TOD KP

PD-R01

TOD ZONING CODE TEMPLATE

Template zoning ordinance/guideline for governments to use, including provisions on pedestrian pathways, activity generating uses, porous urban design, parking restrictions, shared parking provision, etc.

Type: Reference Document

TOD Global Platform for Sustainable Cities WORLD BANK GROUP IBI

TOD KP

ABOUT THE PLAN+DESIGN TOOL

PURPOSE

Establishing an appropriate zoning framework for TOD projects is essential to achieving good design and upholding best practices in transit-oriented development. An effective zoning framework allows for easy and unambiguous enforcement. The approach to writing zoning codes must depend on the planning framework applicable to the city. Most cities in low and middle-income countries, where zoning codes are used, follow the conventional Euclidean or Single-use Zoning format. This format relies on a land use-based definition of development of building standards.

Traditionally, Euclidean Zoning formats have been based on automobile-oriented planning practices and regulations are catered towards managing the impacts of specific land uses by segregating them spatially. This has led to sprawled development patterns, with limited connectivity. Poorer communities, in particular, have suffered from lack of access to jobs and opportunities because of such segregation. The TOD planning paradigm is fundamentally based on reversing segregation and allowing for compact, mixed-use developments within close proximity to transit. Consequently, zoning codes need revision to ensure the success of your city's TOD.

This Knowledge Product provides the resources listed below. The resources are based on industry-led best practices, but should be tailored to the context-specific conditions and considerations of your city.

Disclaimer: *The Transit-Orientated Development Implementation Resources & Tools knowledge product is designed to provide a high-level framework for the implementation of TOD and offer direction to cities in addressing barriers at all stages. As the context in low and middle-income cities varies, the application of the knowledge product must be adapted to local needs and priorities, and customized on a case-by-case basis.*

RESOURCES:

I SAMPLE ZONING CODES

As a reference, Case studies have been assembled to highlight zoning efforts in the few cities in low and middle-income countries where TOD is implemented statutorily that may serve as references for future efforts globally.

II MODEL ZONING CODE KEY ELEMENTS

TOD elements that are found to be most commonly used in zoning codes from the case studies are listed and explained here. These elements form the basis of a TOD zoning code. To understand how to incorporate these elements into your city's zoning code, refer to the detailed templates.

III MODEL ZONING TEMPLATES

These templates can be used by city authorities as a base to develop zoning codes and ordinances for their respective cities. Two types of zoning templates are provided here:

IIIA. The Model TOD Overlay Zoning Ordinance:

This model template is adapted from the Model Transit-Oriented District Overlay Zoning Ordinance resource by Reconnecting America (Valley Connections 2001). It provides a city the opportunity to create a "TOD Overlay Zone" over an existing base zoning framework. All the development parcels that lie within the TOD Overlay Zone are either required to or have the option to follow the regulations of the overlay zone. When the model template is applied to a city, the TOD Overlay Zone must be clearly defined to avoid ambiguity in property selection.

IIIB. The Model TOD Form-Based Code:

This model template is adapted from the Smart Code Version 9.2 (Center for Applied Transect Studies; 2008). This template is based on the innovative form-based code paradigm, where building standards will be defined based on the station area typology rather than land use.

These Codes may be used as a replacement or as an overlay to the existing base zoning framework. All the development parcels that lie within a specific station area typology would need to adhere to form-based regulations for that specific typology. When the model template is applied to a city, the TOD Station Area Typologies and their boundary delineation must be clearly defined to avoid ambiguity in property selection.

A form-based code is a land development regulation that fosters predictable built results and a high-quality public realm by using physical form (rather than separation of uses) as the organizing principle for the code. A form-based code is a regulation, not a mere guideline, adopted into city, town, or county law. A form-based code offers a powerful alternative to conventional zoning regulation. (Form-Based Codes Institute n.d.)

A TOD station area typology is a powerful tool to prioritize where and when to make investments, determine the types of investments that are appropriate in varying transit communities, and guide the timing and scale of those investments. A TOD typology provides a means of classifying and differentiating the many transit communities throughout a city by grouping them based on key shared characteristics. (Salat and Ollivier 2016)

REFERENCES

Center for Applied Transect Studies;. 2008. SmartCode Version 9.2. USA.

City of Johannesburg: Department of Development Planning. 2016. "Spatial Development Framework 2040 City of Johannesburg Metropolitan Municipality." Johannesburg.

n.d. Form Based Codes Institute. Accessed 8 18, 2018. https://formbasedcodes.org/definition/.

ITDP (Institute for Transportation and Development Policy) . 2008. "TOD Standard v9.3."

NRDA (Naya Raipur Development Authority). 2013. "Naya Raipur Transit Oriented Development Study." Naya Raipur. Consultant Report: IBI Group

Salat, Serge, and Gerald Ollivier. 2017. *Transforming Urban Space through Transit Oriented Development - The 3V Approach*. Washington DC: World Bank Group.

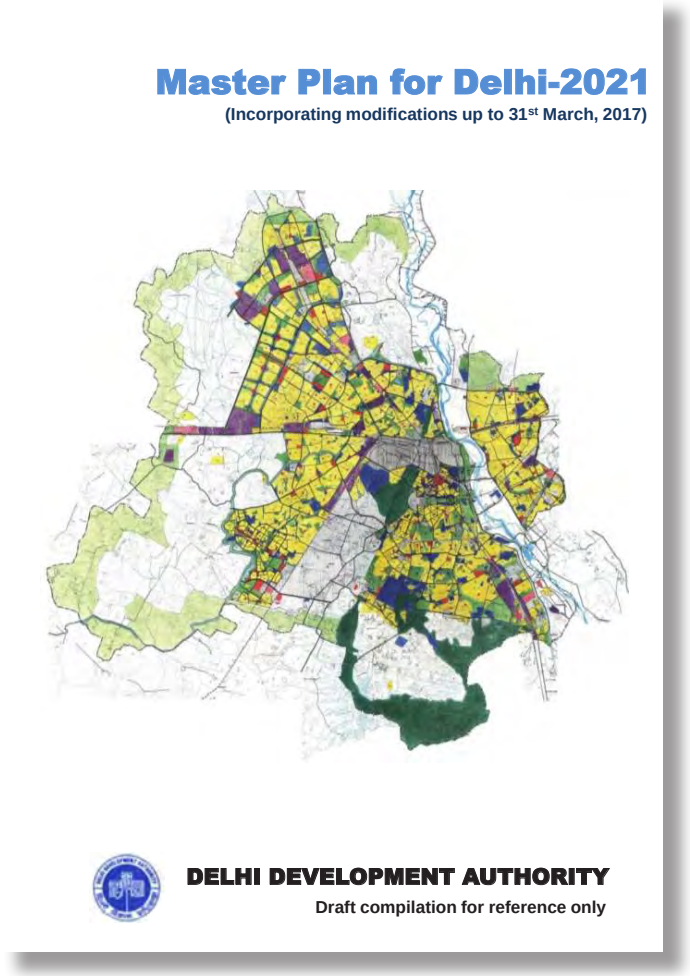
UD&UHD (Urban Development and Urban Housing Department). 2017. "Comprehensive General Development Control Regulation - 2017." Gandhinagar.

UTTIPEC (Unified Traffic and Transportation Infrastructure (Planning & Engineering) Centre), WRI India. 2014. Transit Oriented Development Manual – Delhi TOD Policy and Regulations Interpretation. New Delhi.

Valley Connections. 2001. Model Transit-Oriented District Overlay Zoning Ordinance. http://www.reconnectingamerica.org/assets/Uploads/bestpractice230.pdf, California: Community Design + Architecture, Inc.

SAMPLE ZONING CODE

DELHI TOD POLICY AND MASTER PLAN 2021, INDIA



KEY ELEMENTS

1 TOD Zone

The TOD Policy in Delhi was framed within the Influence Zone along MRTS corridor, designated as the Transit-oriented Development Zone in the Master Plan for Delhi 2021, modified with the latest revisions in 2017. This zone comprises of all the areas lying within 500m of the metro transit corridor on either sides. This area is expected to be delineated in the Zonal Development Plans to avoid ambiguity. The Master Plan incorporates TOD as a redevelopment strategy, encouraging private landowners to assemble and redevelop lands that have high TOD potential. (WRI [World Resources Institute] 2007)

Figure 1: TOD Influence Zone Delineation, Delhi TOD Policy Manual
Source: Reproduced from UTTIPEC, WRI India (2014)

2 FAR and Density:

Higher densities are allowed for all developments that are planned on individual or amalgamated land parcels of a size of 1Ha or more. A minimum mandatory Floor Area Ratio (FAR) is imposed for housing for the economically weaker section. This norm is intended to encourage land pooling as a redevelopment strategy in the TOD influence zones. Larger land parcels allow Delhi Development Authority (DDA) to extract land for public use including open spaces and transit plazas.

3 Mix of Uses:

Minimum 30% residential use, 10% commercial use, and 10% public amenities are compulsorily required on all land parcels irrespective of their dominant land use as per the Master Plan. Within the minimum residential area requirement, the Master Plan mandates housing units to be of smaller sizes. This is intended to encourage economic diversity within transit influence zones. Smaller unit sizes allow buyers the flexibility of purchasing small units in case of budget limitations and purchasing multiple units and combining them in case of larger family sizes. However, in practice, this requirement has been the most difficult to meet, because it increases the planned density of the development substantially. This, in turn, increases the infrastructural and parking requirement for the development.

4 Road Network:

A minimum 20% of the land is required to be reserved for roads, adhering to the principles of 250m center-to-center road density of vehicular roads and 100m center-to-center density of the pedestrian network. These roads will be handed over to the Government as public roads, but will be maintained and kept encroachment free by the Developer Entity.

5 Open Spaces:

A minimum of 20% of the land is required to be reserved for green open spaces for public use, adhering to principles of inclusion and another 10% green space for private use. In parcels smaller than 1 HA, private open space is allowable in the form of common terraces, rooftops or podiums.

6 Public Facilities:

Public facilities like schools and health facilities are required to be provided as part of the development.

7 Green Buildings:

The built form of the development is required to achieve a minimum of 3 stars or gold rating as per the Indian Green Building Standards.

8 Traffic Impact:

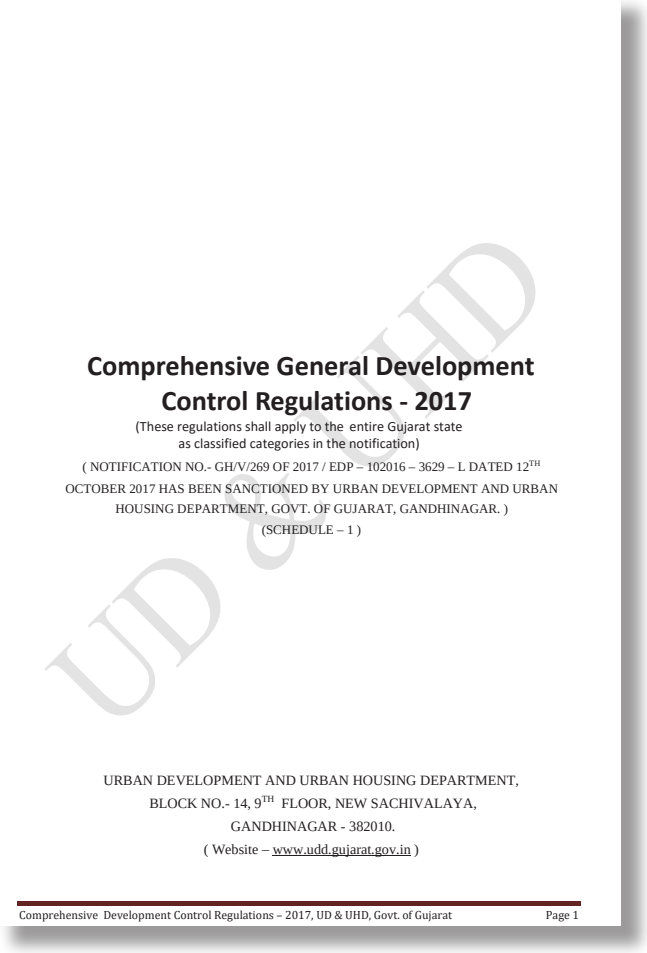
It is expected to be assessed and mitigated through traffic management measures.

In addition to the above norms, the Master Plan also prescribed Street Design Regulations to be followed within the streets planned in a development under the TOD scheme. The street design elements are intended:

- Promote Preferable Public Transport Use
- For Safety of All Road Uses by Design
- For Pedestrian Safety, Comfort and Convenience on All Streets
- For climatic comfort for all Road Users
- To ensure universal accessibility and amenities for all street users
- To reduce Urban Heat Island Effect and Aid Natural Storm Water Management

SAMPLE ZONING CODE

COMPREHENSIVE GENERAL DCR - 2017 GANDHINAGAR, AND AHMEDABAD URBAN DEVELOPMENT AUTHORITY (AUDA) DEVELOPMENT PLAN, INDIA



Comprehensive General Development Control Regulations - 2017

(These regulations shall apply to the entire Gujarat state as classified categories in the notification)

(NOTIFICATION NO.- GH/V/269 OF 2017 / EDP – 102016 – 3629 – L DATED 12TH OCTOBER 2017 HAS BEEN SANCTIONED BY URBAN DEVELOPMENT AND URBAN HOUSING DEPARTMENT, GOVT. OF GUJARAT, GANDHINAGAR.)

(SCHEDULE – 1)

URBAN DEVELOPMENT AND URBAN HOUSING DEPARTMENT,
BLOCK NO.- 14, 9TH FLOOR, NEW SACHIVALAYA,
GANDHINAGAR - 382010.
(Website – www.udd.gujarat.gov.in)

Comprehensive Development Control Regulations – 2017, UD & UHD, Govt. of Gujarat Page 1

KEY ELEMENTS

1 Smart City and TOZ

TOZ is an overlay zone which provides opportunities for mixed-use and high-density development along the Bus Rapid Transit (BRT) corridor and Metro Rail Transit (MRT) corridor except in Core Walled City, Industrial Zone – General, Industrial Zone – Special, SPD-2 Science Park and on GIDC Estates. High-density development permissible in areas falling within 200m on both sides on transit corridor in case of AUDA and RUDA and in case of smart city node.

[Refer to Section 7.1.11 Smart City & TOZ (SPD-5)]

Sr. No	Use Zone / Use as per Development Plan of Competent Authority	As mentioned	
		Conceptulised Use Zone	Code
(1)	(2)	(3)	(4)
38	Transport Oriented Zone, Smart City Node/ Transport Node, Highdensity zone available in both the sides of 200 mtr. from the edge of the road.	Smart City & TOZ	SPD5

Source: Reproduced from UD&UHD (2017)

2 Use Zone and Permissible Uses

The comprehensive Development Control Regulation permits mixed-use development on Smart City & TOZ zone with permissible uses of Residence, Commercial and Green Institutional Zone.

[Refer to Table 7.3.1: USE ZONE AND PERMISSIBLE USES]

Sr. No.	Conceptulized Use Zone	Code	Permissible Uses
(1)	(2)	(3)	(4)
33	Special Plan Development Zone – 1	SPD1	As per GIFT Master Plan.
34	Special Plan Development Zone - 2	SPD2	As per SRFDCL Master Plan.
35	Special Plan Development Zone - 3	SPD3	Those permissible in R1.
36	Special Plan Development Zone - 4	SPD4	Those permissible in R1.
37	Smart City & TOZ	SPD5	Those permissible in R1,C1,REZ.

Source: Reproduced from UD&UHD (2017)

3 Permissible FAR

Smart City & TOZ allow a Base FAR of 1.8 on a building unit and a chargeable FAR of 2.2. Maximum FAR of 4.0 is permissible.

[Refer to Section 7.7 Floor Space Index (F.S.I) for different categories, Table 7.7.6 Use Zone and F.S.I.: Category D1 RUDA.]

Sr.No.	Zone	Code	Base F.S.I	Chargeable F.S.I	Maximum Permissible F.S.I
(1)	(2)	(3)	(5)	(6)	(7)
1	City Area - A	GM	2.25	-	2.25
2	City Area - B	GM	2.00	0.5	2.5
3	Gamtal	GM	2.25	-	2.25
4	Gamtal Extension	GME	1.5	-	1.5
5	TOZ	SPD5	1.8	2.2	4.0

Source: Reproduced from UD&UHD (2017)

Uses as per Knowledge and Industrial Zone (KZ) and Residential Affordable Housing (RAH) with respective permissible FSI specified as under:

No.	Proposed Use	BaseFSI	Additional Chargeable FSI @ 40% Of Jantry Rate	
			Within TOZ	Out Side TOZ
1	Knowledge Zone (KZ) & Residential Affordable Housing (RAH)	1.8	2	0.9

Source: Reproduced from UD&UHD (2017)

An Additional Chargeable FAR of 2.0 is permissible at a 40% Jantry Rate within TOZ zone.

[Refer to 20.1.2: Permissible Uses & FSI in Closed Textile Mill Zone (CZ)]

4 Permissible Ground Coverage

Entire Area available after providing for the required margins, Common plot and other Regulations may be utilized for construction of the superstructure.

5 Parking

For Building- Units within the Transit-Oriented Zone with Commercial Use (Mercantile -1), The minimum parking requirement shall be 35% of Total Utilized FAR and 20% of the required parking shall be provided as Visitor Parking.

[Refer Section 13.2.1 Relaxation in Parking]

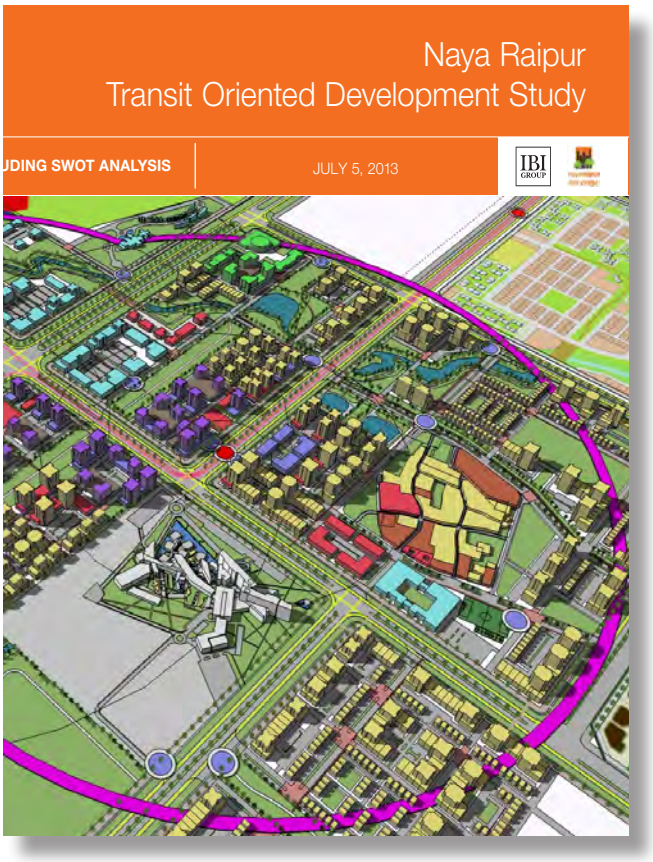
Type of Use	Minimum Parking Required	Visitor's Parking and Remarks
Mercantile-1	35% of Total Utilised FSI	20% of the required parking shall b provided as visitors parking
Note: In case the maximum permissible FSI is not utilised, for any extension/additions in the future, additional parking shall have to be provided as required for this additional utilised FSI.		

Source: Reproduced from UD&UHD (2017)

[Note: good TOD practice in TOD shifts the parking approach to maximum parking requirements instead of minimum ones]

In case of Metro Rail Transit (MRT) corridor the regulations of the Transit Oriented Zone shall be applicable only after finalization and notification of the MRT corridors by the Comprehensive Development Control Regulations – 2017, UD & UHD, Govt. of Gujarat.

NAYA RAIPUR TRANSIT-ORIENTED DEVELOPMENT STUDY



KEY ELEMENTS

1 Multimodal Transit Station

Rapid Transit Stations Local feeder bus stops must be located within 50m of rapid transit stations. Bus stops may be located within station premises or along the street right-of-way. IPT stands must be located within 150m of rapid transit stations. Parking shall be provided for 2-wheelers and cycles within 400m of all rapid transit stations. A parking space for the differently-abled must be provided within close proximity of a rapid transit station. Car drop-off bays must be provided within 150m of rapid transit stations.

Intermediate Public Transport IPT stands should be spread throughout the city, such that an IPT stand should be within 300m walking distance from anywhere in the city. IPT stands should be located such that the resulting passenger queues do not block pedestrian or NMV movement. Clear directions for forming queues at IPT stands shall be placed at all IPT stands.

2 Interconnected Street Pattern

An interconnected street pattern is a traditional urban design technique that reduces congestion, encourages travel choice and supports mixed-use development. Block lengths should not exceed 200m.

	Total ROW Min & Max	Maximum C/C Intervals between Street Intersections
City Arterial Roads		
Major	30m - 48m (excluding green buffer)	200m
Minor	24m - 36m (excluding green buffer)	200m
Intra-Sectoral Roads		
Local Collector Streets	15m - 24m	100m
Neighbourhood Streets	12m - 18m	100m
Shared Village Streets	12m - 20m	
Service Lane	5m - 6m	N/A

Source: Reproduced from NRDA (2013)

3 Mixed Used Development

A mix of diverse and complementary land uses in a compact pattern allows residents and workers to walk to work or to shop rather than driving for all daily needs. All projects and sites within the Mixed Use (MU) zones may have a mix of uses. A variety of shared parks and multi-use public spaces shall be provided, which can be active round-the-clock and open for use by users of a variety of age groups, income groups and gender, and also reduce number and length of trips. Selective plots within the MU Zone shall be applied with vertical mixed-use requirements incorporating 2 or more uses. A minimum of 50% of total street frontage length of any TOD project should have an active frontage with a mix of at least two types of uses with different peak hours of activity stacked vertically, to provide round-the-clock 'eyes on the street'. A minimum of 20% of FAR for all Residential Group Housing projects to be allocated to rental or for-sale housing with unit sizes no larger than 40 sq.m.

4 Walkability

Pedestrian-friendly environments allow walking to be a pleasant, safe, and efficient alternative to (or extension of) the automobile. This includes design features such as safe crossing points near transit stations, shaded pedestrian routes, and continuous sidewalks and paths.

Table 1: Table: Pedestrian Mobility

Table 3: Pedestrian Mobility Standards	
Pedestrian clearance requirements	Minimum clear width = 1.8M
	Minimum clear height = 2.4M
Pedestrian path	Minimum width on residential street = 2M
	Minimum width on commercial/mixed use street = 2.5M
Kerb height	Maximum height = 150MM
Pedestrian crossings	Minimum width = 3M
	Preferred C/C spacing = 100M
Accessibility	Maximum ramp gradient = 1:12
	Minimum ramp width = 1.2M
Pedestrian refuge islands	Minimum width = 2.5M
Bollards	Minimum spacing = 1.2M

Source: Reproduced from NRDA (2013)

Road design standards should be pedestrian-friendly:

Lane widths: narrower lanes encourage slower travel by vehicles. Lane widths on urban streets should not exceed 3M.

Turning radii: tightening turning radii require vehicles to slow down while making turns. Turning radii should not exceed 4.5M for urban streets and 7.5M for arterial streets. Channelized left turn lanes must be avoided.

Kerb extensions: commonly used traffic calming measure at intersections to reduce travel speed.

5 Compact Development

The scale of transit-oriented development approximates the scale of the pedestrian. The extent of these neighborhoods is based on a comfortable walking distance from the edge to center (approximately 400 to 800m in radius).

Table 2: Table: Ground Coverage, FAR, Height and Other Controls

Use Premise (Plot Sizes)	Minimum Ground Coverage (%)	Maximum Ground Coverage (%)	Minimum FAR	Maximum FAR	Maximum Height (m)	Other Controls
A. RESIDENTIAL						
All types in MU - 5	65	85	4		70m (for group housing min 400sqm)	The maximum standard for net density permissible for any TOD project within the SAP is 300 du /ha.
All types in MU - 10	65	85	2		70m (for group housing min 400sqm)	Minimum standard for net density permissible for any TOD project within the SAP is 250 pph.
B. INDUSTRIAL						
Large Flatted Group Industry > 2.25HA not permissible in MU Zones						
C. SPECIAL INDUSTRY						
All types in MU - 5	65	85	4		50m	
All types in MU - 10	65	85	2		50m	
D. COMMERCIAL - RETAIL						
All types in MU - 5	65	85	4		70m	
All types in MU - 10	65	85	2		70m	
E. COMMERCIAL - WHOLESALE						
Wholesale Trade / Warehousing (Integrated development) > 2.25HA not permissible in MU Zones						
F. PUBLIC / SEMI-PUBLIC						
All types in MU - 5	65	85	4		70m	
All types in MU - 10	65	85	2		70m	

Table 3: Table: Minimum Frontage Standards

Street ROW	Minimum Frontage
> 24M	70%
18 - 24M	60%
< 18M	0%

Source: Reproduced from NRDA (2013)

Table 4: Table: Active Frontage Standards

TOD Zone	Minimum Active Frontage for Commercial/ Mixed-use buildings	Minimum Active Frontage for Residential buildings
MU-5	70%	50%
MU-10	50%	30%
Rest of the City	30%	10%

Source: Reproduced from NRDA (2013)

Intermediate Public Transport IPT stands should be spread throughout the city, such that an IPT stand should be within 300m walking distance from anywhere in the city. IPT stands should be located such that the resulting passenger queues do not block pedestrian or NMV movement. Clear directions for forming queues at IPT stands shall be placed at all IPT stands.

6 Street Facing Building

Buildings should be placed near streets, not behind parking areas, to better define the street. Street front retail should be provided to humanize the building wall and activate the sidewalk. Building entrances should be close to transit entrances.

S. No.	Plot Size (in sqm.)	Minimum Setbacks in MU Zones			
		Front	Rear	Side (1)	Side (2)
1	40-60	0	5	0	0
2	Above 60 & upto 120	0	5	0	0
3	Above 120 & upto 250	0	5	0	0
4	Above 250 & upto 500	0	5	0	5
5	Above 500 & upto 1000	0	5	0	5
6	Above 1000 & upto 2000	1	5	3	3
7	Above 2000 & upto 4000	1	5	6	6
8	Above 4000 & upto 10,000	1	5	6	6
9	Above 10,000	1	5	6	6

Source: Reproduced from NRDA (2013)

Within MU zones, maximum front setbacks will be maintained as defined below

S. No.	Use	Maximum Setbacks	
		Public ROW >24m	Public ROW <24m
1	Commercial, retail, offices and non residential Uses	3m	3m
2	Institutional / industrial etc.	3m	5m
3	Residential	5m	5m

Source: Reproduced from NRDA (2013)

7 Bicycle Friendly Streets/Parking

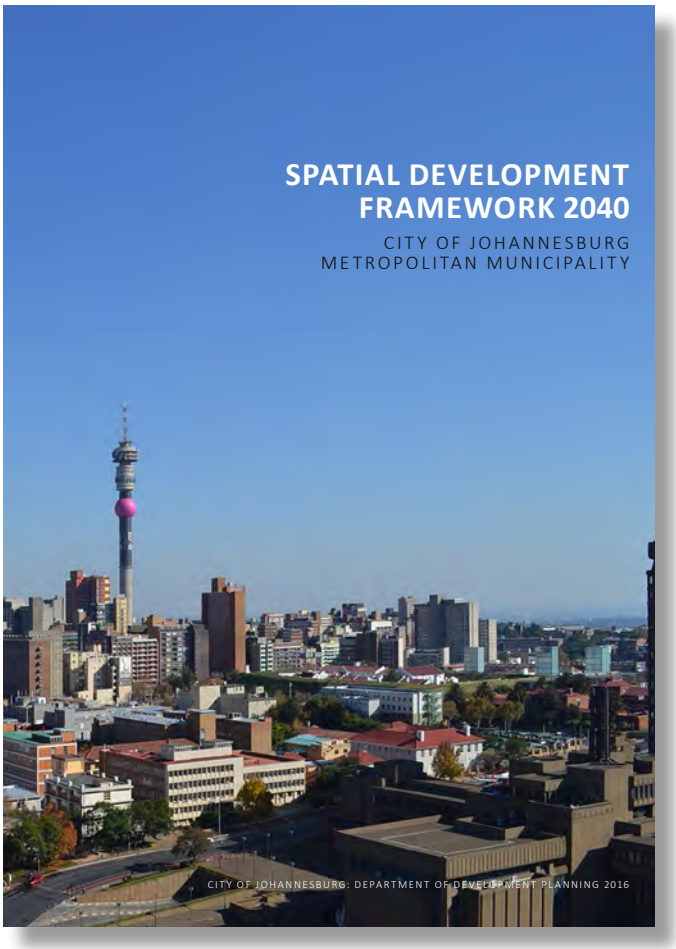
Bicycles are efficient ways to expand the service area of the station without relying on automobiles or bus service. Bike lanes, bike routes, and secure parking make the bicycle an easy option.

Table 9: NMT Standards	
Segregated NMT paths/ trails	Minimum width = 2.5M
	Minimum buffer between NMT path and MV lanes = 1M
Marked NMT lanes	Minimum width = 2M
Vertical clearance	Minimum vertical clearance = 2.5M
Minimum horizontal radius	Minimum horizontal curve radius = 10m
Gradients	Maximum gradient = 1: 30 for length not exceeding 90m.
	Steeper gradients may be allowed for very short distances
	Maximum gradient = 1:70 for length not exceeding 500m.

Source: Reproduced from NRDA (2013)

- Bicycle markings on the roadway shall be clear. NMT paths and lanes should be colored in a distinct color to avoid confusion. NMT conflict zones shall be identified and marked with a different color to alert drivers of impending conflicts with NMVs.
- NMT crossing infrastructure design shall ensure a barrier-free environment for all including, raised crossings and additional traffic calming interventions, audible signals, curb ramps, etc.
- Bicycle boxes may be used at major signalized intersections to provide cyclist priority and safety.
- NMT paths or lanes should never be terminated abruptly due to a sudden change in ROW width or at a T-junction. Ramps should be provided where necessary to enable novice cyclists to shift to pedestrian paths.
- Cyclists should have a clear view of at least 25m straight ahead and 60m ahead on slopes.
- On-street NMT parking should be provided throughout the city, such that at least one NMT parking would be within a 300m radius from anywhere in the city.
- Private commercial developments should be encouraged to accommodate bicycle amenities such as showers, change rooms, and lockers. Incentives should be offered to developers or employers who install such facilities in their premises.

SPATIAL DEVELOPMENT FRAMEWORK 2040, CITY OF JOHANNESBURG METROPOLITAN MUNICIPALITY



1 Form-Based codes to supplement zoning in transformation Zone

Introducing Form-Based Codes as spatial policy on a local or regional scale in Johannesburg has the following goals:

- To supplement, not replace, traditional zoning tools to allow for a more desirable built form.
- To define what form the built environment should take, and what land uses should be in place.
- To offer design requirements to be applied in specific areas.
- To deal with context-specific aspects such as interaction with the street (shops and commercial activities, and permeability on the ground floor), height, interaction of building facades, parking location (on street, underground, or in a manner that does not create a parking 'buffer' between the street and the building), pedestrian accessibility and contribution to shared visions for the built environment.

2 Land Value Capture

The infrastructure needed to support new development can be financed, based on the projected returns. It is important in this case, that:

- Rates increases are considered thoroughly, and in consultation with finance experts and lenders to ensure realistic predictions;
- Rates increases from the specific developments are ring-fenced to service the specific infrastructure loans;
- That risk on the infrastructure loans is shared by private developers and the city, to ensure mutual commitment to realizing the goals of such a project;
- Inclusive social return (such as inclusionary housing and a percentage of public space) is set out as a requirement for this type of infrastructure funding.

3 Transit Oriented Development (TOD) Nodes

- TOD is identified as a priority programme, with the objective to encourage the optimal development of transit hubs across the city, that provide access to affordable accommodation, intense economic activities, transport, high-quality spaces, amenities and social services.
- TOD nodes are a key aspect of the compact polycentric vision for Johannesburg. Stations, in this regard, act not only as

points for accessing public transit, but as catalysts for growth. Stations should act as points of departure and arrival and are thus promoted as areas of intensification of high-density, mixed land uses.

- TOD nodes are those that are specifically linked to transit facilities. These nodes should ideally offer a range of mixed uses relating to the function and scale of the transit node. TOD areas have great potential for offering good quality of life through the creation of intense mixed-use precincts that can accommodate a range of economic opportunities within walking distance from public transport.
- These nodes vary in size and function. The largest TOD nodes are anchored by multi-modal stations. A large number of TOD precincts are anchored by PRASA rail stations, however, generally speaking, the development potential around these stations has not been realized. At a more localized scale, BRT stations will contribute significantly to the achievement of TOD precincts in the city. As a matter of principle, low density, single-storey, single-use developments are not acceptable within TOD nodes.

4 Density

The goal of the density regulations is to assist the city in curbing urban sprawl and locating the bulk of the city's residents across all income groups close to urban amenities, specifically public transportation infrastructure, jobs, economic opportunities and social infrastructure.

Higher residential densities will be allowed where developers show that they will deliver inclusionary housing. To qualify, the inclusionary housing proportion of the development must cater to households earning less than R7000 a month, equivalent to USD95 (10/2018), with a total monthly housing cost of 30% of household income per month (for rental or purchase). Density bonuses will be awarded proportionally to the percentage of inclusionary units per development (i.e. 30% inclusionary units would result in a 30% density bonus in du/ha), up to a maximum density bonus of 50%. To qualify, at least 20% of the total units applied for should be for inclusionary housing. The Transit Development Node within 500m walking distance of Rea Vaya/BRT bus station would have a minimum density of 60du/ha.

5 Land readjustment

With land readjustment, a group of neighboring landowners come together in a partnership and pool their land to jointly plan and service their adjoining plots. Part of the land can also be sold to offset development costs. The resulting costs and benefits of the project are equitably shared among public bodies, landowners and developers. During the readjustment, part of the land will often be used for infrastructure or public space. The public sector can stimulate this process by devising incentives that promote collective action.

Land readjustment involves a change in people's legal relationships in the same way that it alters their physical ones. This means that there are three fundamental considerations:

(1) To provide the framework within which relationships can be changed in a clear and predictable manner that results in mutual (public and private) benefit.

(2) To ensure that the framework is fair and will treat individuals and groups equitably, particularly the poor, women and the vulnerable, including private landowners and the wider citizenry of the city.

(3) To provide the vehicle for the implementation of government policy on the ground, legal mechanisms are needed to address issues such as site selection, the level of land contributions, the land valuation mechanism, sales and transfers of land after the project has been announced, handling disputes, combatting speculation, the classification of land in the plan, the types of formal land rights to be allocated, and financial arrangements.

6 Housing

The Spatial Development Framework 2040 provides a housing vision and approach and locational principles for housing, including housing for the poor, state delivered housing, informal settlements, backyard homes and inclusionary housing. The Inner City is targeted to accommodate a large number of new low income and affordable housing opportunities, including public rental housing, mainly through conversion of buildings. The development of inclusionary housing is a key priority to ensure that the City's residents are housed adequately, in close proximity to job opportunities, public transport as well as social amenities.

MODEL ZONING CODE KEY ELEMENTS

FAR AND DENSITY

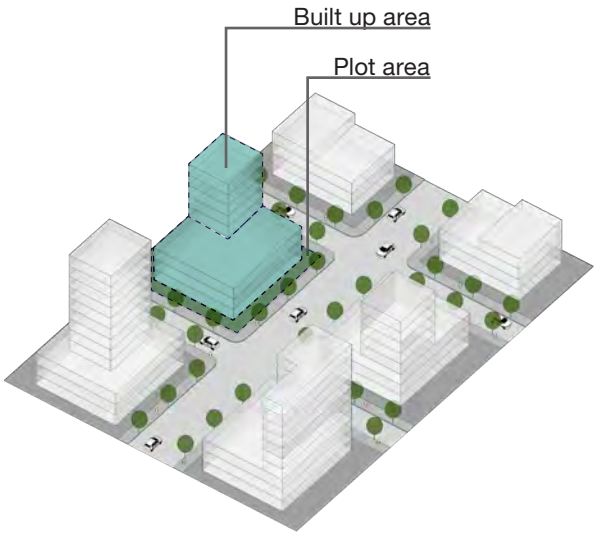
Floor area ratio (FAR) and Density norms are needed to ensure densities are strategically distributed across the urban area as a means to create compact city forms near transit proximities. The FAR is representative of the intensity of built form. It is a function of the total floor area of the building as a fraction of the total area of the development parcel. It is used as an instrument to control the density of a place by imposing maximum permissible FAR norms. In TOD zones, FAR norms need relaxation to allow for higher density buildings.

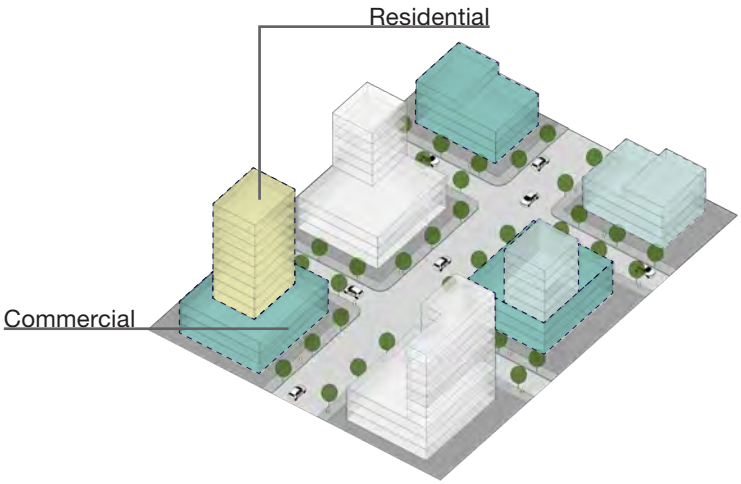
Alternatively, other measures to control residential density are also used, for example, Persons Per Hectare (PPH) or Dwelling Unit Per Hectare (DU/HA) thresholds. The density may also be influenced by norms for building heights, podium heights and step-backs and lot coverage.

MIXED USE

Mixed land use promotes more efficient land use patterns by increasing options for residents to access retail, commercial and civic services, employment and recreational facilities within walking distance. Mixed use is codified in the zoning code through Permissible Land Uses or Building Functions, and Non-Permissible Land Uses or Building Functions. Permissible Land Use/ Building Function Regulations must allow for complementary uses to be mixed, ensuring optimal and shared use of resources such as streets and parking. Non-Permissible Uses must discourage automobile-oriented uses such as large industries, car showrooms, cemeteries, etc.

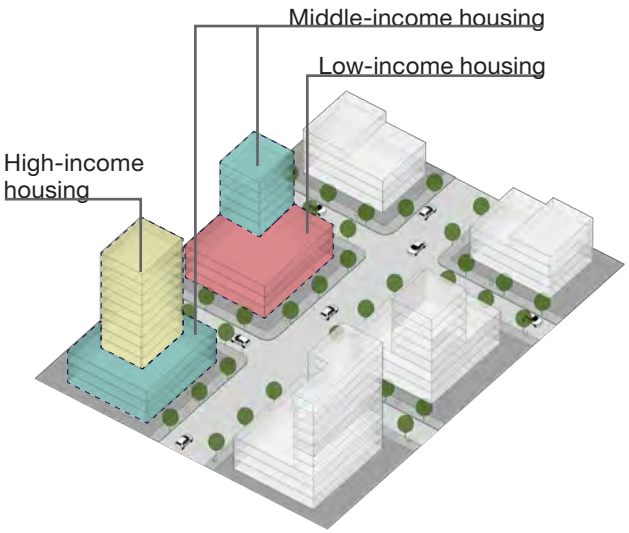
Other Design Guidelines for Mixed Use are suggested in PD-R01 TOD Planning Principles.





HOUSING DIVERSITY

A mix of housing types based on sizes and residential types may be provided within the TOD Zone or Station Area. This will allow for means to ensure that housing affordability is maintained within walking distance of transit. The mix of housing units and types within a corridor or station area can be dictated through minimum standards for inclusionary housing provision or affordable housing incentives. An inclusionary housing provision is operationalized by requiring a percentage of housing units to be within a specific range of unit sizes. The affordable housing incentive provision is operationalized by offering development incentives such as density bonuses or transfer of development rights. Other incentives are suggested in FI-R01 Development Incentives.

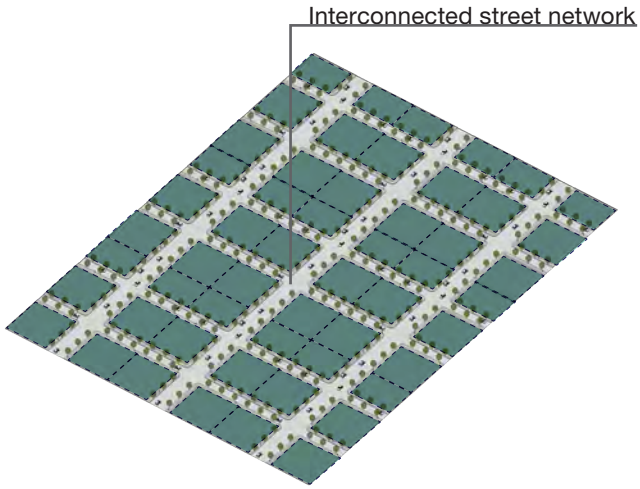


STREET NETWORK

The street network is controlled through block width and street design standards. Landforms, topography, natural features (waterbodies, forests) and physical barriers (railway lines, roads, existing developments) may influence street network standards.

Block widths are intended to increase the intersection density per sq. unit within the station area. Intersection density is the number of intersections in an area. It corresponds closely to block size– the greater the intersection density, the smaller the blocks. Small blocks make a neighborhood walkable.. Additionally, street standards can be provided for public streets within private developments or accessing private sites. These standards depend on the type of roadway and the level of service required and may be codified in the form of minimum widths for pedestrian sidewalks, cycle lanes, and traffic calming requirements.

Other Design Guidelines for Street Network are suggested in PD-R01 TOD Planning Principles.

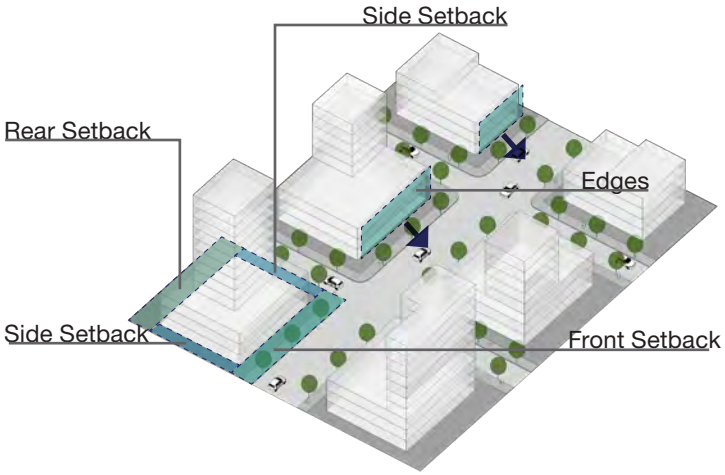


MODEL ZONING CODE KEY ELEMENTS

EDGES

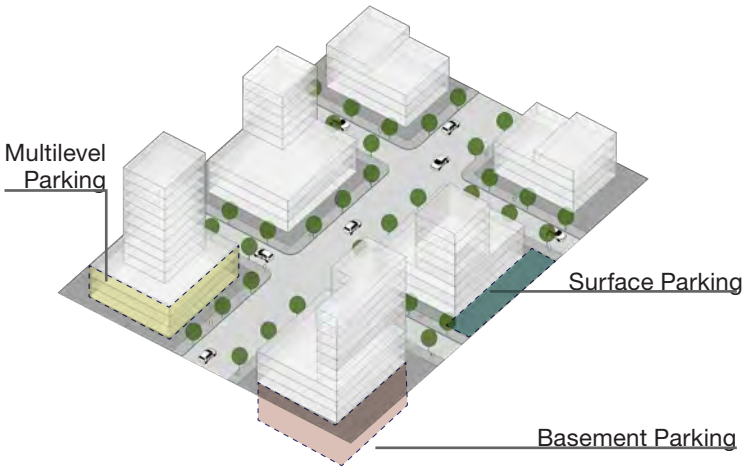
The transition zone between the building and the street is defined by the building setback and street frontage. Building setbacks should be reduced either to zero or shallow setbacks in the TOD Zone or station area to allow for a legible street edge. Buildings should be oriented towards the pedestrian, with active uses located along the sidewalk and not located behind parking lots or blank walls. Optimum setback needs are usually dictated by state/federal firefighting requirements and light and ventilation needs.

Street frontage requirements address the orientation of a building in relation to the street. They typically require a minimum percentage of a building facade to occupy a primary street frontage. Some portion of the frontage may be required to be transparent or interact with the street through shop fronts. Mandatory shop line requirements may be proposed along key streets to ensure active uses are oriented towards the street.



PARKING

Parking needs need to be rationalized in TOD Zones or station areas. Allow for flexibility in parking provisions, based on the specific development and transportation contexts. The trend is to move from minimum parking requirements to maximum parking requirements. Develop adjustment factors that can be applied when evaluating parking supply, while ensuring parking caps and maximums are respected. Shared parking standards and unbundled parking norms may be used to make the most out of parking provisions. The quantity of parking per built-up area impacts maximum development densities. Thus it is extremely important to reduce parking requirements or apply maximum caps if higher densities are proposed.



MODEL TRANSIT-ORIENTED DEVELOPMENT OVERLAY ZONING ORDINANCE

This model template is adapted from the Model Transit-Oriented District Overlay Zoning Ordinance resource by Reconnecting America (Valley Connections 2001). It provides a city the opportunity to create a "TOD Overlay Zone" over an existing base zoning framework. All the development parcels that lie within the TOD Overlay Zone are either required to or have the option to follow the regulations of the overlay zone. When the model template is applied to a city, the TOD Overlay Zone must be clearly defined to avoid ambiguity in property selection.

The original model zoning ordinance is available here: www.reconnectingamerica.org/assets/Uploads/bestpractice230.pdf

1. PURPOSE AND INTENT

The purpose of the Transit-Oriented District is to encourage an appropriate mixture and density of activity around transit stations to increase ridership along the transport corridor and promote alternative modes of transportation to the automobile. The consequent intent is to decrease auto-dependency and mitigate the effects of congestion and pollution. These regulations seek to achieve this by providing a pedestrian-, bicycle-, and transit-supportive environment configured in a compact pattern and a complementary mix of land uses all within a comfortable walking and bicycling distance from stations.

Transit-Oriented Development often occurs as infill and reuse within areas of existing development. The regulations within this ordinance vary in some cases from other ordinances related to infill development in the City, because of the additional need to support transit ridership.

OBJECTIVES

The specific objectives of this district are to:

- Encourage people to walk, ride a bicycle or use transit;
- Allow for a mix of uses to create an environment that engages people at the pedestrian scale;
- Achieve a compact pattern of development that is more conducive to walking and bicycling;
- Provide a high level of amenities that create a comfortable environment for pedestrians, bicyclists, and other users;
- Maintain an adequate level of parking and access for automobiles;
- Create fine-grained detail in architectural and urban form that provides interest and complexity at the level of the pedestrian and bicyclist;
- Encourage uses that allow round-the-clock activity around transit stations;
- Provide sufficient density of employees, residents and recreational users to support transit;
- Generate a relatively high percentage of trips serviceable by transit.

INTRODUCING THE OVERLAY ZONE

This is an overlay zone established in Transit-Oriented Development (TOD) principles, which provides the opportunity for mixed-use and higher density development along the transport corridor. This zone takes precedence over all underlying zones, except conservation areas and special areas, by encouraging compact, mixed-use development. Sustainable transit-oriented densification could be achieved through incentivizing the development of additional floor space along the transit corridors and station areas. The concept of Transit Oriented Development shall be adopted for development within this zone, such that the maximum number of people can live, work or find means of recreation within walking/ cycling distance of the transit corridors. This overlay Zone shall establish separate densities and development regulations applicable to any development in the TOD Zone. The TOD Zones will establish high-density environments in the city where bus feeder connectivity is optimum. This zone can benefit from more transit-friendly urban design.

DEFINITIONS

These definitions shall apply only to the Transit-Oriented District Overlay District.

Accessory Dwelling

units that are “secondary” or subordinate to the primary residence and situated on the same lot as the primary residence.

Access way

a formalized path, walkway, or other physical connection that allows pedestrians to efficiently reach destinations.

Clear Window

the amount of glass surface of a window that allows 100% visual permeability.

Commercial Parking Facility

a parking structure or a surface parking lot operated for profit that has parking spaces that are not accessory to a primary use. This term does not include a park-and-ride lot.

Compact Development

the planning concept of using site design and urban design techniques to decrease the amount of land needed to develop a given amount of land use. In the case of TOD, this is done with the goal of improving transit access.

Density

a unit of measurement that divides persons, floor area, or dwelling units per the gross or net measurement of a discreet area e.g., acres, square feet, square miles. Density requirements in this document are expressed as gross densities with the land area including the area of the parcel, specific to the use including its yard and any parking provided, plus the area of one-half of the street right-of-way upon which the parcel fronts.

Drive-Through Facility

facilities allowing transactions for goods or services without leaving a motor vehicle.

Finished Floor

the ultimate grade at which a structural floor will be constructed including added decorative and finished surfaces.

Floor Area Ratio (FAR)

the amount of enclosed gross floor area in relation to the amount of site area. For example, a floor area ratio of 0.5 is equal to one square foot of floor area for every two square feet of site area.

Frontage

the linear edge of a property adjacent to the property line abutting a street, public right-of-way.

Gradient

the change in density, height, and/or land use occurring in stages, degrees, or even and continuous change.

Greenway

a singular or a series of vegetative, linear corridors, natural or man-made, which may contain active or passive recreational uses or which may prohibit human activity altogether in order to preserve sensitive areas. These are usually associated with riparian systems, but may also include transportation corridors.

Human Scale

the size and proportion of a physical element that closely relates to the human body e.g., a 16-foot lamp post vs. a 30-foot lamp post, and a façade with vertically oriented framed windows vs. a façade with a continuous and unarticulated window wall.

Interior of Lot

the area within a parcel that does not contain a side which is adjacent to a public or private right-of-way for an access way or street.

Live-Work

a residential unit that is also used for commercial purposes for a time, with a minimum of 50% of the total building area given to the commercial use within the same structure as the residential component.

Major Pedestrian Route

the primary route or space used by “Pedestrians” as defined in this section.

Mixed-Use

Development contained within a single-parcel (horizontally or vertically) or adjacent parcels that contains different uses that are complementary to each other and provide activity throughout the day.

Open Space

a private or public open land area that is currently undeveloped; it may be maintained as open space into the future or it could be developed.

Parking Structure

a parking garage located above ground or underground consisting of one or more levels, not surface parking.

Park-and-Ride Lot

A parking structure or surface parking lot intended primarily for use by persons riding transit or carpooling, and that is owned or operated either by a transit agency or by another entity with the concurrence of the transit agency.

Parking, Off-Street

formal or informal parking located within a parcel and outside a private or public right-of-way.

Parking, On-Street

formal or informal parking located within a private or public right-of-way and outside of a parcel.

Pedestrian

a pedestrian means people who walk, sit, stand, or use a wheelchair in public spaces, be they children, teens, adults, elderly, people with disabilities, workers, residents, shoppers or people watchers, etc.

Pedestrian Activity

the congregation of persons in an area whose primary means of transportation is by foot.

Pedestrian-oriented Design (PeD)

The design of communities, neighborhoods, streetscapes, sites, and buildings that emphasizes pedestrian access, comfort, and visual interest. Transit-Oriented Design is a particular type of PeD that includes design and intensity of land use to support transit in addition to pedestrians.

Pedestrian Way

a linear space or an area where the primary users are pedestrians and that may also accommodate bicyclists.

Pergola

an arbor or passageway with a roof or trellis on which climbing plants can grow.

Portico

a porch or walkway with a roof supported by columns, often leading to the entrance of a building.

Porch

an open or enclosed gallery or room attached to the outside of a building, typically serving as a semi-public space prior to a building entry.

Primary Front Façade

the façade of a building that is meant to take importance over the remaining façades of a building, typically fronting onto a public or private street or pedestrian access way.

Setback

the distance between the building façade and the property line of the parcel in which the building is located.

Shared Parking

parking that is utilized by two or more uses taking into account the variable peak demand times of each use; the uses can be located on more than one parcel.

Station Area

the core area of the TOD within closest proximity of the transit platform e.g., within 300 to 500 feet of the platform.

Street-Facing

the façade of a building that is adjacent to a public or private right-of-way.

Transit-Oriented Development (TOD)

a development pattern characterized by a mix of uses surrounding a transit platform where streets have a high level of connectivity, blocks are small, and streetscape, buildings, and uses cater to the pedestrian.

Transit Platform

A designated transit loading and waiting area as assigned by the public transit agency.

Transit Station

the area including the platform which supports transit usage and that is owned by the transit authority.

Transit Street

a street that contains s transit line.

Transparent

a surface which allows objects on the other side to be easily seen.

Visual Permeability

the ability of vertical surfaces to allow viewers to see through to the other side e.g., windows and open fencing.

Walking Radius

the distance beyond a central point from which a person is willing to walk. This distance will vary depending on existing barriers, the walking environment, and the availability of destinations.

2. APPLICABILITY AND GENERAL PROVISIONS

The City of _____'s Transit-Oriented Development Overlay District(s) (TOD) shall apply to lands delineated on the City's official zoning map as adopted on _____ and generally within an 800m walking radius (or distance) of a transit platform. All land uses and development including, but not limited to buildings, drives, parking areas, landscaping, streets, alleys, greenways, and pedestrian/bicycle ways designated to be within this district, shall be located and developed in accordance with the following provisions. The standards of the TOD shall not apply to development for which approval was granted prior to the adoption of these regulations and for development for which the city has issued building permits.

3. INCONSISTENCIES OF UNDERLYING DISTRICTS

In the event that the underlying zoning district standards or other ordinance or regulations are inconsistent with these Overlay Zoning Ordinance standards or any other provisions herein, the TOD standards shall control within the specific TOD district.

4. PERMITTED USES

For properties within the Transit-Oriented Development Overlay District the following uses are permitted:

	Retail	Office	Industrial	Mixed-Use	Res>7du/ac	Res<7da/ac
Retail/Commercial						
Convenience Retail						
Retail and Service Uses						
Hotel or Motel Lodging						
Mixed Use						
Live-Work						
Mixed-Use						
Office						
Professional Offices						
Other Offices						
Civic						
Day Care Facilities						
Post Offices						
Schools & Community Buildings						
Government Offices						
Hospitals/Clinics						
Sports Facilities						
Residential						
Single-Family Detached						
Single-Family Attached						
Apartments						
Accessory Units						

5. PROHIBITED USES

For property within the Transit-Oriented Development Overlay District the following uses are prohibited:

- Boat dealers, resellers, repair, and leasing
- Bulk retail and wholesale uses including building materials, food and beverage sales, restaurant suppliers, etc.
- Car washes
- Cemeteries
- Cold Storage Plants
- Commercial Equipment and Construction Equipment, Sales, Service and Rental
- Drive-in Businesses
- Exterior Display of Goods and Exterior Storage
- Funeral Homes and Mortuaries
- Gas Station accessory uses such as mini-marts, convenience food and sundries sales
- Golf Courses including miniature golf courses
- Grocery stores with building footprints over 50,000 square feet
- Heavy Commercial Services
- Heating Fuel Sales
- Junk Yards and Motor Vehicle Wrecking Yards
- Kennels, excluding those accessory to veterinary clinics
- Manufactured Home sale
- Motorized vehicles dealers, resellers, repair, leasing, service stations, including oil and lubrication services, tire and muffler installation and service, body shops, or other motor vehicle services, but excluding retail or wholesale outlets selling motor vehicle parts and accessories without provision for on-site installation
- Nurseries or Greenhouses
- RV Parks or Mobile Home Parks and campgrounds
- Solid waste transfer stations
- “Telecom Hotels”
- Towing services
- Truck stops and Uses Related to Trucking excluding loading and unloading for permitted commercial uses
- Uses that require building footprints over [insert building footprint maximum area desired by jurisdiction, could vary by distance from transit platform and existing station area context, authors of this Model Overlay Ordinance recommend 30,000] sq. ft.10 with the exception of Civic Uses and Sports Facilities.
- Warehouses, Mini-Warehouses, Storage Facilities, and Mini-Storage Facilities (Indoor and Outdoor)

6. DEVELOPMENT STANDARDS FOR PERMITTED USES

SETBACKS AND BUILT-TO-LINE

Setbacks and Build-to Lines for Non-Residential and Mixed-Uses

The following standards shall apply to new non-residential and mixed-use development within the TOD Overlay District.

Table 5: Non-Residential & Mixed-Use Setbacks and Build-to Lines

Distance from Station	Max. Building Setback
0-150m	
150-400m	
400-800m	

Features such as overhangs, porticos, balconies, loggias, arcades, covered (non-enclosed) bicycle parking, pergolas, and similar architectural features placed on the front (street-facing) side of the building are allowed within the setback.

Setbacks and Build-to Lines for Residential Uses

The following standards shall apply to new residential development within the TOD Overlay District.

Table 6: Residential Setbacks and Build-to Lines

Distance from Station	Max. Building Setback
0-150m	
150-400m	
400-800m	

DENSITY, AREA, BUILDING AND REGULATIONS

DENSITY

Densities for Non-Residential and Mixed–Uses:

New non-residential and mixed-use development within the TOD Overlay District shall achieve minimum FARs as stated in the table below and a maximum of 125% of the FAR given in the underlying zone.

Table 7: Non-Residential & Mixed-Use Densities

Distance from Station	Minimum FAR
0-150m	
150-400m	
400-800m	

Densities for Residential Uses:

New residential uses within the TOD Overlay District shall achieve densities according to the following table and a maximum of 150% of the average density given in the underlying zone.

Table 8: Residential Densities

Distance from Station	Min. Residential Density
0-150m	
150-400m	
400-800m	

BUILDING HEIGHTS

For all new development and the vertical alteration of existing development, building heights within the TOD Overlay District shall conform to the following table.

Table 9: Building Heights

Distance from Station	Max. Building Heights
0-150m	
150-400m	
400-800m	

GROUND COVERAGE

New development within the TOD Overlay District shall achieve ground coverage according to the following table or the underlying zoning designation's maximum lot coverage, whichever is higher.

Table 10: Ground Coverage

Distance from Station	Max. Ground Coverage
0-150m	
150-400m	
400-800m	

BUILDING FRONTAGE AND FACADES

In order to support the pedestrian-oriented environment within the TOD station area, building frontages onto streets and open spaces shall be maximized. Building frontage within the TOD Overlay District shall achieve the requirements as outlined in the following table:

Table 11: Building frontage

Distance from Station	Min. Building Frontage as a Percentage of Lot Frontage
0-150m	
150-400m	
400-800m	

Clear windows shall encompass, at a minimum, 50% of the building façade length fronting onto a street within the area from 1 m to 2 m above adjacent interior finished floor and adjacent sidewalk grade. Blank walls shall not occupy over 30% of the principal frontage for non-residential buildings and 50% for residential buildings, and a section of blank wall shall not exceed 6 m feet without being interrupted by a window or entry.

BUILDING ENTRY

If a building is adjacent to the transit platform, transit station, a transit street, or a major pedestrian access way, at least one main building entry shall be oriented to the adjacent transit platform, transit station, transit street and/or major pedestrian access way. A pedestrian way shall be provided from the building entry to the transit platform, transit station, transit street or major pedestrian access way.

To allow for their use, residential porches shall have a minimum clear depth of 2 m and shall be a minimum of 4.6 square meters.

7. STREET AND SIDEWALK REGULATIONS

Minimum Width

Sidewalks within the TOD Overlay District shall have a minimum 75cm clear space for circulation with the exception of residential areas with a density of less than 12 units per acre where the width may be reduced to 1.8 m.

Private Use of Sidewalks

Exterior storage on sidewalks is prohibited. Outdoor seating for food and drink establishments and pedestrian-oriented accessory uses, such as sales display for flowers, small shops, food, or drink stands, are exempt from this requirement. Outdoor service of alcoholic beverages shall be clearly demarcated from public spaces. In all cases, a minimum 8-foot clear pedestrian circulation path shall be maintained along the sidewalk.

Sign Regulations

New signage within the TOD Overlay District shall conform to the standards stated herein and Section.

Signage shall not reduce clear sidewalk width to less than 2.5 m. Opaque signage shall not reduce the visual permeability of street-fronting windows to less than the minimum clear window requirement.

8. PARKING AND LOADING REGULATIONS

Automobile Parking Requirements Per Floor Area or Unit Size and Land Use Type

For new development within the TOD Overlay District, the number of required parking spaces (on-street and off-street) shall be based upon the following table which summarizes the maximum number of parking spaces required for permitted uses:

Table 12: Automobile Parking “Maximums” for Permitted Uses

RETAIL/COMMERCIAL	
Bank	1.0 space for each __ square meters of gross floor area
Bars/Nightclubs	1.0 space for each __square meters of gross floor area
Bed & Breakfast	1.0 space per room or suite of rooms
Bookstores	1.0 space for each __square meters of gross floor area
Convenience Retail	1.0 space for each __square meters of gross floor area
Dry Cleaners	1.0 space for each __square meters of gross floor area
Eating and Drinking Establishments	1.0 space for each __square meters of gross floor area
Hotel or Motel Lodging	1.0 spaces per room or suite of rooms
Live-Work	1.25 spaces per dwelling unit and 1 space for each employee not residing in the dwelling unit
Lodging limited Bed and Breakfast Inn	1.0 space for each room or suite of rooms
MIXED USE	
Mixed-Use	1.0 space for each __square meters of gross floor area
Retail and Service Uses	1.0 space for each __square meters of gross floor area
OFFICE	
Professional Offices	1.0 space for each __square meters of gross floor area
Other Offices	1.0 space for each __square meters of gross floor area

CIVIC	
Day Care Facilities	__ spaces per employee
Gov't Offices	1.0 space for each __square meters of gross floor area
Lodges/Clubs	1.0 space for each __square meters of gross floor area
Hospitals/Clinics	1.0 space for each __square meters of gross floor area
Museums	1.0 space for each __square meters of gross floor area
Post Offices	1.0 space for each __square meters of gross floor area
Schools-Elementary/Jr. High	10 spaces + __ per classroom
Schools-High/College	__ spaces per student and staff
Sports Facilities	1.0 space for each __square meters of gross floor area
Theaters	__ spaces per seat
Worship	__ spaces per seat
RESIDENTIAL	
Studios and Efficiencies	__spaces per dwelling unit
1 Bedroom	__spaces per dwelling unit
2 Bedroom	__spaces per dwelling unit
3 Bedroom	__spaces per dwelling unit
Accessory Units	__space per accessory dwelling unit
AUTOMOBILE PARKING "MAXIMUMS" FOR PERMITTED USES	
Boarding Houses	__space per bedroom
Nursing Home	__space per bed
Elderly Housing	__space per bed
INDUSTRIAL	
Manufacturing/Light Industry	1.0 spaces per__square meter of gross floor area

9. ON-STREET PARKING

For new development occurring within the TOD Overlay District, on-street parking along the use's lot frontage shall count towards the parking requirements for uses on the lot set forth within the regulations of this Overlay District.

10. BICYCLE PARKING

Convenient bicycle facilities should also be provided within the TOD district. The following bicycle parking requirements shall be applied within the TOD district. Bicycle parking shall be provided at 1 space per 186 square meter feet of commercial floor area.

11. OFF-STREET PARKING LOCATION

Non-Residential and Multi-Family Uses

Surface Parking Lots

Off-street parking location for new development within the TOD Overlay District shall conform to the following requirements:

Off-street parking shall be located to the rear and/or interior of a lot such that its visibility from a street shall be minimized. At-grade, above-, or below-ground parking structures shall be permitted. At-grade parking structures shall have a minimum frontage. Surface parking lots shall be placed between the structure and a side or rear lot line. Where a lot fronts onto two or more streets, parking shall be located accordingly:

- Along the street with the least amount of commercial activity
- Along the street with the least amount of pedestrian activity if the lot is located along two or more commercial streets with equal amounts of commercial activity.

A maximum 2 m high wall or fence shall separate parking lots from abutting residential uses with a minimum 1.2m landscaped buffer. Walls and fences shall take on the character of residential uses.

12. SINGLE-FAMILY RESIDENTIAL USES

Garages, whether attached or detached, shall be set back at least 3 m behind the primary front façade of the buildings they serve. The primary front façade shall comprise at least 50% of the overall width of the primary residence and the 3 m setback shall not be measured from projections such as bay windows and porches, but from the façade of the wall which encloses the building.

13. LOCATION OF VEHICLE ACCESS

Conflicts between pedestrians and vehicles entering and exiting parking lots shall be minimized. Access from pedestrian-oriented streets shall be avoided unless no other reasonable access is available, such as in lots with a single street frontage and no alley. Where alleys are present, driveways leading to parking lots, and loading and service areas shall be accessed from the alley. Lots with more than one street frontage and no alley shall locate vehicular access along the street with the least amount of pedestrian activity. All loading and service drives shall be of a depth that prevents loading and service vehicles from obstructing the sidewalk and roadway.

Entrances to loading and service areas shall be screened from view. Access driveways shall not dominate the street frontage. Driveway widths shall be minimized to reduce their presence along the street. Where feasible, driveways shall be consolidated within the single lot and shared with adjacent properties to minimize their encroachment upon sidewalks. Shared driveway agreements shall be utilized where possible for shared parking, and loading and service areas. To avoid encroaching upon sidewalks and creating uneven pedestrian surfaces, driveway slopes shall be located between the roadside edge of the sidewalk and the curb.

14. LOADING AND SERVICE AREA LOCATION

Loading, service, and refuse areas shall be located at the interior of the lot and screened from view with walls, trellises, planting, berms, or by integration into the design of the building. Walls shall not exceed 2 m in height. Solid walls shall be landscaped to soften their appearance and shall be made of finished materials to match the primary building. Decorative elements, variation in materials, and articulation shall be used.

MODEL TOD FORM-BASED CODE

This model template is adapted from the Smart Code Version 9.2 (Center for Applied Transect Studies; 2008). This template is based on the innovative form-based code paradigm, where building standards will be defined based on the station area typology rather than land use.

These Codes may be used as a replacement or as an overlay to the existing base zoning framework. All the development parcels that lie within a specific station area typology would need to adhere to form-based regulations for that specific typology. When the model template is applied to a city, the TOD Station Area Typologies and their boundary delineation must be clearly defined to avoid ambiguity in property selection.

The Original Code is available here: https://transect.org/codes.html

Station areas along corridors are set in different urban contexts, play different roles in the transportation network and present unique challenges and opportunities. Successful approaches to built form around a Station Area that acts as a main interface into the rapid transit network may not be appropriate for a station area that serves as a key transfer point between different modes. Similarly, appropriate intensification strategies at a very urbanized hub may be very different from a regional destination or a greenfield low-density area. Every station area, whether existing or proposed, faces unique challenges and will require specially tailored strategies to develop high-performing TOD projects.

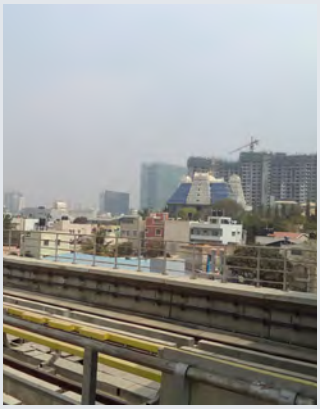
This Form-based Code is prepared for seven key station area typologies that depict typical planning considerations. Station area typologies are typically established based on:

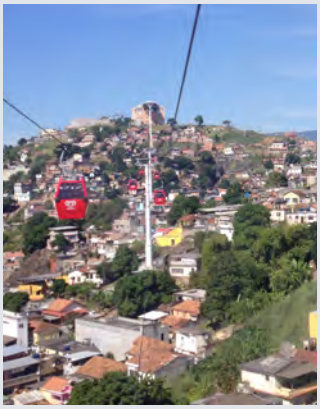
- Existing land use character
- Transport functions including right-of-way, availability of multiple modes, and connectivity to the citywide network
- Land availability for future development
- Susceptibility to change - for example, age of buildings
- Mobility network (including block size and mobility barriers)
- Infrastructure carrying capacity

In the context of low and middle-income countries, typical station area typologies may include:

- Intermodal Gateways
- Employment Centres
- Destination Nodes
- Transit Neighborhoods
- Urban Core(CBD)
- Infill Neighborhoods
- New Residential Area

STATION AREA TYPOLOGIES

	Intermodal Gateways	Employment Centres	Destination Nodes
	 *Milwaukee Intermodal Station*	 *Raffles Place, Singapore*	 *Mahalaxmi, Bangalore*
What are the characteristics of the Station Area?	Significant hubs of transport activity with supporting commercial and informal activities	Significant center of economic and community activity. Stations serve the main public/semi public-amenities & offices of the city.	Stations which provide access to unique destinations.
What is the Character of Land Use Mix & Density?	Moderate- to high-density mix of industrial, commercial, employment, public - semi public / cultural and residential uses.	Moderate to high-density mix of employment, public-semi public / cultural uses. Some residential and local- retail also supported.	Moderate to low-density mix of public-semi public and cultural uses. Some residential and local-retail also supported.
What are the major planning & development challenges?	Integrating dense mix of housing and employment uses while maintaining ease of access to transit stations. Illegal parking and hawker encroachment can create a false sense of congestion.	Introducing housing into predominantly employment/ public-semi-public uses and improving connections/ access to transit.	Creating sustainable off-peak uses and accommodating peak travel demand.
What are land development opportunities?	Moderate chance of land availability	Less possibility of land availability	Less possibility of land availability

Transit Neighborhoods	Urban Core (CBD)	Infill Neighborhoods	New Residential Areas
 *Teleferico Do Alemao, Riode Janeiro*	 *Church Gate, Mumbai*	 *Koh-e-fiza, Bhopal*	 *Guatemala City*
Predominantly residential district with good access to regional and subregional centres	Significant center of economic, community and cultural activity with regional-scale retail destinations.	Predominantly residential districts located just outside the core/old city	Predominantly residential district outside the core/old city area with good access to the core city
Potential for community and regional-serving retail but need to balance demands and conflict with surrounding destination retail.	High-density with commercial uses (>75%) + a moderate mix of other uses such as institutions, and residential within a 5 min (400m) walking radius.	Moderate-to high-density with predominantly residential and moderate mix of Commercial, public semi public & community facilities	Moderate-to high-density mix with predominantly residential supported with commercial & community facilities
Integrating affordable housing in the product mix to increase transit ridership. Provide greater opportunities for commercial activities and informal markets to support household needs.	Integrating high-density housing into existing mix of housing and employment to support local-serving retail and improving connections/ access to transit	Integrating new housing and supporting local-serving retail Improving connections/ access to transit”	Expanding local-serving retail opportunities and high-density housing opportunities
Less possibility of land availability	Mostly infill developments & retrofitting uses	Very less chance of land availability	Moderate chance of land availability

	Note: All requirements in this Table are subject to calibration for local context.	INTERMODAL GATEWAY	EMPLOYMENT NODE	DESTINATION NODE	TRANSIT NEIGHBORHOODS
a.	BASE RESIDENTIAL DENSITY				
	Dwelling units per hectare				
b.	BLOCK SIZE				
	Block perimeter				
c.	THOROUGHFARES				
	Arterial				
	Sub-arterial				
	Collector				
	Neighborhood streets				
	Bike facilities				
	Pedestrian priority streets				
	Shared street				
d.	CIVIC SPACES				
	Park				
	Green				
	Square				
	Plaza				
	Playground				
e.	LOT OCCUPATION				
	Lot Width				
	Lot Coverage				
f.	DEVELOPMENT STANDARDS				
	Minimum height				
	Maximum height				
	Maximum podium height				
	Minimum podium stepback				
g.	SETBACKS - PRINCIPAL BUILDING				
	Front Setback Principal				

URBAN CORE	INFILL NEIGHBORHOODS	NEW RESIDENTIAL AREAS	BASELINE STANDARDS		
			High	Medium	Low
			Highest density should be within 500m catchment	Medium density should be within 1000m catchment	Lower density should be beyond the 1000m catchment
			150m	130m	110m

Dubai, UAE