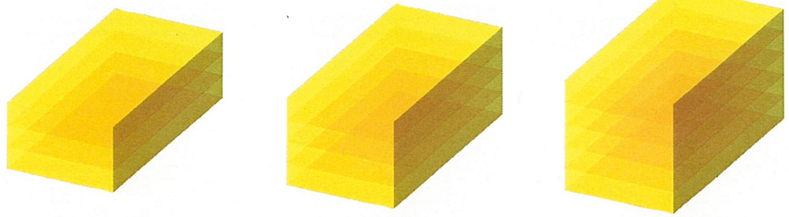




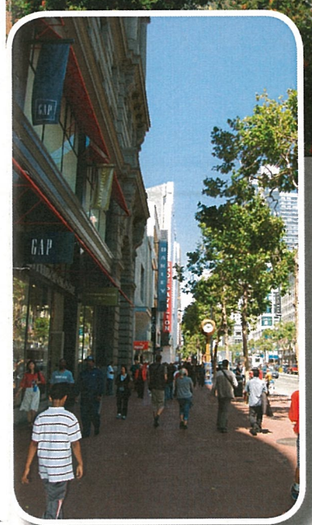
"What to Build" Summary

Development Models & Building Codes

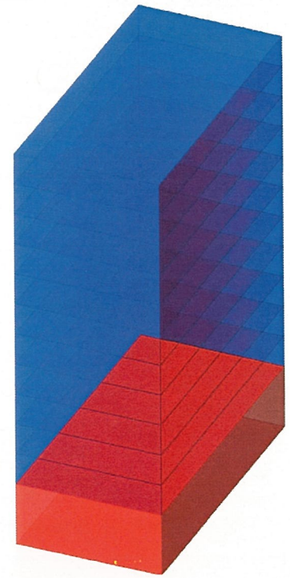
This chart assumes IBC 2006 Group R2 multi-family residential use



	Garden Apartments	Garden Apartments	Garden Apartments
Bldg Description:	3 stories Residential only exurban traditional market quick approvals no elevators open egress	4 stories Residential only suburban traditional market quick approvals no elevators open egress	5 stories Residential only suburban transit new market new codes & approvals need elevators protected egress
Utilities/Trash/SWM	easy	easy	easy
Density:	0.35 FAR (10-20u/a)	0.5 FAR (20-30u/a)	0.65 FAR (30-40u/a)
Parking Supported:	Surface	Surface	Surface Park w/Transit
Cost $/sf:	$75-90	$85-100	$95-110
Construction Type:	Type Vb	Type Va	Type IIIb
Description	all wood	all wood	wood interior; steel ext
Fire Rating	combustible limited fire ratings	combustible substantial fire ratings	noncombustible skin limited fire ratings
IBC Chart 503	2-40'	3-50'	4-55'
Sprinkler Increase	**3-60'**	**4-70'**	**5-75'**
Podium Exception	n/a	n/a	n/a
Typical Flr Heights	12' x 3 stories	12' x 4 stories	12' x 5 stories



Using the IBC construction Type Ib (1b) B will raise the allowable height to twelve stories (rarely 13 with the podium exception) and 160'. This is a challenging construction type seen in high-rise office parks or as the central core of an urban transit hub.

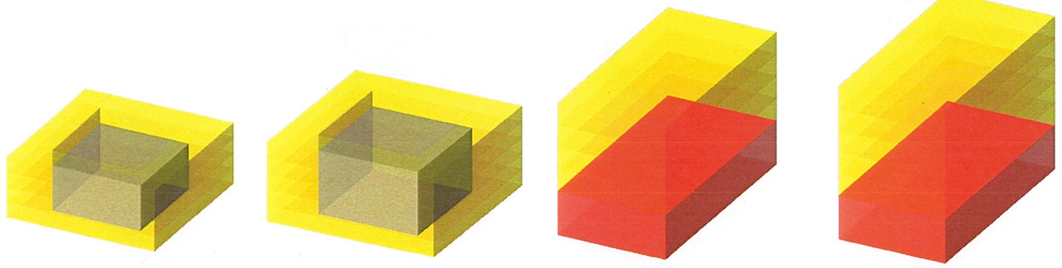


	High-Rise Office
Bldg Description:	7-12 stories Office & Retail multi-use/lg office park urban/suburban market hard codes & approvals separated verticals complicated egress
Utilities/Trash/SWM	difficult
Density:	3.0-5.0 FAR
Parking Supported:	Structured/Transit
Cost $/sf:	$140-170
Construction Type:	Type Ib
Description	concrete or steel
Fire Rating	non-com / highrise difficult fire ratings
IBC Chart 503	11-160'
Sprinkler Increase	**12-180'**
Podium Exception	n/a
Typical Flr Heights	13'6"' x 12stories

High-Rise Office is a common dense urban building type for office uses. Type Ib fireproofed steel and deck or concrete construction is found in some dense commercial zones or downtown urban streetscapes. A highly fireproofed steel superstructure or poured in place concrete frame and floor are appropriate options for this building type and will be selected based on market and region. Larger construction companies and experienced trades become more important as the height of the building grows and the available site area becomes smaller. Careful attention must be paid to the additional fireproofing requirements in the floors, structure and, most importantly, the skin and roof. Once the 75' to the highest egress landing is exceeded around seven stories, all the specialized requirements for "high-rise" add additional cost and complexity to the project over the lower Type II buildings.

The size and massing is powerfully dense and either requires a great deal of setback and site area or a high-rise TOD environment to support the bulk of a 12 story building. This product becomes difficult to surface park within 200'-300' from the building leading but can be accommodated with low-rise structured parking or transit based urban streets.

High-Rise Office

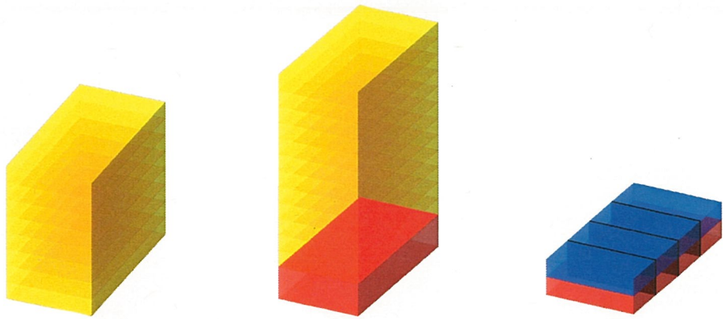


Wrap Apartments	Wrap Apartments	Mixed-Use Podium	Mixed-Use Podium
4 stories	5 stories	5 stories (4+1)	6 stories (5+1)
Residential only	Residential only	Residential over Retail	Residential over Retail
multi-use / infill /transit	multi-use / infill / transit	urban / transit	urban / transit
semi traditional market	semi traditional market	current market	current market
modest approvals	new codes & approvals	hard codes & approvals	hard codes & approvals
probably elevators	more elevators	separated verticals	separated verticals
protected egress	protected egress	complicated egress	complicated egress
modest	modest	difficult	difficult
1.0 FAR (40-50u/a)	1.25 FAR (50-60u/a)	1.5-2 FAR (50-85u/a)	1.75-2.5 FAR (60-90u/a)
Structured	Structured	Structured	Structured / Underground
$110-120	$120-130	$130-140	$140-150
Type Va wrapping Ia	Type IIIb wrapping Ia	Type Va over Ia	Type Va over Ia
all wood	wood interior; steel ext	wood above/PIP below	wood+ above/PIP below
combustible	noncombustible skin	mixed but separate	mixed but separate
substantial fire ratings	limited fire ratings	specific fire ratings	specific fire ratings
3-50'	4-55'	3-50'	4-55'
4-70'	**5-75'**	4-70'	5-75'
n/a	n/a	**4+1-70'**	**5+1-75'**
12' x 4 stories	12' x 5 stories	20'base+12.5' x 4 stories	20'base+11' x 5 stories

"What to Build" Summary

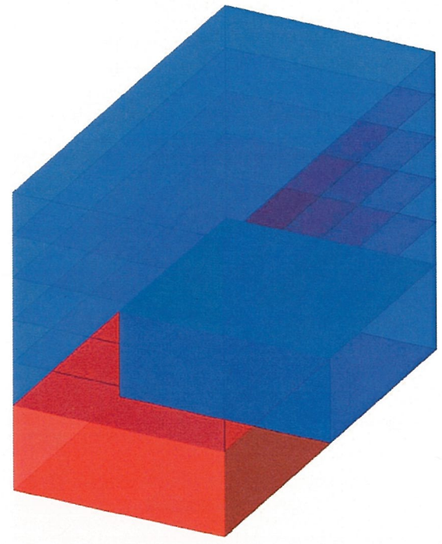
Development Models & Building Codes

This chart assumes IBC 2006 Group R2 multi-family residential use



	Mid-Rise Apartments	High-Rise Apartments	Professional Small Office
Bldg Description:	6-8 stories Residential only multi-use / infill /transit traditional market modest approvals high level elevators protected egress	8-13 stories Residential over Retail urban / transit urban market hard codes & approvals separated verticals complicated egress	1-4 stories Very Small Tenants only exurban/newurban/town uncommon market modest approvals possibly elevators open egress
Utilities/Trash/SWM	modest	difficult / management	modest
Density:	2.0-3.0 FAR (80-120u/a)	3.0-5.0 FAR (150-240u/a)	0.25 FAR
Parking Supported:	Surface/Structured	Structured / Underground	Surface
Cost $/sf:	$150-160	$170-190	$70-90
Construction Type:	Type Ib	Type Ib	Type Va
Description	concrete / maybe steel	concrete or steel	all wood
Fire Rating	noncombustible limited fire ratings	non-com / highrise difficult fire ratings	combustible difficult fire ratings
IBC Chart 503	11-160'	11-160'	3-50'
Sprinkler Increase	**12-180'**	12-180'	**4-70'**
Podium Exception	n/a	**12+1-180'**	n/a
Typical Flr Heights	10'6"' x 8stories=<75'stair	20'base+13'4"x12stories	12'6" x 4 stories

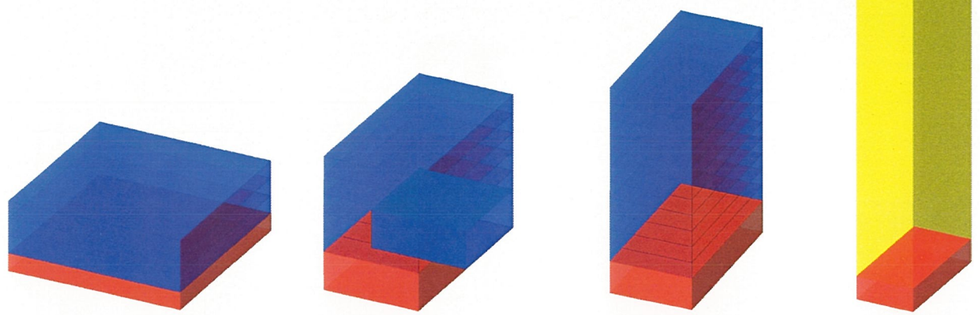
Using the IBC construction Type IIa (2a) B will raise the allowable height to six stories and 75'. This is a flexible construction type seen in many different mid-rise commercial environments, most commonly in suburban office parks or as transition corner office buildings in urban developments.



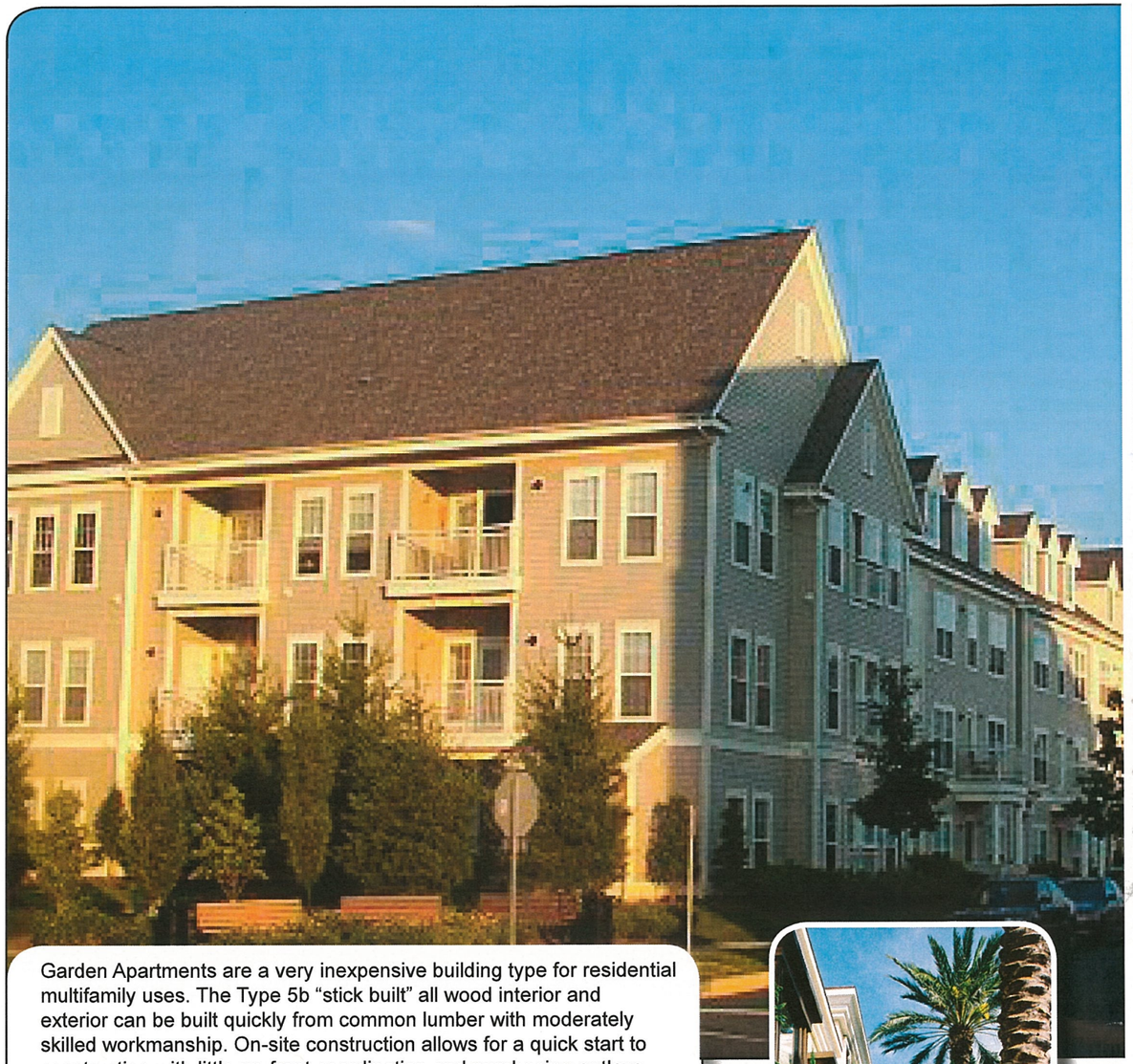
	Mid-Rise Office
Bldg Description:	5-6 stories Office over Retail office park/urban/transit urban market hard codes & approvals separated verticals complicated egress
Utilities/Trash/SWM	difficult
Density:	1.0-2.5 FAR
Parking Supported:	Structured/Transit
Cost $/sf:	$130-150
Construction Type:	Type IIa
Description	concrete or steel
Fire Rating	non-combustible substantial fire ratings
IBC Chart 503	5-65'
Sprinkler Increase	**6-85'**
Podium Exception	**n/a**
Typical Flr Heights	13'4"' x 6stories

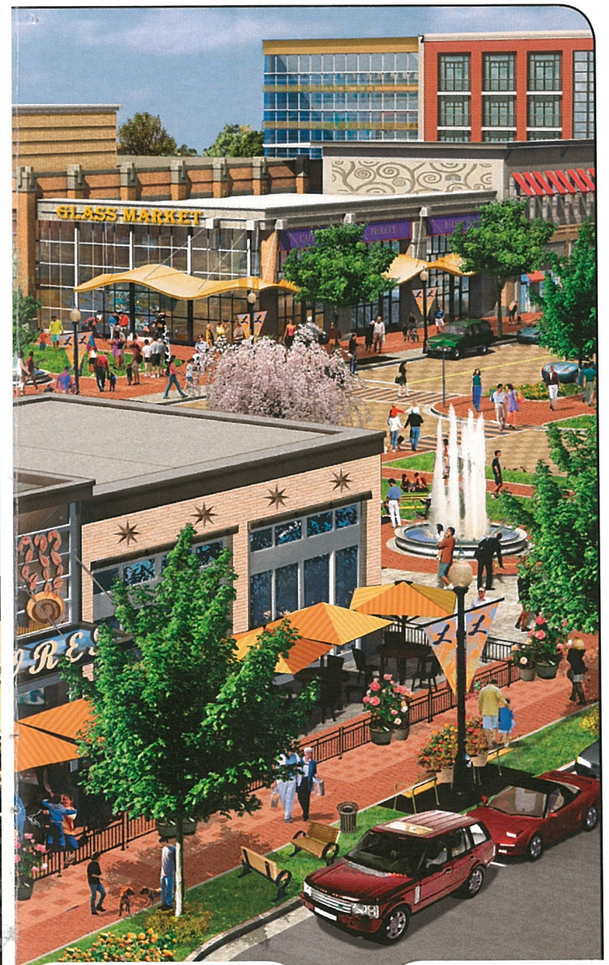
Mid-Rise Office is a very common building type for medium sized office uses. Type IIa steel and deck construction is found in many commercial zoned parks or mid-rise urban streetscapes. A steel superstructure is bolted directly to a concrete slab with concrete-filled metal decking over steel beams at floors and insulated metal deck on joist at the roof. Most medium sized construction companies can complete these buildings with careful attention paid to the additional fireproofing requirements. The size and massing is dense but not imposing and works well in urban office streets, single-use commercial parks or as a good transition from low-rise residential to high-rise TOD. The product can be surface parked at less than .5 FAR leading to the large number of Euclidean six story office buildings throughout the suburbs but is just as common on 2.0 FAR structured parking or transit based semi-urban streets. Big box retail often uses the Type IIa construction to allow for large continuously open floorplans.

Mid-Rise Office

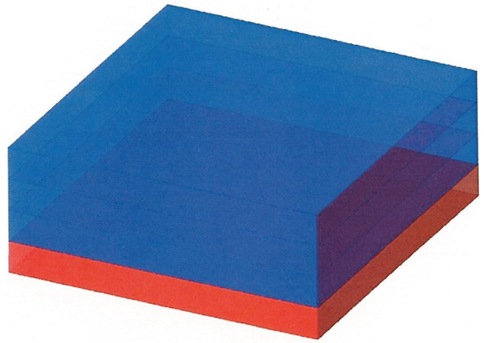


Large Commercial	Mid-Rise Office	High-Rise Office	Mixed-Use High-Rise
1-4 stories	5-6 stories	7-12 stories	14+ stories
Office or Retail	Office over Retail	Office & Retail	Residential/Retail/Office
suburban/newurban	office park/urban/transit	multi-use/lg office park	urban / transit
traditional market	urban market	urban/suburban market	urban market
easy approvals	hard codes & approvals	hard codes & approvals	hard codes & approvals
modest elevators	separated verticals	separated verticals	separated verticals
protected egress	complicated egress	complicated egress	complicated egress
modest-difficult	difficult	difficult	difficult / management
0.5 FAR	1.0-2.5 FAR	3.0-5.0 FAR	6.0+ FAR (250+u/a)
Surface/maybe Structure	Structured/Transit	Structured/Transit	Structured / Underground
$120-130	$130-150	$140-170	$180-250
Type IIb	Type IIa	Type Ib	Type Ia
steel / maybe concrete	concrete or steel	concrete or steel	concrete or steel
noncombustible	non-combustible	non-com / highrise	non-com / highrise
modest fire ratings	substantial fire ratings	difficult fire ratings	highly difficult fire ratings
4-55’	5-65’	11-160’	unlimited
5-75’	**6-85’**	**12-180’**	unlimited
n/a	**n/a**	n/a	**unlimited**
13’4”’ x 5 stories	13’4”’ x 6stories	13’6”’ x 12stories	unlimited



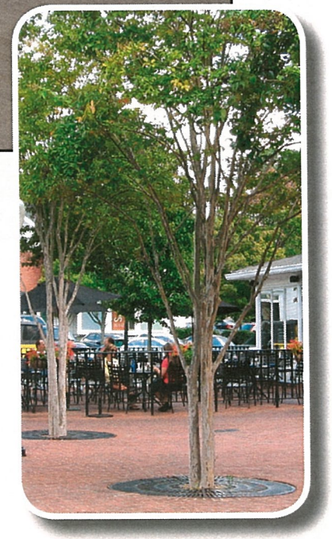


Using the IBC construction Type IIb (2b) B will raise the allowable height to five stories. This is a flexible construction type seen in many different low-rise commercial environments, predominantly suburban office parks and strip shopping centers.



Garden Apartments are a very inexpensive building type for residential multifamily uses. The Type 5b “stick built” all wood interior and exterior can be built quickly from common lumber with moderately skilled workmanship. On-site construction allows for a quick start to construction with little up-front coordination and purchasing outlays. The size and massing of these smaller garden apartments is seen as complimentary to single family neighborhoods and can serve as an excellent transition zone to denser environments. The smaller footprints and lower densities can usually be surface parked with one or two rows of double spaces, which allows for some additional green areas and a stepping back of the mass from the street. These units are an exurban or suburban product predominantly seen where the market is weak or new and land values are relatively low but a larger population of residents than single family product is desired or required.

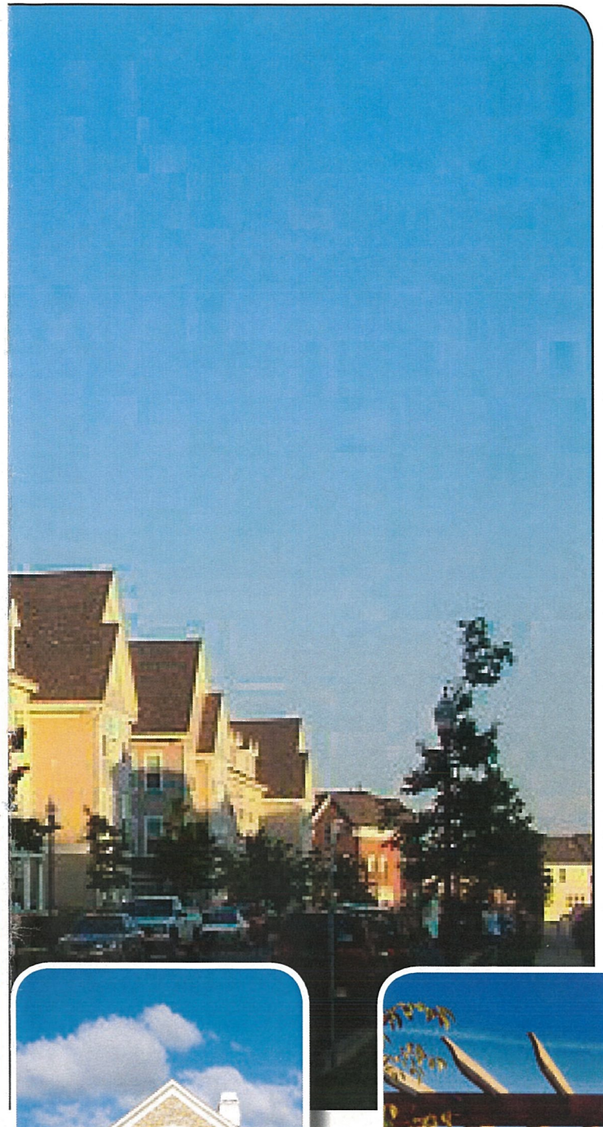
Garden Apartment - 3 Story

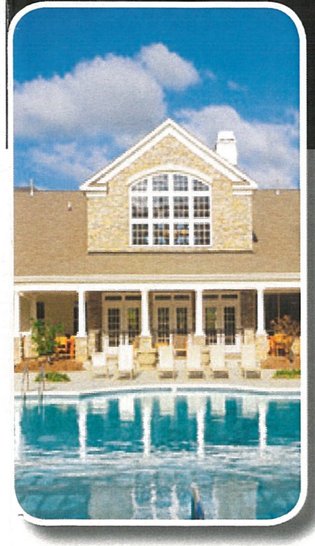


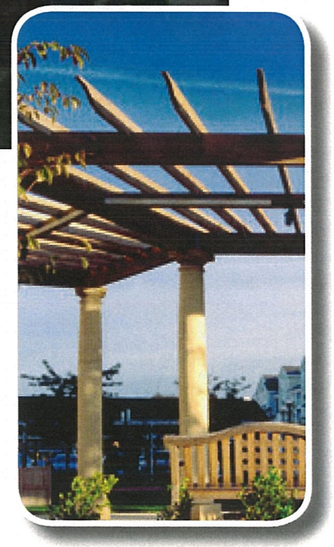
Bldg Description:	Large Commercial 1-4 stories Office or Retail suburban/newurban traditional market easy approvals modest elevators protected egress
Utilities/Trash/SWM	modest-difficult
Density:	0.5 FAR
Parking Supported:	Surface/maybe Structure
Cost $/sf:	$110-130
Construction Type:	Type IIb
Description	steel / maybe concrete
Fire Rating	non-combustible modest fire ratings
IBC Chart 503	4-55’
Sprinkler Increase	**5-75’**
Podium Exception	n/a
Typical Flr Heights	13’4”’ x 5 stories

Large Commercial is an inexpensive and very common building type for small to medium footprint retail and office uses. Type IIb simple steel and deck construction makes up the majority of the commercial buildings built today. A steel superstructure is bolted directly to concrete filled metal decking over steel beams at floors and insulated metal deck on joists at the roof. Most medium sized construction companies can complete these buildings without any difficulties and minimal fire proofing allows for an easy inspection process. The size and massing is found in all strip retail centers, most freestanding retail pad buildings medium anchor stores and four story or smaller office buildings. Tenants' areas can be fairly large with super big boxes or warehouses needing to jump to Type IIa just for the additional area. The office forms of this product is easily surface parked on a typical .5 FAR site leading to the large number of Euclidean four story office buildings throughout the suburbs. The retail forms are typically found in suburban shopping centers, suburban office parks and low-rise urban streets.

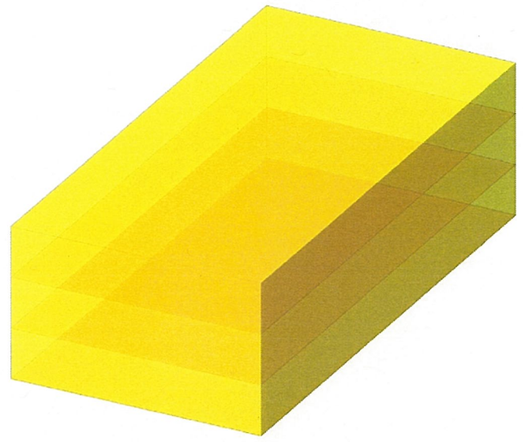
Large Commercial Office



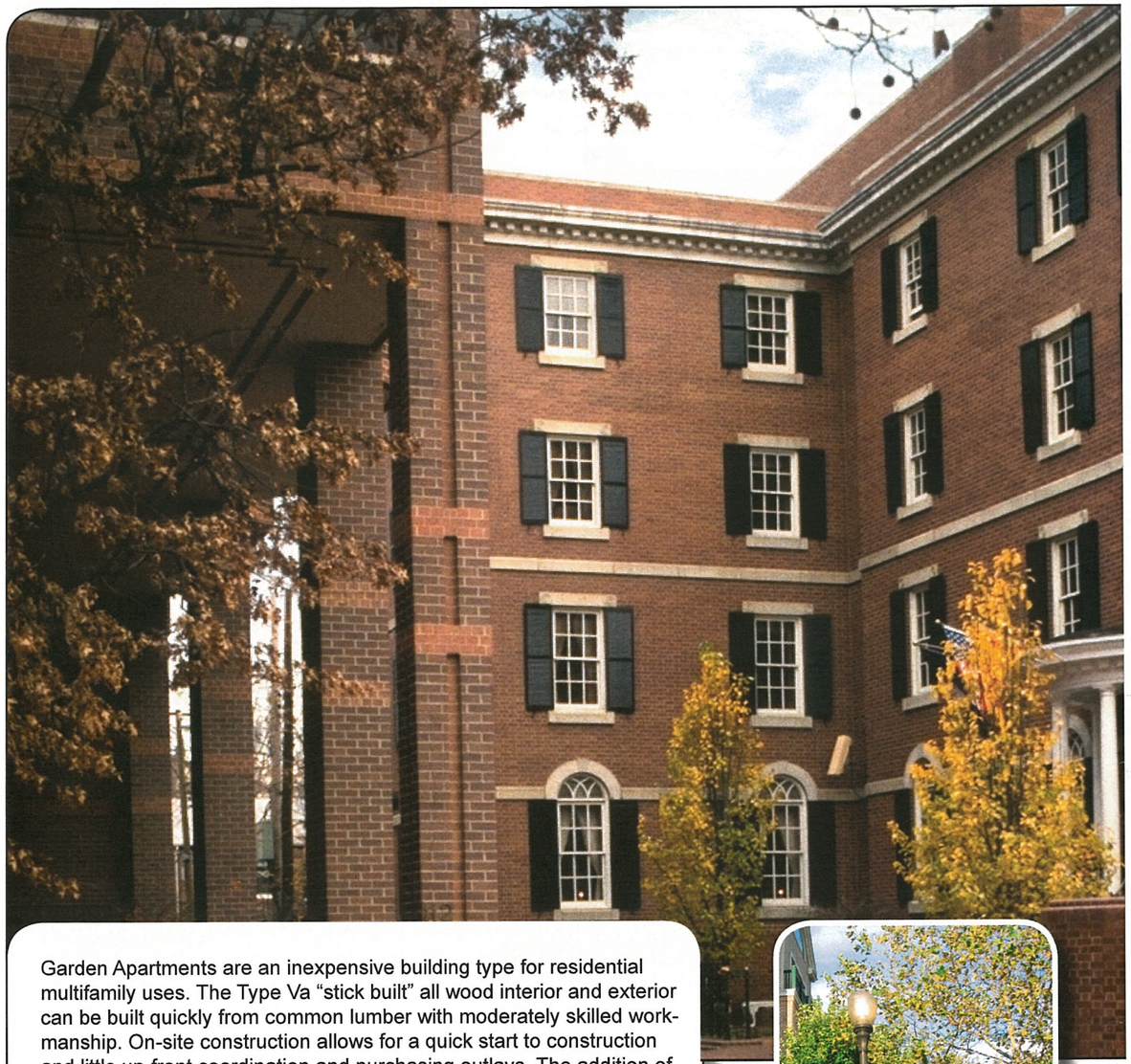




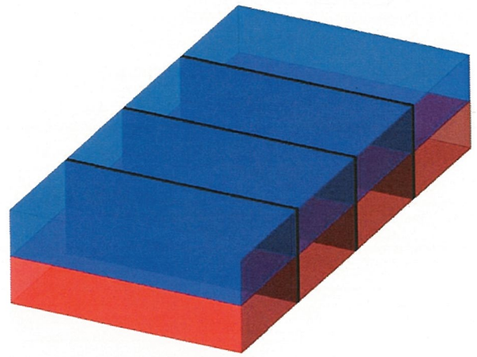
Using the IBC construction Type Vb (5b) R-2 will restrict the height to three stories and a relatively small area without a fire wall but has few difficult fire proofing requirements and fewer run-ins with approvals.



Bldg Description:	Garden Apartments
	3 stories
	Residential only
	exurban
	traditional market
	quick approvals
	no elevators
	open egress
Utilities/Trash/SWM	easy
Density:	0.35 FAR (10-20u/a)
Parking Supported:	Surface
Cost $/sf:	$75-90
Construction Type:	Type Vb
Description	all wood
Fire Rating	combustible
	limited fire ratings
IBC Chart 503	2-40'
Sprinkler Increase	**3-60'**
Podium Exception	n/a
Typical Flr Heights	12' x 3stories



Using the IBC construction Type Va (5a) B business will raise the height to four stories (rarely seen above two) and allow enough area for a one or two office company without a fire wall.



Garden Apartments are an inexpensive building type for residential multifamily uses. The Type Va "stick built" all wood interior and exterior can be built quickly from common lumber with moderately skilled workmanship. On-site construction allows for a quick start to construction and little up-front coordination and purchasing outlays. The addition of elevator cores and enclosed egress corridors raise the difficulty, cost and density of this product. The size and massing of these garden apartments is still seen as complimentary to single family neighborhoods and can serve as a transition zone to denser environments. The smaller footprints and lower densities can usually be surface parked with one or two rows of double spaces, which allows for some additional green areas and a stepping back of the mass from the street. These units are a suburban product predominantly seen where the market is still developing and land values are relatively low but a larger population of residents than single family product is desired or required.

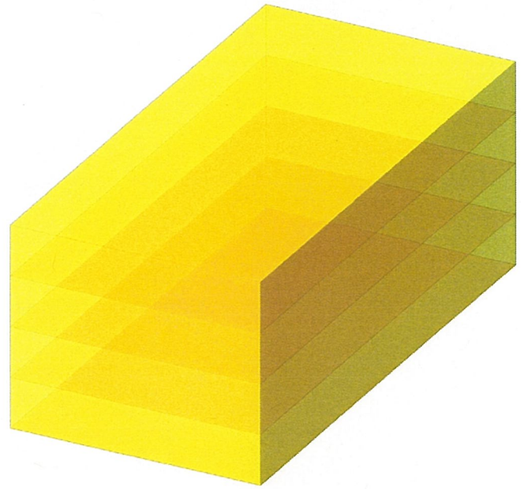
Garden Apartment - 4 Story

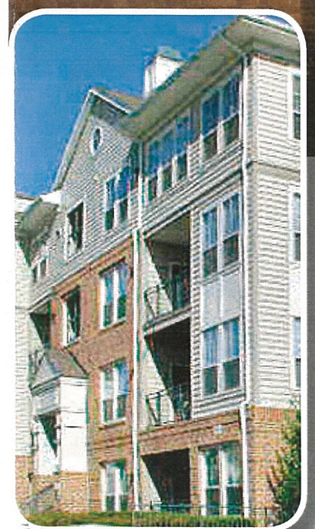
Bldg Description:	Professional Small Office
	1-4 stories
	Very Small Tenants only
	exurban/newurban/town
	uncommon low market
	modest approvals
	possibly elevators
	open egress
Utilities/Trash/SWM	modest
Density:	0.25-1.0 FAR
Parking Supported:	Surface or Urban
Cost $/sf:	$70-90
Construction Type:	Type Va
Description	all wood
Fire Rating	combustible
	difficult fire ratings
IBC Chart 503	3-50'
Sprinkler Increase	**4-70'**
Podium Exception	n/a
Typical Flr Heights	12'6" x 4 stories

Professional Small Office is a very inexpensive building type for small commercial uses typicaly on small lots. The Type Va "stick built" all wood interior and exterior can be built quickly from common lumber with moderately skilled workmanship. On-site construction allows for a quick start to construction and little up-front coordination and purchasing outlays. This building type is typically held to two stories of walk-up or "bridged" offices to avoid the need for elevators and egress stairs. The size and massing of professional small office space is seen as complimentary to single family neighborhoods or older low-rise retail streets. The tiny tenant areas allowed by the construction type are very restrictive and will limit flexibility and use of the partitioned space. The low densities of this product are easily surface parked with one row of double spaces or incorporation into other nearby surface parking. These units are a suburban or rural town product predominantly seen where the market is still developing and land values are low but a small amount of service, design, legal or medical offices is desired. Durability and construction quality are considerable considerations for this mix of combustible mold prone materials. A similar construction type is occasionally mixed with residential for small "live/work" units in new-urbanist village transitions.

Professional Small Office

Using the IBC construction Type Va (5a) R-2 will raise the height to four stories, slightly increase allowable area without a fire wall and add some increasingly difficult fire proofing requirements with more risk on approvals.



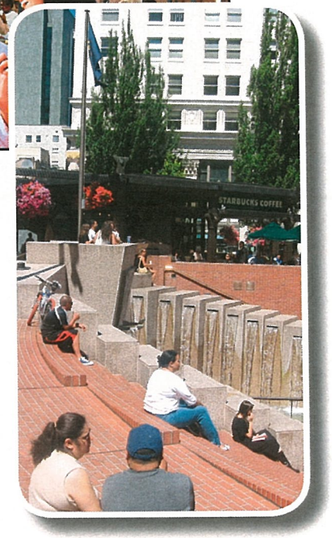


Bldg Description:	Garden Apartments
	4 stories
	Residential only
	suburban
	traditional market
	quick approvals
	no elevators
	open egress
Utilities/Trash/SWM	easy
Density:	0.5 FAR (20-30u/a)
Parking Supported:	Surface
Cost $/sf:	$85-100
Construction Type:	Type Va
Description	all wood
Fire Rating	combustible
	substantial fire ratings
IBC Chart 503	3-50'
Sprinkler Increase	**4-70'**
Podium Exception	n/a
Typical Flr Heights	12' x 4 stories

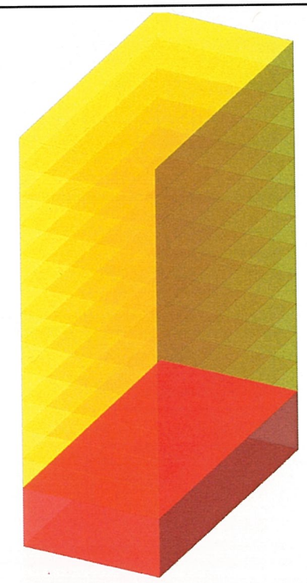
Garden Apartments are an inexpensive building type for residential multifamily uses. The Type IIIb all wood interior and roof and non-combustible exterior wall requires additional design and engineering to accommodate the freestanding metal stud or CMU exterior wall with the wood truss interior floors and roof. Interior stick construction still allows for some economy in materials and workmanship. The addition of elevator cores and enclosed egress corridors raise the difficulty, cost and density of this product.

The size and massing of these larger garden apartments might still be seen as complimentary to single family neighborhoods or smaller garden apartments but may run up against zoning restriction at four stories and 50'. The larger footprints and higher densities may be surface parked with several rows of double spaces or be located adjacent to transit (which reduces parking need). These units are a suburban product predominantly seen where the market is climbing and land values do not support mixed-use development but require higher densities to balance costs. This in-between market generally does not support structured parking and requires a delicate balance of higher approval, construction and land costs.

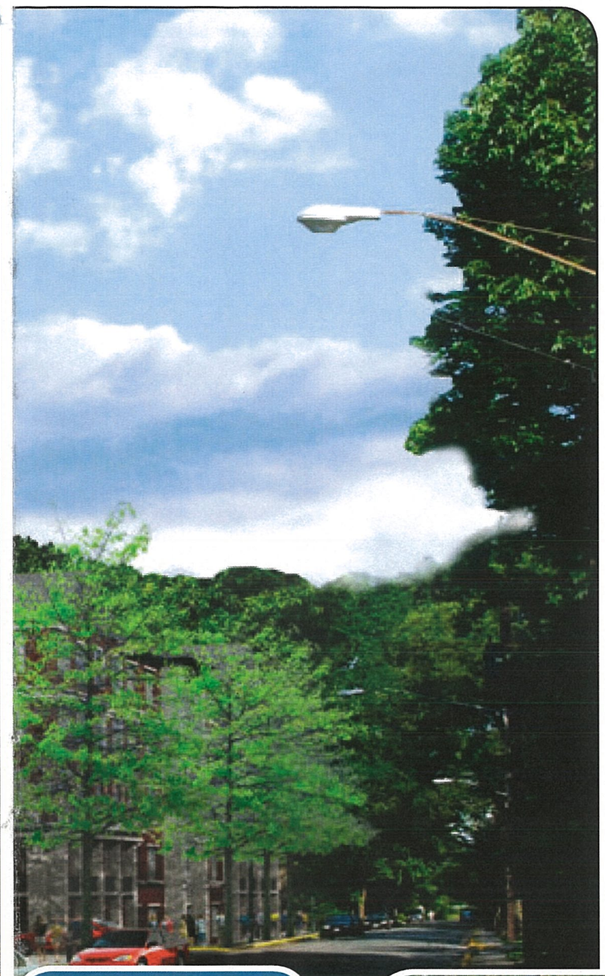
Garden Apartment - 5 Story



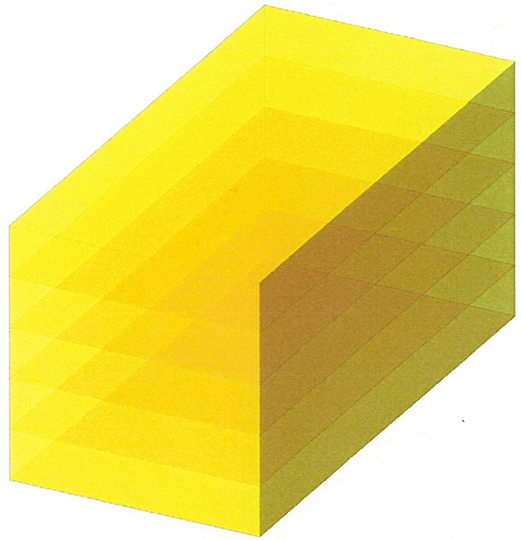
Using the IBC construction High-Rise podium Type Ib (1b) R-2 over Type Ia M retail space or S-2 garage will raise the height to 13 (12+1) stories and a maximum of 180'. This is a fairly common building type with time tested construction methods and found at targeted zoning environments, transit oriented developments and city centers.



Bldg Description:	<u>High-Rise Apartments</u> 8-13 stories Residential over Retail urban / transit urban market hard codes & approvals separated verticals complicated egress
Utilities/Trash/SWM	difficult / management
Density:	3.0-5.0 FAR (150-240u/a)
Parking Supported:	Structured / Underground
Cost $/sf:	$170-190
Construction Type:	<u>Type Ib</u>
Description	concrete or steel
Fire Rating	non-com / highrise difficult fire ratings
IBC Chart 503	11-160'
Sprinkler Increase	12-180'
Podium Exception	**12+1-180'**
Typical Flr Heights	20'base+13'4"x12stories



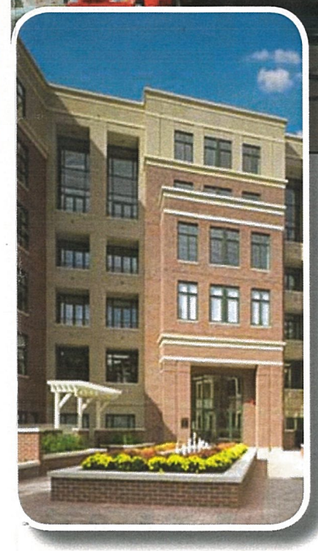
Using the IBC construction Type IIIb (3b) R-2 will raise the height to five stories and 75', increase allowable area without a fire wall but is a difficult uncommon construction type that may require additional effort with the approval authority.

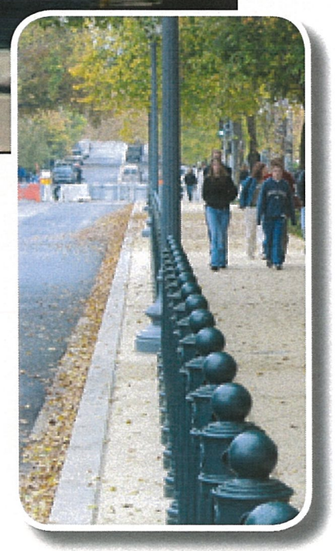


High-Rise Podium Apartments are a relatively expensive and dense alternative building type for residential multifamily use over retail since they require the same Type Ib non-combustible construction as Mid-Rise construction with the added cost and height of a high-rise fire safety package. Elevators, emergency power, stair towers all have strict requirements that increase the design and construction costs. This product type allows for a much denser population which can provide high levels of support for amenities and common areas. Common HVAC and utilities are assumed at this scale of building creating good economy of scale with a high demand of property management.

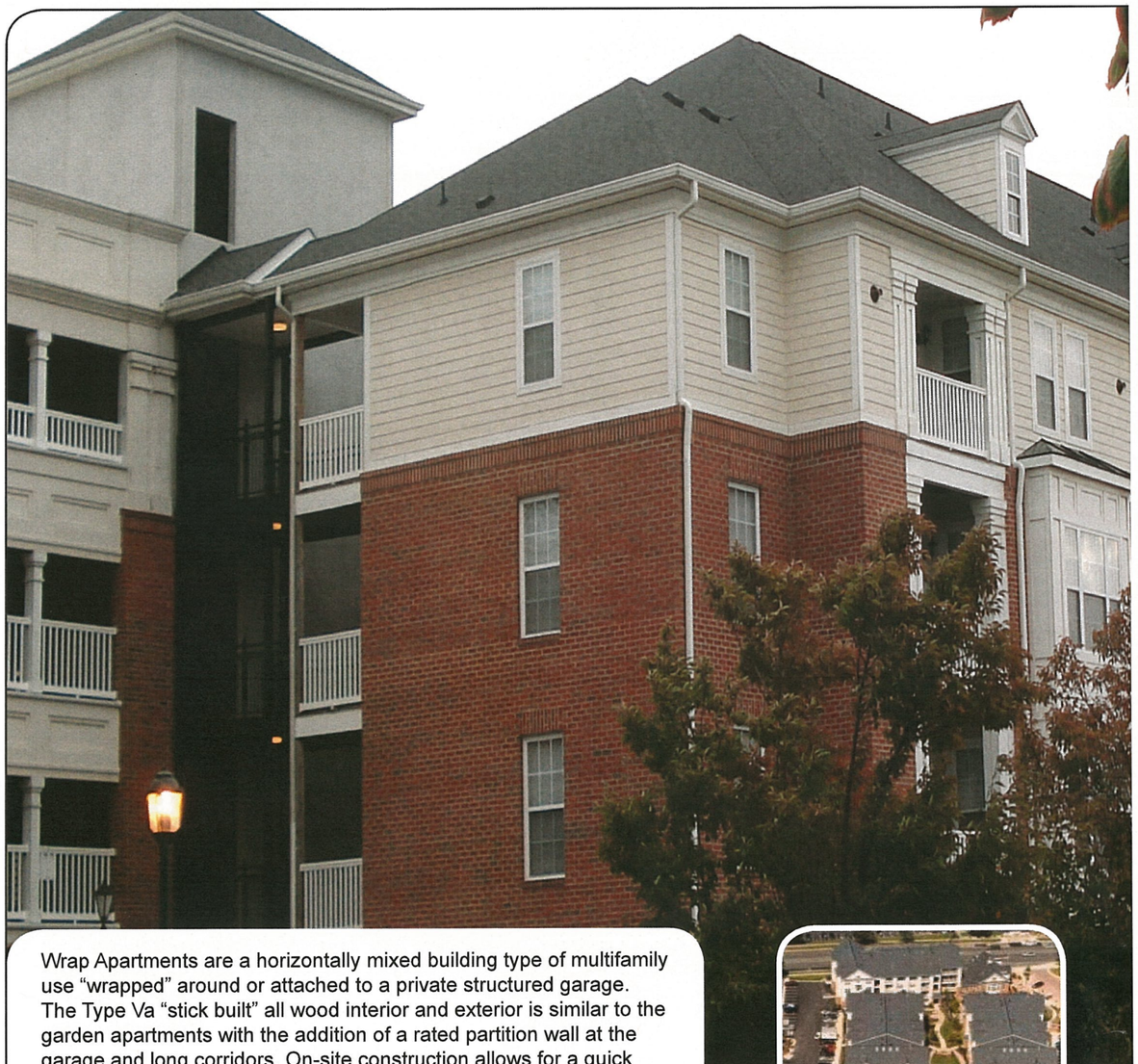
The size and massing of these high-rise apartments is imposing. Dense environments may be able to accommodate these towers, though considerable setbacks and screening will be required. Parking might still be able to be accomplished in a large field of surface spaces if within 300' of the building but most likely will require private or public structured parking. These units are primarily an inner suburban product near transit or major roadways or support density at the edge of a mixed-use town center. The podium exception may also be used to increase the height and introduce street retail at the base of the tower. This is a very urban solution but will allow for maximum density without the additional fire safety restrictions of the highest construction type.

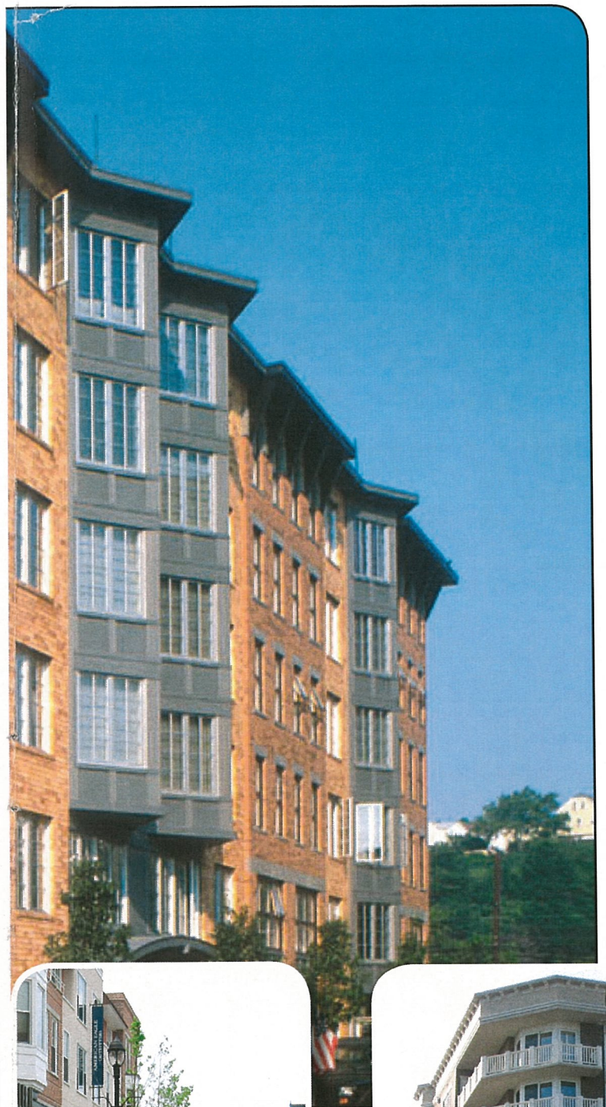
High-Rise Apartments



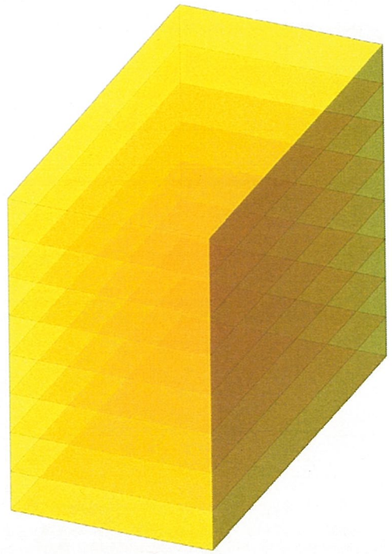


Bldg Description:	<u>Garden Apartments</u>
	5 stories
	Residential only
	suburban transit
	new market
	new codes & approvals
	need elevators
	protected egress
Utilities/Trash/SWM	easy
Density:	0.65 FAR (30-40u/a)
Parking Supported:	Surface Park w/Transit
Cost $/sf:	$95-110
Construction Type:	<u>Type IIIb</u>
Description	wood interior; steel ext
Fire Rating	non-combustable skin
	limited fire ratings
IBC Chart 503	4-55'
Sprinkler Increase	**5-75'**
Podium Exception	n/a
Typical Flr Heights	12' x 5 stories





Using the IBC construction Type Ib (1b) R-2 will raise the height to eight stories and a maximum of 75' to the top landing to avoid high-rise fire safety conditions. This is however a common single use building type with time tested construction methods and traditional Euclidian zoning.

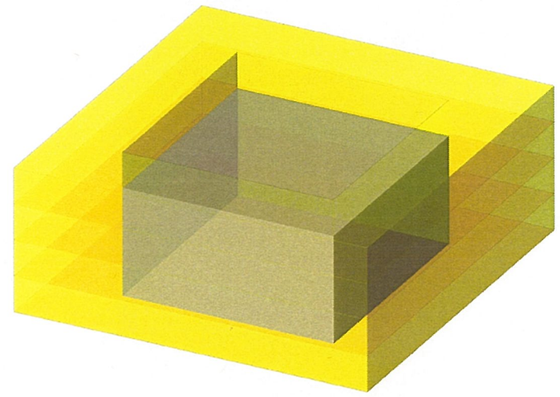


Wrap Apartments are a horizontally mixed building type of multifamily use "wrapped" around or attached to a private structured garage. The Type Va "stick built" all wood interior and exterior is similar to the garden apartments with the addition of a rated partition wall at the garage and long corridors. On-site construction allows for a quick start to construction and little upfront cost with the exception of the (likely) precast garage, which generally needs to be erected before the residential wrap and adds considerable costs over garden apartments. The addition of elevator cores, additional egress stairs and long enclosed egress corridors raise the difficulty, cost and density of this product. Size and massing are similar to garden apartments with the added benefit of contained and covered parking which allows for a more urban streetscape. Contained space within the wrapped block provides for a protected common area. This product is an excellent addition to a more urban community near commercial uses and/or transit if large block areas are available.

Wrap Apartments - 4 Story

Bldg Description:	<u>Mid-Rise Apartments</u> 6-8 stories Residential only multi-use / infill /transit traditional market modest approvals high level elevators protected egress
Utilities/Trash/SWM	modest
Density:	2.0-3.0 FAR (80-120u/a)
Parking Supported:	Surface/Structured
Cost $/sf:	$150-160
Construction Type:	<u>Type Ib</u>
Description	concrete / maybe steel
Fire Rating	non-combustible limited fire ratings
IBC Chart 503	11-160'
Sprinkler Increase	**12-180'**
Podium Exception	n/a
Typical Flr Heights	10'6"' x 8stories=<75'stair

Using the IBC construction Type Va (5a) R-2 wrapped around a Type I S-2 garage will restrict the height to four stories, will restrict allowable area without a fire wall and has some difficult fireproofing conditions but is a very common separated construction type that is easily understood by jurisdictions.

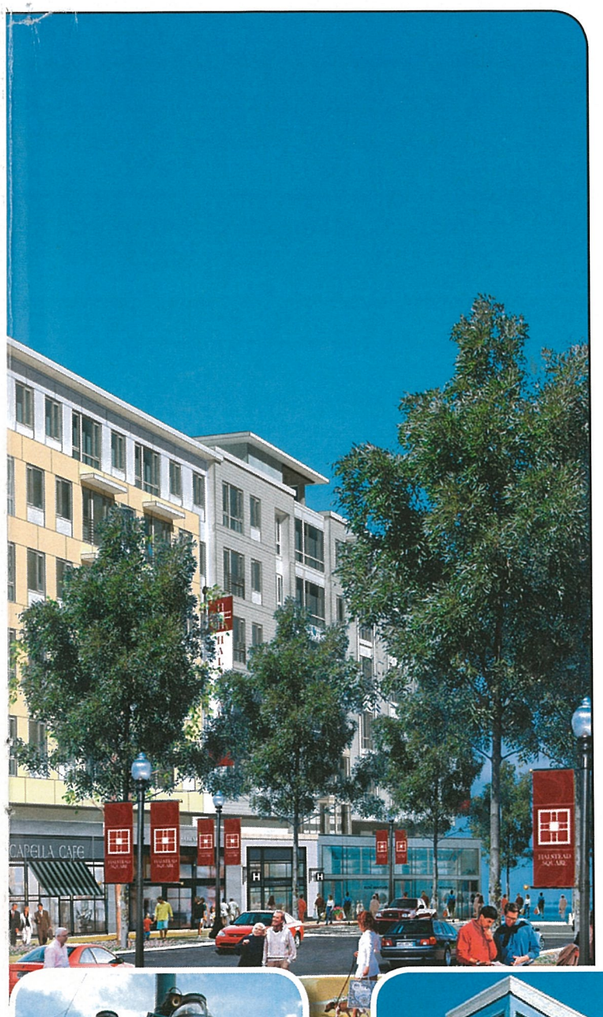


Mid-Rise Apartments are an inexpensive single use alternative building type for residential multifamily use. The Type Ib non-combustible construction requires a higher level of commercial design and construction. Elevator cores and enclosed egress corridors become important to maintain the level of service to the higher building. This product type allows for a denser population which can provide the income for stronger amenities and common areas. Common HVAC and utilities creates some economy of scale with the level of protection allowing some additional uses such as office, retail and assembly within the same structure.

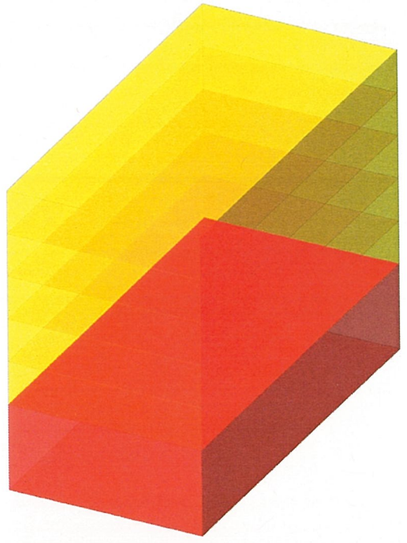
The size and massing of these mid-rise apartments is complimentary to garden apartments or denser environments but will need some setback and screening from lower densities. Parking becomes either a large field of surface spaces in the suburbs or private or public structured parking closer to urban centers. These units are primarily a suburban product where zoning or land-use does not support mixed-use development but does support higher densities. This in-between market generally does not support structured parking or a high-rise fire safety package and requires a delicate balance of higher approval, construction and land costs for the limited density.

Mid-Rise Apartments

Bldg Description:	Wrap Apartments 4 stories Residential only multi-use / infill /transit semi traditional market modest approvals problably elevators protected egress
Utilities/Trash/SWM	modest
Density:	1.0 FAR (40-50u/a)
Parking Supported:	Structured
Cost $/sf:	$110-120
Construction Type:	Type Va wrapping Ia
Description	all wood
Fire Rating	combustible substantial fire ratings
IBC Chart 503	3-50'
Sprinkler Increase	**4-70'**
Podium Exception	n/a
Typical Flr Heights	12' x 4 stories

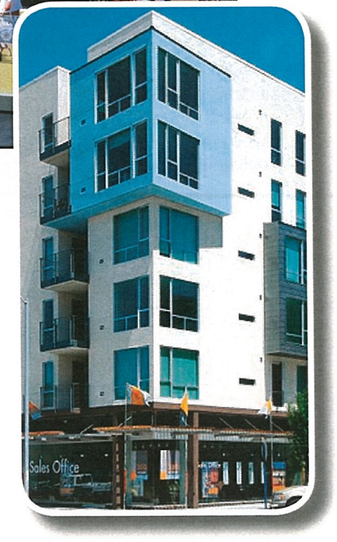


Using the IBC construction Type Va (5a) R-2 wrapped around a Type I S-2 garage will restrict the height to four stories, will restrict allowable area without a fire wall and has some difficult fireproofing conditions but is a very common separated construction type that is easily understood by jurisdictions.



Wrap Apartments are a horizontally mixed building type of multifamily use "wrapped" around or attached to a private structured garage. The Type IIIb all wood interior and roof and non-combustible exterior wall requires additional design and engineering to accommodate the freestanding metal stud or CMU exterior wall with the wood truss interior floors and roof with the addition of a rated partition wall at the garage and long corridors. On-site construction allows for a quick start to construction and little upfront cost with the exception of the (likely) precast garage which generally needs to be erected before the residential wrap and adds considerable costs over garden apartments. The addition of multiple elevator cores, additional egress stairs and long enclosed egress corridors raise the difficulty, cost and density of this product. Size and massing are similar to garden apartments with the added benefit of contained and covered parking which allows for a more urban streetscape. Contained space within the wrapped block provides for a protected common area. This product is an excellent addition to a more urban community near commercial uses and/or transit if large block areas are available.

Wrap Apartments - 5 Story

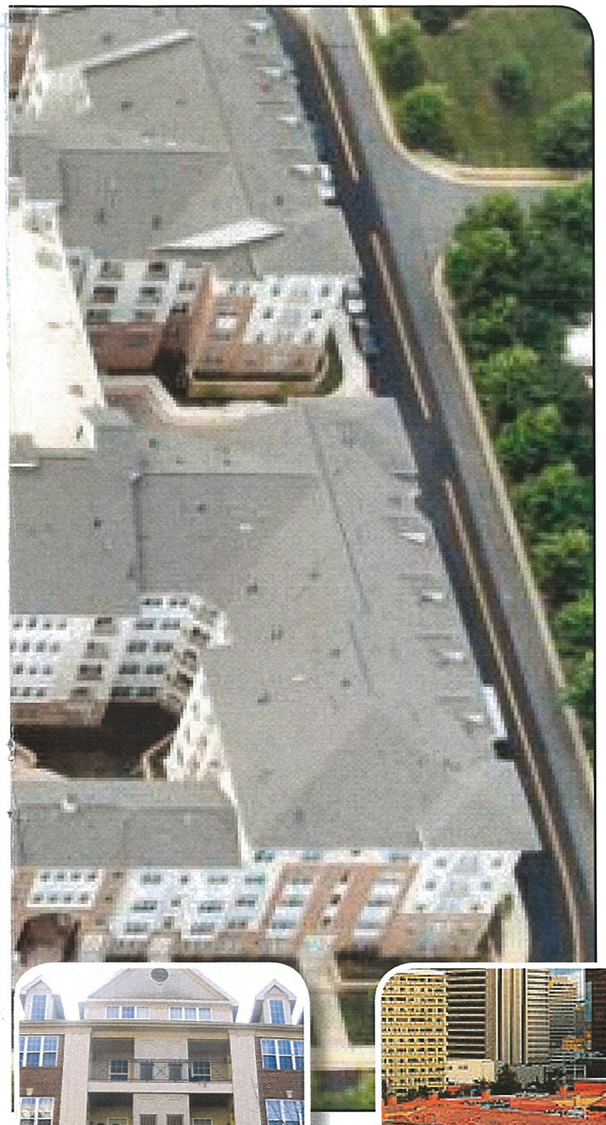


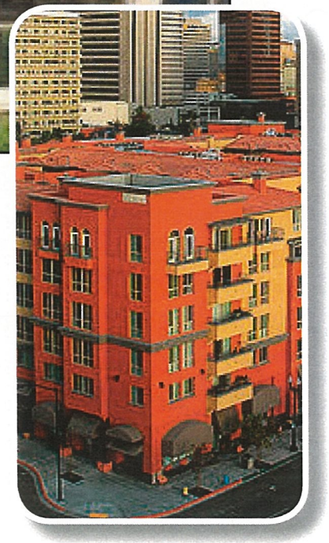
Bldg Description:	Mixed-Use Podium
	6 stories (5+1)
	Residential over Retail
	urban / transit
	current market
	hard codes & approvals
	separated verticals
	complicated egress
Utilities/Trash/SWM	difficult
Density:	1.75-2.5 FAR (60-90u/a)
Parking Supported:	Structured / Underground
Cost $/sf:	$140-150
Construction Type:	Type Va over Ia
Description	wood+ above/PIP below
Fire Rating	mixed but separate
	specific fire ratings
IBC Chart 503	4-55'
Sprinkler Increase	5-75'
Podium Exception	**5+1-75'**
Typical Flr Heights	20'base+11' x 5 stories

Mixed-Use Podium buildings include both a mix of uses and construction types in varying combinations. The Type Va all wood "stick built" building can be placed on top of a Type I podium with a separating 3 hour transfer slab. Under a special provision in IBC, the additional podium floor does not count against the maximum story limit of the building above. While the, usually, poured in place concrete podium requires commercial quality construction methods, once the podium is complete the residential trades can build above the transfer slab with little impact to the fit-out of tenant space below allowing faster retail occupancy. The timing of delivery maybe the greatest challenge in podium construction as multiple buildings of retail will require near simultaneous occupancy while the residential units may require a longer timeline than traditional separate uses.

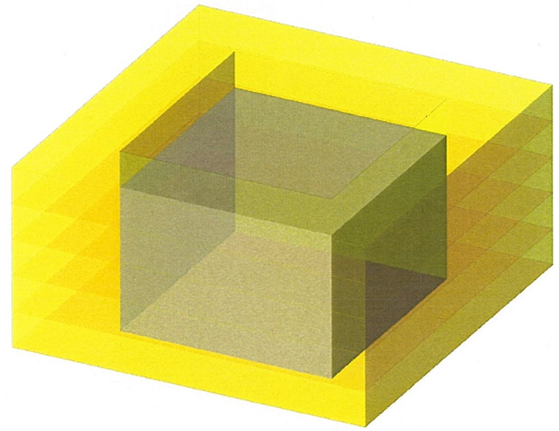
Size and massing create a classic urban streetscape of vibrant retail base and residential above. Garage and office uses may also be contained within the podium level and continued below ground if land values are high. The podium product greatly intensifies pedestrian retail, civic and entertainment districts which increases value for all uses. This product works best with common/ shared parking structures and highly detailed streetscapes. Loading, trash, utilities and egress issues are intertwined between very different functional uses creating an urban-like challenge for property management. Careful consideration should be given to separating as many functions as possible. Utility space becomes limited with potential for added costs of central cooling/ heating or specialized variable HVAC systems.

Mixed Use Podium - 6 Story



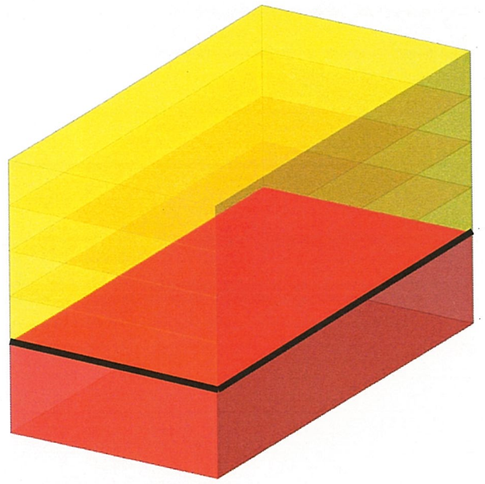


Using the IBC construction Type IIIb (3b) R-2 wrapped around a Type Ia (1a) S-2 garage will restrict the height to five stories, will restrict allowable area without a fire wall and has some difficult fireproofing conditions. The added difficulties and costs of the Type III construction are only offset if land costs demand increased density. The garage height will generally correspond to the extra floor and the separation of buildings is still a major advantage of this building type.



Bldg Description:	Wrap Apartments 5 stories Residential only multi-use / infill / transit semi traditional market new codes & approvals more elevators protected egress
Utilities/Trash/SWM	modest
Density:	1.25 FAR (50-60u/a)
Parking Supported:	Structured
Cost $/sf:	$120-130
Construction Type:	Type IIIb wrapping Ia
Description	wood interior; steel ext
Fire Rating	non-combustable skin limited fire ratings
IBC Chart 503	4-55'
Sprinkler Increase	**5-75'**
Podium Exception	n/a
Typical Flr Heights	12' x 5 stories

Using the IBC construction Type Va (5a) R-2 over Type Ia (1a) M retail space or S-2 garage will restrict the height to five stories (4 over 1) and 70', allowing the two stacked buildings to be designed somewhat separately with unique fireproofing and waterproofing conditions. This construction type is fairly new to the east coast and mid-west so additional approval effort may be necessary. This building type is rarely found outside of urban or new-urban town center environments.



Mixed-Use Podium buildings include both a mix of uses and construction types in varying combinations. The Type Va all wood "stick built" building can be placed on top of a Type I podium with a separating 3 hour transfer slab. Under a special provision in IBC, the additional podium floor does not count against the maximum story limit of the building above. While the, usually, poured in place concrete podium requires commercial quality construction methods, once the podium is complete the residential trades can build above the transfer slab with little impact to the fit-out of tenant space below allowing faster retail occupancy. The timing of delivery maybe the greatest challenge in podium construction as multiple buildings of retail will require near simultaneous occupancy while the residential units may require a longer timeline than traditional separate uses.

Size and massing create a classic urban streetscape of vibrant retail base and residential above. Garage and office uses may also be contained within the podium level and continued below ground if land values are high. The podium product greatly intensifies pedestrian retail, civic and entertainment districts which increases value for all uses. This product works best with common/ shared parking structures and highly detailed streetscapes. Loading, trash, utilities and egress issues are intertwined between very different functional uses creating an urban-like challenge for property management. Careful consideration should be given to separating as many functions as possible. Utility space becomes limited with potential for added costs of central cooling/ heating or specialized variable HVAC systems.

Mixed Use Podium - 5 Story

Bldg Description:	Mixed-Use Podium
	5 stories (4+1)
	Residential over Retail
	urban / transit
	current market
	hard codes & approvals
	separated verticals
	complicated egress
Utilities/Trash/SWM	difficult
Density:	1.5-2 FAR (50-85u/a)
Parking Supported:	Structured
Cost $/sf:	$130-140
Construction Type:	Type Va over Ia
Description	wood above/PIP below
Fire Rating	mixed but separate
	specific fire ratings
IBC Chart 503	3-50'
Sprinkler Increase	4-70'
Podium Exception	**4+1-70'**
Typical Flr Heights	20'base+12.5' x 4 stories