TOD STANDARD

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Cover Photo: Guangzhou, China bus rapid transit corridor
Cover Photo Credit: Wu Wenbin, ITDP China

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TOD STANDARD

Introduction

The Transit-Oriented Development (TOD) Standard ("the Standard") is an effort by the Institute for Transportation and Development Policy (ITDP). It draws on international expertise to come to a common understanding of what constitutes urban development best practice in promoting sustainable urban transport. This includes minimizing the use of personal motor vehicles and reducing greenhouse gas (GHG) emissions and other negative externalities associated with their use.

The Standard recognizes urban development projects that are located within walking distance of a high-capacity transit station and that present specific urban design and land use characteristics known to support, facilitate and prioritize the use of public transport, walking, cycling and other non-motorized modes. As such, the Standard recognizes development that is pro-actively oriented toward, rather than simply adjacent to, public transport.[1]

The TOD Standard is based on ITDP's *Principles of Transport in Urban Life*:

1. Develop neighborhoods that promote walking [WALK]
2. Prioritize non-motorized transport networks [CYCLE]
3. Create dense networks of streets and paths [CONNECT]
4. Locate development near high-quality public transport [TRANSIT]
5. Plan for mixed use [MIX]
6. Optimize density and transit capacity [DENSIFY]
7. Create regions with short commutes [COMPACT]
8. Increase mobility by regulating parking and road use [SHIFT]

Together, these urban development principles foster efficient spatial configurations that enable high-quality, car-free lifestyles.

In the USA, paint and street furniture applied to a section of New York City's busiest road, Broadway, creates a car-free public plaza for visitors to rest and for public programming.

The Purpose of the TOD Standard

The Standard is an assessment, recognition and policy guidance tool uniquely focused on the intersection of land use and transport practices. It is aimed at a broad range of urban development stakeholders, including governments, developers and investors, planners and designers, sustainable development advocates and interested citizens. The principal uses include:

- Evaluate the transit orientation of completed urban development projects,
- Evaluate projects at the planning or design phases to identify gaps and opportunities for improvement, and
- Guide policy and regulations relevant to urban planning, transportation planning, land use, urban design and parking.

By creating a universally applicable framework grounded in the key principles of transport in urban life, the Standard will be able to benchmark the performance of projects and policies against what is considered international best practice. Examples of such best practice include Hammarby Sjöstad in Stockholm and Västra Hamnen in Malmö, Sweden; and Vauban in Freiburg im Brisgau, Germany. [2]

The TOD Standard has been designed to assess individual urban developments and to be used by developers to guide critical aspects of the planning and design of their developments. The TOD Standard can also help local government, planners and policymakers evaluate station area plans around transit and develop recommendations to improve plans and policies to create a more sustainable and transit-oriented strategy for their area. Lastly, citizens can make use of the TOD Standard to advocate for higher quality, transit-oriented communities in the places where people live and work.

To this end, the Standard has been designed to be accessible by a non-technical audience. The Standard measures urban design and planning characteristics that can be easily, independently and objectively observed or verified, especially in places where good data is hard to come by. Although the metrics used are largely congruent with high-quality urban design. The TOD Standard does not directly address all aspects of good urban planning and design.

The Standard is not a model for measuring a project's wider sustainability. Several recommendable options for either of these are already available, such as LEED ND and BREEAM Communities, among others. Neither does the Standard assess the quality of the high-capacity transit system to which a project is oriented.

1. We use the terms "transit" and "public transport" interchangeably.

2. ITDP's Report "Europe's Vibrant New, Low Car(bon) Communities" by Nicole Foletta and Simon Field was the basis for identifying these, among other communities, as examples of international best practice.

In this regard, it is meant to be used to complement other tools and models, such as ITDP's BRT Standard.[3]

Scoring Criteria

The TOD Standard scoring system distributes 100 points, and 50 penalty (negative) points, across 24 metrics, and the allocation of these points approximately reflects the level of impact of each metric in creating a transit-oriented development.

The scoring criteria of each metric quantitatively measures the extent to which a given project leverages public transport infrastructure to create developments that reduce car use and increase the use of transit, cycling and walking. As such, the point system serves as a proxy for expected decreases in greenhouse gas emissions.

In general, the metrics and distribution of points aim to:

- Reflect a general consensus among academics and practitioners on the aspects of urban design, planning and policy that have the greatest impact on reducing motor vehicle use.
- Reward design decisions made by the project team to proactively design developments oriented toward transit infrastructure.
- Be relevant to a wide range of urban development projects in different international contexts.
- Be easily applicable by being based on information that is readily obtained, and which can also easily be independently verified.

Most of the points are awarded positively, but a number of metrics award solely penalty points. The penalty points are given for failing to meet design characteristics that are fundamental to basic TOD development. These elements include having a safe and complete pedestrian network, as measured by *Metrics 1.1 / Walkways* and *1.2 / Crosswalks*; having a safe and complete cycle network, as measured by *Metric 2.1 / Cycle Network*; and having transit within walking distance, as measured by *Metric 4.1 / Maximum Walk Distance to Transit*.

There are two metrics that award either positive points for performance that is better than what is considered the baseline (zero points), or negative points for worse performance. The first is making walking trips as convenient and direct as possible, measured by *Metric 3.1 / Pedestrian Intersection Density*. If having a complete pedestrian network is fundamental, then having a high-quality network, as measured by its connectivity, is crucial to encourage walking in an area. The second is *Metric 7.1 / Urban Site*, which aims to reward development in already developed areas and penalize greenfield projects.

The scoring system ultimately emphasizes the two most important aspects of a transit-oriented development beyond mere proximity to public transport. First, the place that cars occupy in space and as a mode of urban transport should be reduced. This is reflected in *Principle 8 / Shift*, which awards the most points of any single principle with its emphasis on reducing space for cars. Second, urban space should be designed to encourage walking as the main form of transport. The seven other principles highlight the need to provide optimal walking conditions and distances. From ensuring a safe, active, continuous, and well-connected pedestrian public space to bringing urban development close together in a dense, accessible mix of uses and activities, the TOD Standard is about putting walking and transit at the center of the urban development process.

3. The BRT Standard is a framework for evaluating the quality of bus rapid transit systems (www.brtstandard.org).

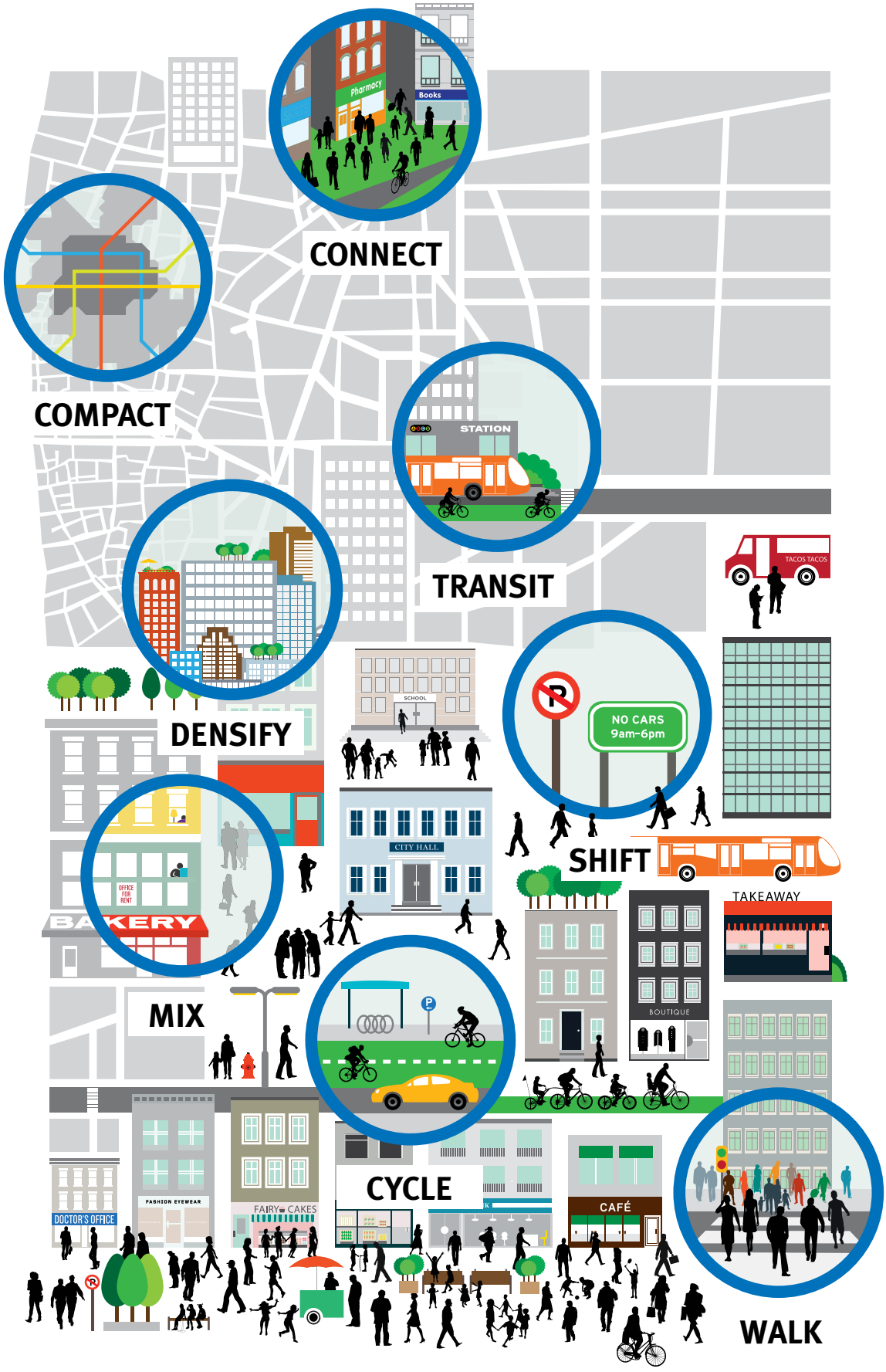
Version 1.0 Pilot Process

The TOD Standard version 1.0, prepared by ITDP with the support of Nelson\Nygaard Consulting and with input from a select group of experts, is presented as a draft for further discussion. The TOD Standard will undergo testing throughout 2013 to refine the metrics and scoring system.

In 2013, ITDP will convene a working group, or Technical Committee, of experts in TOD and sustainable urban development to more deeply vet the Standard and to guide the process of incorporating comments and feedback into a revised TOD Standard for 2014.

In 2014, ITDP will launch a version of the TOD Standard for official use, alongside a recognition process for development projects (e.g., Bronze, Silver, Gold). As part of the recognition process, the newly formed TOD Standard Technical Committee will be authorized to confer recognition of a TOD Standard performance on a development scheme.

This street in South Mumbai, India, has good quality sidewalks and a safe crossing for pedestrians and cyclists, with cars yielding right of way.



ITDP's *8 Principles of Transport in Urban Life*

Principles, Performance Objectives and Metrics

The TOD Standard sums up the new priorities for contemporary urban development. They reflect a fundamental shift from the old, unsustainable paradigm of car-oriented urbanism toward a new paradigm where urban forms and land uses are closely integrated with efficient, low-impact, and people-oriented urban travel modes: walking, cycling, and transit.

Both push factors, away from car-centric city forms, and pull factors, towards an efficient walking, cycling and transit city, are critical to ensuring that the motorized populations of old industrial economies overcome car dependency and that the new urban middle-classes of developing and emerging economies leap-frog into the age of advanced car-free (or low-car) lifestyles. The push factor informs *Principle 8 | Shift* and concerns the reduction of the space given over to cars. This push factor is, however, practically and politically viable only when combined with the provision of a rewarding and attractive alternative — the result of the seven other principles together, which embody the positive aspects of the new paradigm.

The Standard identifies a number of performance objectives for each principle and a few measurable indicators, or metrics, for each objective. The metrics are based on ease of measurement, and the closest approximation of performance against the objectives.

WALK

PRINCIPLE 1
15 POINTS (-15 POINTS)

A: THE PEDESTRIAN NETWORK IS SAFE AND COMPLETE

1.1 Walkways: Percentage of block frontage with complete, wheelchair-accessible walkways. (-10 to 0 points)

1.2 Crosswalks: Percentage of intersections with complete, wheelchair-accessible crosswalks in all directions. (-5 to 0 points)

1.3 Driveway Density: Average number of driveways per 100 meters of block frontage. (0 to 1 point)

B: THE PEDESTRIAN REALM IS ACTIVE AND VIBRANT

1.4 Visually Active Frontage: Percentage of block frontage that abuts public walkways and provides visual connection to building interior activity. (0 to 10 points)

1.5 Physically Permeable Frontage: Average number of shops and pedestrian building entrances per 100 meters of block frontage. (0 to 2 points)

C: THE PEDESTRIAN REALM IS TEMPERATE AND COMFORTABLE

1.6 Shade and Shelter: Percentage of walkway segments that incorporate adequate shade or shelter element. (0 to 2 points)

CYCLE

PRINCIPLE 2
5 POINTS (-5 POINTS)

A: THE CYCLING NETWORK IS SAFE AND COMPLETE

2.1 Cycle Network: Percentage of total street length with safe cycling conditions. (-5 to 0 points)

B: CYCLE PARKING AND STORAGE IS AMPLE AND SECURE

2.2 Cycle Parking at Transit Stations: Secure multi-space cycle parking facilities are provided at all transit stations. (0 to 2 points)

2.3 Cycle Parking at Buildings: Percentage of new buildings that provide secure, weather-protected cycle parking. (0 to 2 points)

2.4 Cycle Access in Buildings: Buildings allow cycle storage within tenant-controlled spaces. (0 to 1 points)

CONNECT

PRINCIPLE 3
10 POINTS (-10 POINTS)

A: WALKING AND CYCLING ROUTES ARE SHORT, DIRECT, AND VARIED

3.1 Pedestrian Intersection Density: Intersections of pedestrian routes per square kilometer. (-10 to 2 points)

3.2 Small Blocks: Percentage of blocks that are no more than 150 meters in length. (0 to 5 points)

B: WALKING AND CYCLING ROUTES ARE SHORTER THAN MOTOR VEHICLE ROUTES

3.3 Prioritized Connectivity: Ratio of pedestrian- and cycle-only intersections to motor vehicle-accessible intersections. (0 to 3 points)

TRANSIT

PRINCIPLE 4
5 POINTS (-5 POINTS)

A: HIGH-QUALITY TRANSIT IS ACCESSIBLE BY FOOT

4.1 Maximum Walk Distance to Transit: Maximum walk distance from the development to the nearest high-capacity transit station. (-5 to 0 points)

4.2 Average Walk Distance to Transit: Weighted average walk distance between buildings in the development and the nearest high-capacity transit station. (0 to 5 points)

MIX

PRINCIPLE 5
15 POINTS

A: TRIP LENGTHS ARE REDUCED BY PROVIDING DIVERSE AND COMPLEMENTARY USES

5.1 Complementary Uses: Presence of residential and non-residential uses combined within the same or adjacent blocks. (0 to 10 points)

5.2 Accessibility to Food: Percentage of residential units that are within 500 meters walk of an existing, or planned, source of fresh food. (0 to 1 point)

B: SHORT COMMUTES FOR LOWER-INCOME GROUPS

5.3 Affordable Housing: Percentage of residential units provided as affordable housing. (0 to 4 points)

DENSIFY

PRINCIPLE 6
15 POINTS

A: RESIDENTIAL AND JOB DENSITIES SUPPORT HIGH-QUALITY TRANSIT AND LOCAL SERVICES

6.1 Residential Density: Residential density measured in dwelling units per net hectare (DU/NHa) of developable land. (0 to 10 points)

6.2 Non-Residential Density: Non-residential density measured in floor area per net hectare (FAR/NHa) for the project. (0 to 5 points)

COMPACT

PRINCIPLE 7
15 POINTS (-15 POINTS)

A: THE DEVELOPMENT IS IN AN EXISTING URBAN AREA

7.1 Urban Site: Number of sides of the development adjoining existing built-up sites. (-15 to 10 points)

B: SHORT DISTANCES MAKE TRAVELLING THROUGH THE CITY CONVENIENT

7.2 Short Commute: Average peak-time commute by transit to the nearest urban center (minutes). (0 to 5 points)

SHIFT

PRINCIPLE 8
20 POINTS

A: THE AREA OF LAND OCCUPIED BY MOTOR VEHICLES IS MINIMIZED

8.1 Off-Street Parking: Total off-street area dedicated to parking as a percentage of total development land area. (0 to 15 points)

8.2 On-Street Parking and Traffic Area: Total road area used for motor vehicle travel and on-street parking as percentage of total development land area. (0 to 5 points)

Principles, Objectives & Metrics

TOD STANDARD

Reforma Avenue in Mexico City, Mexico, has vibrant and well designed pedestrian spaces located near transit.

WALK

PRINCIPLE 1

Walking is the most natural, affordable, healthy, and clean mode of travel for short distances and a necessary component of the vast majority of transit trips. As such, walking is a fundamental building block of sustainable transport. Walking is, or can be, the most enjoyable and productive way of getting around provided that paths and streets are populated and desired services and resources conveniently located. Walking also requires physical effort, and it is highly sensitive to environmental conditions. The key factors to making walking appealing form the basis for the three Performance Objectives under this Principle: safety, activity and comfort. Shortness and directness, other important aspects of walkability, are discussed under *Principle 3 | Connect*.

Objective A: The pedestrian network is safe and complete
The most basic requirement of urban walkability is the existence of a safe walking network linking all buildings and destinations, accessible to all persons and protected from motor vehicles. This can be achieved using a variety of configurations of paths and streets. Completeness of walkways and road-crossing systems are measured by *Metrics 1.1 | Walkways* and *1.2 | Crosswalks*. These elements are required for transit-oriented developments and therefore, not rewarded. Incompleteness of the pedestrian network is penalized with negative points. *Metric 1.3 | Driveway Density* measures the frequency of driveways breaching the protected status of walkways, and rewards the minimization of interference.

Objective B: The pedestrian realm is active and vibrant
Activity feeds activity. When sidewalks are populated, animated and lined with useful ground-floor activities and services, walking is attractive and safe and can be highly productive. In turn, being closer to passing pedestrians and bicyclists increases the exposure and vitality of local retail. *Metric 1.4 | Visually Active Frontage* measures the opportunities for visual connection between sidewalks and the interior ground floors of adjacent buildings. All types of premises are relevant, not only shops and restaurants, but also workplaces and residences. Similarly, *Metric 1.5 | Physically Permeable Frontage* measures active physical connections through the block frontage via entrances and exits to and from storefronts, building lobbies, courtyard entrances, passageways , and so on.

Objective C: The pedestrian realm is temperate and comfortable
The willingness to walk can be significantly enhanced with the provision of simple elements that enhance the walking environment, such as street trees. Provision of trees, the simplest and most effective way of providing shade in most climates, is measured by *Metric 1.6 | Shade and Shelter*. Trees also bring many environmental and psychological benefits. Various forms of shelter, such as arcades and awnings, can also improve walkability.

CYCLE

PRINCIPLE 2

Cycling is an elegant, emission-free, healthy, and affordable transport option that is highly efficient and consumes little space and few resources. It combines the convenience of door-to-door travel, the route and schedule flexibility of walking, and the range and speed of many local transit services. Bicycles and other means of people-powered transport, such as pedicabs, activate streets and greatly increase the coverage area of transit stations. Cyclists, however, are among the most vulnerable road users, and their bicycles are also vulnerable to theft and vandalism.

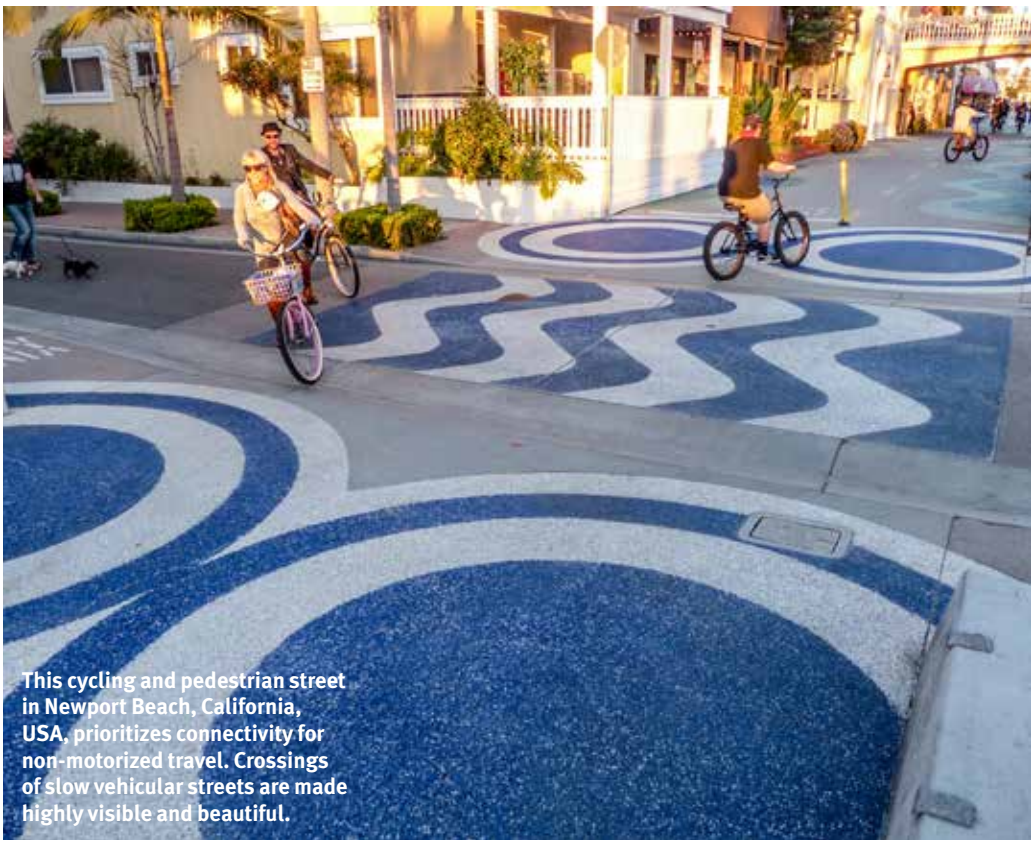
The key factors encouraging cycling are the provision of safe street conditions, and secure cycle parking and storage.

Objective A: The cycling network is safe and complete

A safe cycling network connecting all buildings and destinations through the shortest routes available is a basic TOD requirement. *Metric 2.1 | Cycle Networks* controls for this provision. Various types of cycleways, including cycle paths, cycle lanes on roads and cycle-friendly streets, can be part of the network.

Objective B: Cycle parking and storage is ample and secure

Bicycles do not take up much space, but still require secure parking and storage. Cycling can be an attractive travel option only to the extent that cycle racks are available at destinations and that bicycles can be secured within private premises at night and for longer periods. These are addressed by *Metrics 2.2 | Cycle Parking at Transit Stations*, *2.3 | Cycle Parking at Buildings*, and *2.4 | Cycle Access in Buildings*.



This cycling and pedestrian street in Newport Beach, California, USA, prioritizes connectivity for non-motorized travel. Crossings of slow vehicular streets are made highly visible and beautiful.

CONNECT

PRINCIPLE 3

Short and direct pedestrian and cycling routes require highly connected networks of paths and streets around small, permeable blocks. This is primarily important for walking and for transit station accessibility, which can be easily discouraged by detours. A tight network of paths and streets offering multiple routes to many destinations can also make walking and cycling trips varied and enjoyable. Frequent street corners and narrower right of ways with slow vehicular speed and many pedestrians encourage street activity and local commerce. An urban fabric that is more permeable to pedestrians and cyclists than to cars also prioritizes non-motorized and transit modes.

Objective A: Walking and cycling routes are short, direct, and varied
The simplest proxy for the quality of path connectivity is the intersection count to area ratio as used in *Metric 3.1 | Pedestrian Intersection Density*. A high intersection count infers a dense pedestrian network, and therefore small average block size. *Metric 3.2 | Small Blocks* controls for the presence of overly long blocks that might be hidden in the averaged mix.

Objective B: Walking and cycling routes are shorter than motor vehicle routes
Although high pedestrian and cycling connectivity is an important feature of TOD, road connectivity enhancing motor vehicle travel is not. *Metric 3.3 | Prioritized Connectivity* compares the two categories and rewards higher ratios of non-motorized travel (NMT) path connectivity to car-accessible road connectivity.

A street in the center of Copenhagen, Denmark, was designed with short blocks, providing direct access to shops for pedestrians and cyclists, who are safely separated from cars.

TRANSIT

PRINCIPLE 4

The BRT corridor in Guangzhou, China, is flanked by highly dense, compact, mixed use development.

Transit connects and integrates distant parts of the city. Access and proximity to high-capacity public transit service, defined as bus rapid transit (BRT)[4] or rail transit, is a prerequisite for TOD Standard recognition. High-capacity public transit plays a critical role, as it allows for highly efficient and equitable urban mobility, and supports dense and compact development patterns. Transit also comes in various forms to support the entire spectrum of urban transport needs, including low- and high-capacity vehicles, taxis and motorized rickshaws, bi-articulated buses and trains.

Objective A: High-quality transit is accessible by foot

The maximum recommended distance to the nearest high-capacity transit station for a transit-oriented development is defined as 500 meters, a 6- to 10- minute walk. *Metric 4.1 / Maximum Walk Distance to Transit* imposes penalties if any building in the development is located beyond this threshold. Any development built beyond 800 meters from a transit station cannot be characterized as TOD. To encourage massing of buildings nearer transit stations, *Metric 4.2 / Average Walk Distance to Transit* also measures the weighted average walk distance per unit of floor area and rewards lower average walk distance results.

4. BRT must comply with the requirements of the BRT Standard. Refer to ITDP's BRT Standard at www.brtstandard.org

MIX

PRINCIPLE 5

When there is a mix of complementary uses and activities within a local area (e.g., a mix of residences, workplaces and local retail commerce), many daily trips can remain short and walkable. Diverse uses peaking at different times keep local streets animated and safe, further encouraging walking and cycling activity, and fostering a vibrant human environment where people want to live. Inbound and outbound commuting trips are also more likely to be balanced, resulting in more efficient operations in the transit system. A mix of housing prices allows some workers to live near their jobs and prevents lower-income residents from being displaced to outlying areas, potentially encouraging this group to become dependant on motor vehicles. Therefore, the two performance objectives for this principle are the provision of a balanced mix of land uses and a balanced mix of resident income levels.

Objective A: Trip lengths are reduced by the provision of diverse and complementary uses
Developments that add to the mix of complementary uses allow for a wider range of daily trips to be walkable. *Metric 5.1 | Complementary Uses* rewards developments that mix residential and non-residential uses. *Metric 5.2 | Accessibility to Food* rewards the presence of perishable food retail as a "litmus test" indicative of an area well served by locally oriented and regularly supplied commerce and services.

Objective B: Short commutes for lower-income groups
Metric 5.3 | Affordable Housing rewards mixed-income developments that include dedicated affordable housing.

Ground floor retail provides useful goods and services in a high-density development in Hong Kong, China.

DENSIFY

PRINCIPLE 6

To absorb urban growth in compact and dense forms, urban areas must grow vertically (densification) instead of horizontally (sprawl). In turn, high urban densities support a transit service of high quality, frequency and connectivity and help generate resources for investment in system improvements and expansions.

Transit-oriented density results in well-populated streets, ensuring that station areas are lively, active, vibrant and safe places where people want to live. Density delivers the customer base that supports a wide range of services and amenities and makes local commerce thrive. As many of the most famous and desirable neighborhoods in the world attest, high-density living can be highly attractive. The only limits to densification should result from requirements for access to daylight and circulation of fresh air, access to parks and open space, preservation of natural systems, and protection of historic and cultural resources.

The performance objective under this principle emphasizes residential and non-residential density to support high-quality transit and local services.

Objective A: Residential and job densities support high-quality transit and local services
Metric 6.1 | Residential Density rewards minimal thresholds of residential density known to support high-quality transit service. *Metric 6.2 | Non-Residential Density* similarly rewards thresholds of non-residential density.

Mixed uses and prioritized connectivity for pedestrians between dense retail and work-live housing units are demonstrated in the high-profile development of Soho-Jianwai in Beijing, China.

COMPACT

PRINCIPLE 7

The basic organizational principle of dense urban development is compact development. In a compact city, or a compact district, the various activities and uses are conveniently located close together, minimizing the time and energy required to reach them and maximizing the potential for interaction. With shorter distances, compact cities require less extensive and costly infrastructure (though higher standards of planning and design are required), and they preserve rural land from development by prioritizing densification and redevelopment of previously developed land. The *Principle 7 | Compact* can be applied to a neighborhood scale, resulting in spatial integration by good walking and cycling connectivity and orientation toward transit stations. At the scale of a city, being compact means being integrated spatially by public transit systems. The two performance objectives for this principle focus on the proximity of a development to existing urban activity, and short travel time to the major trip generators in the central and regional destinations.

Objective A: The development is in an existing urban area
To promote densification and the efficient use of previously developed vacant lots such as brown-fields, *Metric 7.1 | Urban Site* rewards development on sites within or at the immediate edge of an urbanized area.

Objective B: Short distances make traveling through the city convenient
Metric 7.2 | Short Commute rewards development with short transit commute time to the closest major center of employment and specialized urban services. Developers and promoters of a project have control over this aspect when making a location decision in the early stage of a project.

The BRT corridor spurred further development along the compact urban area of Zhongshan road, Guangzhou, China.

SHIFT

PRINCIPLE 8

When cities are shaped by the above seven principles, personal motor vehicles become largely unnecessary in day-to-day life. Walking, cycling and the use of high-capacity transit are easy and convenient, and can be supplemented by a variety of intermediary transit modes and rented vehicles that are much less space-intensive. Scarce and valuable urban space can be reclaimed from unnecessary roads and parking, and can be reallocated to more socially and economically productive uses. The performance objective below focuses on these benefits.

Objective A: The land occupied by motor vehicles is minimized
Low provision of off-street space for motor vehicles parking is rewarded by *Metric 8.1 | Off-Street Parking*. *Metric 8.2 | On-Street Parking and Traffic Areas* rewards the reduction of street space occupied by motor vehicles either in the form of road area or on-street parking.

A MODEL TO SHIFT FROM

The Round Towers of Marina City in Chicago, USA, are an example of what not to do. Cars occupy about one third of the structure and contribute to creating a hostile walking environment.

A MODEL TO SHIFT TO

The Central Saint Giles mixed use development in London, UK, does not provide any car parking, except for disabled persons. This popular development is densewith small block footprints, active and permeable frontage, and provides easy access for pedestrians and cyclists.

TOD Standard Scoring Detail

Project Definition:
To qualify for official TOD Standard recognition a development must satisfy all the following requirements:

- The development is within an 800 meter walking distance (not radius) from a high-capacity transit station. To qualify as a transit station, the transit corridor must be, at minimum, a basic BRT or LRT as defined by the BRT Standard, or another form of high-capacity public transit (light/heavy rail, ferry).

- The development creates or transforms a minimum of four city blocks separated by publicly accessible walking paths or streets. A project that takes a single block and breaks it into smaller blocks by adding new publicly accessible through streets, or publicly accessible pedestrian passageways that previously did not exist is eligible.

- The development creates a minimum of 20,000 square meters of above-ground gross floor area.

The TOD Standard's metrics have not been designed for application to existing districts around high-capacity transit stations. A version adapted to this use will be elaborated in the next phase of its development.

A pedestrian street in Rio de Janeiro, Brazil provides an attractive and stimularing walking environment.

Walkways METRIC 1.1

Percentage of block frontage with complete, wheelchair-accessible walkways.

- Completeness of the walkway network is a basic requirement, and no positive points are given. Minor gaps in completeness are subject to penalty points (negative points).
- Complete walkways are defined as either:
(a) dedicated and protected sidewalks, or

(b) shared streets designed for safe sharing between pedestrians, cyclists and vehicles, with speeds capped at 15km/h by design, or

(c) pedestrian-only paths.

- Wheelchair-accessible walkways are defined as barrier-free for wheelchair users.
- Walkway obstructions due to works or other temporary situations are not penalized as long as a safe detour is available.

Measurement Method
1. Quantify the total length of all block frontage.

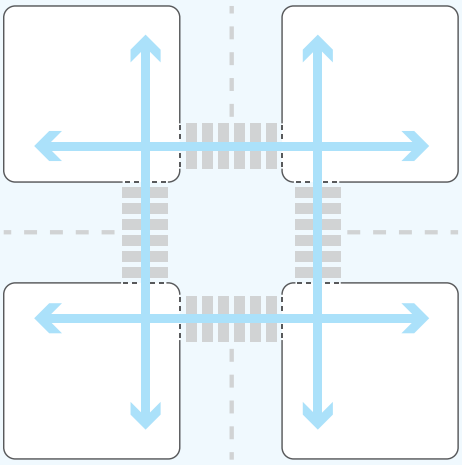
2. Quantify the length of all block frontages with qualifying walkways (see details above).

3. Divide the second measure by the first to calculate percentage of walkway coverage.

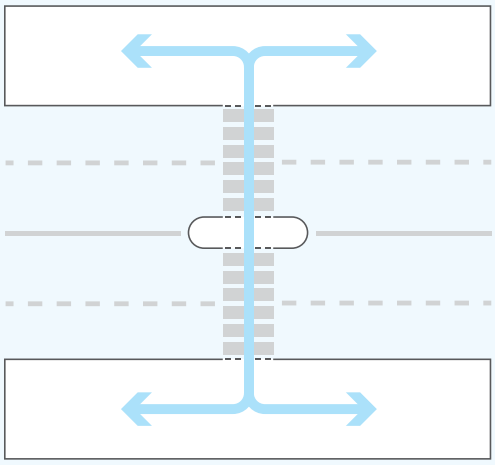
Scope
Within development boundaries and to the centerline of peripheral streets.

Data Source
Plans and designs of development, up-to-date aerial/satellite photography, on-site survey.

WALKWAYS	POINTS
99% or more of the walkway network is complete	0
98% or more of the walkway network is complete	-2
97% or more of the walkway network is complete	-4
96% or more of the walkway network is complete	-6
95% or more of the walkway network is complete	-8
94% or less of the walkway network is complete	-10



Crosswalks should be provided in all directions to create a complete pedestrian network.



Crosswalks that cross two or more traffic lanes have a wheelchair-accessible pedestrian refuge.

Crosswalks METRIC 1.2

Percentage of intersections with complete, wheelchair-accessible crosswalks in all directions.

- Completeness of the pedestrian network is a basic requirement, and no positive points are given. Minor gaps in completeness are subject to penalty points (negative points).
- In the case of very dense street networks, where there are qualifying crosswalks at an interval of 150 meters or less, crosswalks are not required at intersections between pedestrian priority and slow streets (with speeds of 30 km/h or less).
- Qualifying safe crosswalks are:
(a) two or more meters in width and demarcated, and

(b) fully wheelchair accessible, and

(c) if the crossing is longer than 2 traffic lanes, safe crosswalks also have a wheelchair accessible refuge island.

Reforma Avenue in Mexico City, Mexico, has raised crosswalks that force cars to slow down and give priority to pedestrians and cyclists.

Measurement Method

1. Quantify the number of intersections requiring pedestrian crossing facilities.

2. Quantify the number of these intersections with qualifying crossing facilities (see details above).

3. Divide the second measure by the first to calculate the percentage of complete intersections.

Scope

Within development boundaries and peripheral streets.

Data Source

Plans and designs of development and peripheral streets, or up-to-date aerial/ satellite photography, on-site survey.

CROSSWALKS	POINTS
100% of intersections have complete crosswalks	0
99% of intersections or less have complete crosswalks	-1
98% of intersections or less have complete crosswalks	-2
97% of intersections or less have complete crosswalks	-3
96% of intersections or less have complete crosswalks	-4
95% of intersections or less have complete crosswalks	-5

Driveway Density METRIC 1.3

Average number of driveways per 100 meters of block frontage.

- Driveways are defined as paths for motor vehicles that cross pedestrian areas and walkways to connect to off-street parking or loading facilities.

- Vehicle connections to off-street parking and loading facilities that do not intersect a walkway or reduce the completeness of the walkway network are not counted as driveways for this metric.

Measurement Method
1. Quantify the total length of block frontage and divide by 100 meters.

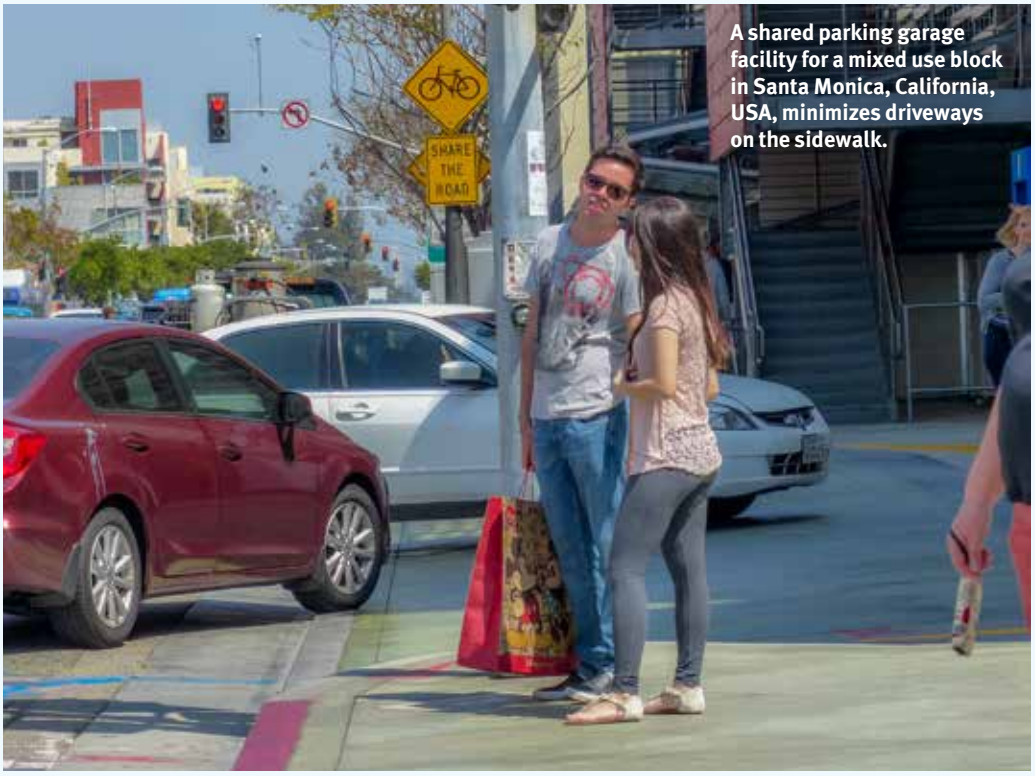
2. Quantify the total number of driveways that intersect a walkway.

3. Divide the second measure by the first to calculate a driveway density average.

Scope
Within the development and to the centerline of peripheral streets.

Data Source
Plans and designs of development, up-to-date aerial/satellite photography, on-site survey.

DRIVEWAY DENSITY	POINTS
Average driveway density is 2 or less driveways per 100m of block frontage	1
Average driveway density is more than 2 driveways per 100m of block frontage	0



A shared parking garage facility for a mixed use block in Santa Monica, California, USA, minimizes driveways on the sidewalk.

Visually Active Frontage METRIC 1.4

Percentage of block frontage that abuts public walkways and provides visual connection to building interior activity.

- Visually active frontage is defined as a length of ground-floor building frontage that abuts public walkways and is visually penetrable.
- Visually active frontage is measured as windows and open or transparent walls of 50% transparency or more, and accessible open space (playground and park, but not fenced-off landscaping, porches, or patios), located along the streetwall at any point between 1 meter and 2 meters elevation from curb level.
- Vehicle entrances do not count as visually active frontage.
- Operable interior or exterior curtains or shutters are admissible.

Measurement Method

1. Quantify the total length of building frontages that abuts public walkways.

2. Quantify the total length of building frontages that qualify as visually active (see details above).

3. Divide the second measure by the first to calculate an active frontage percentage.

Scope

Within the development boundaries including public street frontage.

Data Source

Plans and designs of development, on-site survey.

Visually active frontage in the SOMA neighborhood of San Francisco, California, USA, provides a pleasant and engaging walking and working environment.

VISUALLY ACTIVE FRONTAGE	POINTS
Visually active frontage percentage is 75% or more	10
Visually active frontage percentage is 70% or more	9
Visually active frontage percentage is 65% or more	8
Visually active frontage percentage is60% or more	7
Visually active frontage percentage is 55% or more	6
Visually active frontage percentage is 50% or more	5
Visually active frontage percentage is 45% or more	4
Visually active frontage percentage is 40% or more	3
Visually active frontage percentage is 35% or more	2
Visually active frontage percentage is 30% or more	1
Visually active frontage percentage is 29% or less	0

Multiple shop and building entrances on the ground level create a highly permeable and welcoming street frontage in Pune, India.

Physically Permeable Frontage METRIC 1.5

Average number of shops and pedestrian building entrances per 100 meters of block frontage.

- Qualifying entrances include openings to storefronts, restaurants and cafés, building lobbies, cycle and pedestrian passageways and entrances, and park and corner plaza entrances and service entrances.
- Non-qualifying entrances include emergency exits, access to storage, motor vehicle garages or driveway entrances.

Measurement Method
1. Quantify the number of entrances along public walkways.

2. Quantify the total length of block frontage that abuts public walkways and divide by 100 meters.

3. Divide the first measure by the second to calculate average number of entrances per 100 meters of block frontage.

Scope
Within the development boundaries.

Data Source
Plans and designs of development, on-site survey.

PHYSICALLY PERMEABLE FRONTAGE	POINTS
Average number of entrances per 100m of block frontage is 5 or more	2
Average number of entrances per 100m of block frontage is 3 or more	1
Average number of entrances per 100m of block frontage is 2 or less	0

Shade and Shelter METRIC 1.6

Percentage of walkway segments that incorporate adequate shade or shelter element.

- Shade can be provided through various means including: trees, buildings (arcades, awnings), free-standing structures (shade shelters at intersections, public transport shelters) and vertical screens (walls, lattices).
- Walkway segments are defined as the part of a walkway that lies between adjacent intersections, including non-motorized intersections.
- Shaded walkways are defined as having a clear pedestrian and wheelchair-accessible path that is appropriately shaded during the hottest seasons.
- Both sidewalks should be shaded on streets with more than two traffic lanes.

Measurement Method

1. Quantify the number of walkway segments within and along the development perimeter.

2. Quantify the number of segments that incorporate a qualifying shade or shelter element.

3. Divide the second measure by the first to calculate a percentage of shaded and sheltered walkways.

Scope

Within development boundaries and to the centerline of peripheral streets.

Data Source

Plans and designs of development, up-to-date aerial/satellite photography, on-site survey.

SHADE AND SHELTER	POINTS
75% or more of all walkway segments have shade/shelter amenities	2
50% or more of all walkway segments have shade/shelter amenities	1
49% or less of all walkways segments have shade/shelter amenities	0

Trees provide shade and pleasant conditions for walking in Ward V of Budapest, Hungary, in the summer.

A high capacity cycleway has physical protection, turning lanes, and an advanced stop line for cyclists in Hangzhou, China.

Cycle Network METRIC 2.1

Percentage of total street length with safe cycling conditions.

- Requirements for safe and complete cycling conditions are:

(a) Streets with speeds above 30km/h must have exclusive or protected cycleways in both directions. Exclusive cycleways are spatially segregated from vehicles (e.g., painted cycle lanes or physically separated cycle lanes).

(b) Slow streets (with design speed of 30km/h or less) are considered safe for cycling and do not require exclusive or protected cycleways, but sharrow stencils are recommended.

(c) Pedestrian priority streets (with design speed of 15km/h or less) are also considered safe for cycling and do not require exclusive or protected cycleways.

Measurement Method

1. Quantify the length of all street segments, excluding pedestrian only streets.

2. Quantify the length of street segments with safe cycling conditions (see details above).

3. Divide the second measure by the first to calculate the percentage of street length with safe cycleways.

Scope

Within development boundaries and peripheral streets.

Data Source

Plans and designs of development, up-to-date aerial/satellite photography, on-site survey.

SAFE AND COMPLETE CYCLEWAYS	POINTS
95% of streets or more have safe cycleways	0
94% of streets or less have safe cycleways	-1
90% of streets or less have safe cycleways	-2
85% of streets or less have safe cycleways	-3
80% of streets or less have safe cycleways	-4
75% of streets or less have safe cycleways	-5

CYCLE: Prioritize non-motorized transport networks

A: The cycling network is safe and complete

Cycle Parking at Transit Stations METRIC 2.2

Secure multi-space cycle parking facilities are provided at all transit stations.

- Secure cycle parking is defined as fixed facilities available to lock bicycles and other non-motorized vehicles. These include multi-space outdoor racks and/or weather-protected storage.

- Cycle parking facilities should be located outside pedestrian or vehicle circulation paths and within 50 meters of a transit station.

Measurement Method

1. Identify all high-capacity transit stations within 800 meters of the development.

2. Identify the stations that provide multi-space, secure cycle parking facilities (see details above).

Scope

All transit stations within 800 meters of the development.

Data Source

Plans and designs of development, local map, public transport map.

Multi-space, covered racks for cycle parking are provided along the BRT corridor in Guangzhou, China.

CYCLE PARKING AT TRANSIT STATIONS	POINTS
Multi-space, weather-protected outdoor racks are provided at all transit stations	2
Multi-space, outdoor racks are provided at all transit stations	1
Only one cycle rack is provided at transit stations / No racks are provided at transit stations	0

Cycle Parking at Buildings METRIC 2.3

Percentage of new buildings that provide secure, weather-protected cycle parking.

- Applies to buildings greater than 500 square meters of floor area, or six residential units.
- Cycle parking at buildings should be:

(a) located within 50 meters of the entrance, and

(b) located outside pedestrian or vehicle circulation areas and

(c) weather-protected.

- Publicly provided cycle parking facilities can be included.

Measurement Method
1. Quantify all applicable buildings.

2. Quantify all applicable buildings with acceptable cycle parking (see details above).

3. Divide the second measure by the first to calculate a percentage for cycle parking provision.

Scope
All buildings constructed as part of the development.

Data Source
Plans and designs of development, location map, public transport map.

Ample and visible cycle parking is located on the ground floor of an affordable housing building in the LandStrasse area of Vienna, Austria.

CYCLE PARKING AT BUILDINGS	POINTS
96% or more of new buildings provide ample secure cycle parking	2
Between 85% and 95% of new buildings provide ample secure cycle parking	1
84% or less of new buildings provide ample secure cycle parking	0

Cycle Access in Buildings METRIC 2.4

Buildings allow interior access for cycles and cycle storage within tenant-controlled spaces.

- Cycle access into tenant-controlled spaces must be required by building code or bylaws.

Measurement Method

1. Review applicable codes and/or bylaws.

Scope

All buildings constructed as part of the development.

Data Source

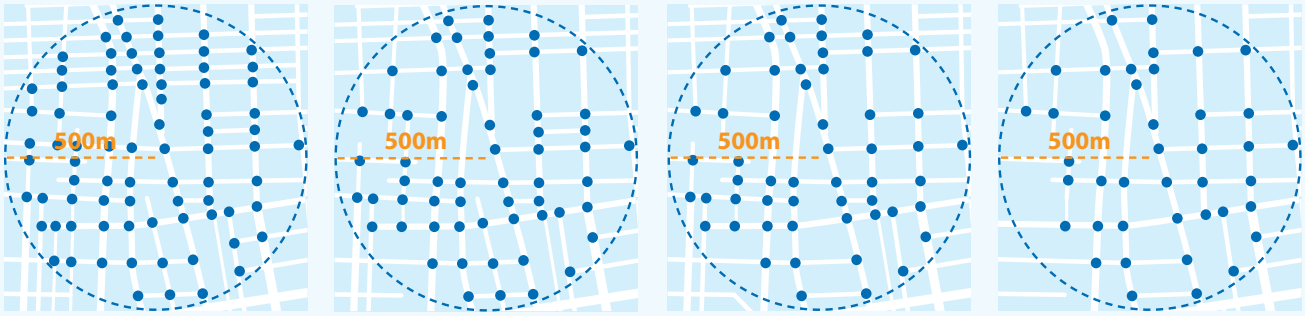
Applicable codes or bylaws.

CYCLE ACCESS IN BUILDINGS	POINTS
Cycle access is required by new building codes or bylaws	1
Cycle access is not required by building codes or bylaws	0

A cycle parking area near the elevator of an office in New York City, USA.

Seoul, South Korea, has revived old streets and alleyways of the Insadong district, creating a diverse network of interesting and convenient walking routes.

PEDESTRIAN INTERSECTION DENSITIES PER SQUARE km (PID/sq km)



80 PID/sq km | 60 PID/sq km | 54 PID/sq km | 40 PID/sq km

Pedestrian Intersection Density METRIC 3.1

Intersections of pedestrian routes per square kilometer.

- Pedestrian routes include:
(a) A street with two sidewalks

(b) Pedestrian priority streets

- Plazas and open spaces permeable to pedestrians, but without defined walkways, should be counted as four-way intersections.

Measurement Method
1. Quantify total development area in square kilometer.

2. Map all pedestrian intersections within the development and to the centerline of peripheral streets.

3. Calculate a total pedestrian intersection count as follows:
   1. A four-way intersection = 1 intersection
   2. A three-way, or "T", intersection = 0.75
   3. A five-way intersection = 1.25

4. Divide third measure by the first to calculate the pedestrian intersection density.

Scope
Within the development and to the centerline of peripheral streets.

Data Source
Maps/plans of development, aerial/satellite photography.

PEDESTRIAN INTERSECTION DENSITY	POINTS
Intersection density is 80 or more	2
Intersection density is between 60 and 79	1
Intersection density is between 55 and 59	0
Intersection density is 54 or less	-1
Intersection density is 53 or less	-2
Intersection density is 52 or less	-3
Intersection density is 51 or less	-4
Intersection density is 50 or less	-5
Intersection density is 49 or less	-6
Intersection density is 48 or less	-7
Intersection density is 47 or less	-8
Intersection density is 46 or less	-9
Intersection density is 45 or less	-10

CONNECT: Create dense networks of streets and paths

A: Walking and cycling routes are short, direct, and varied

A mixed use development in the Västra Hamnen area of Malmö, Sweden, is pedestrian-friendly, permeable, and connected.

Small Blocks METRIC 3.2

Percentage of blocks that are no more than 150 meters in length (long side).

- Blocks are defined as enclosed properties surrounded by publicly accessible walkways.
- Blocks are measured by the length of block faces between adjacent intersections.

Measurement Method
1. Quantify the number of blocks that lie fully within the development.

2. Quantify the number of blocks with any block frontage length of 150 meters or less.

3. Divide the second measure by the first to calculate the small block percentage for the development.

Scope
Within the development.

Data Source
Maps/plans and designs of development, area maps, aerial/satellite photography.

CONNECT: Create dense networks of streets and paths

A: Walking and cycling routes are short, direct, and varied

SMALL BLOCKS	POINTS
98% or more of all blocks in the development are less than 150m in length	5
96% or more of all blocks in the development are less than 150m in length	4
94% or more of all blocks in the development are less than 150m in length	3
92% or more of all blocks in the development are less than 150m in length	2
90% or more of all blocks in the development are less than 150m in length	1
89% or less of all blocks in the development are less than 150m in length	0

Prioritized Connectivity METRIC 3.3

Ratio of pedestrian- and cycle-only intersections to motor vehicle-accessible intersections.

- Intersections at plazas and open spaces permeable to pedestrians and cyclists, but without defined walkways or cycleways, are counted as four-way intersections.

Measurement Method

1. Map all motor vehicle-accessible intersections within the development and to the centerline of peripheral streets.

2. Map all pedestrian- and cycle-accessible intersections within the development and to the centerline of peripheral streets.

3. Quantify all intersections as follows:
    1. A four-way intersection = 1 intersection
    2. A three-way, or "T", intersection = 0.75
    3. A five-way intersection = 1.25

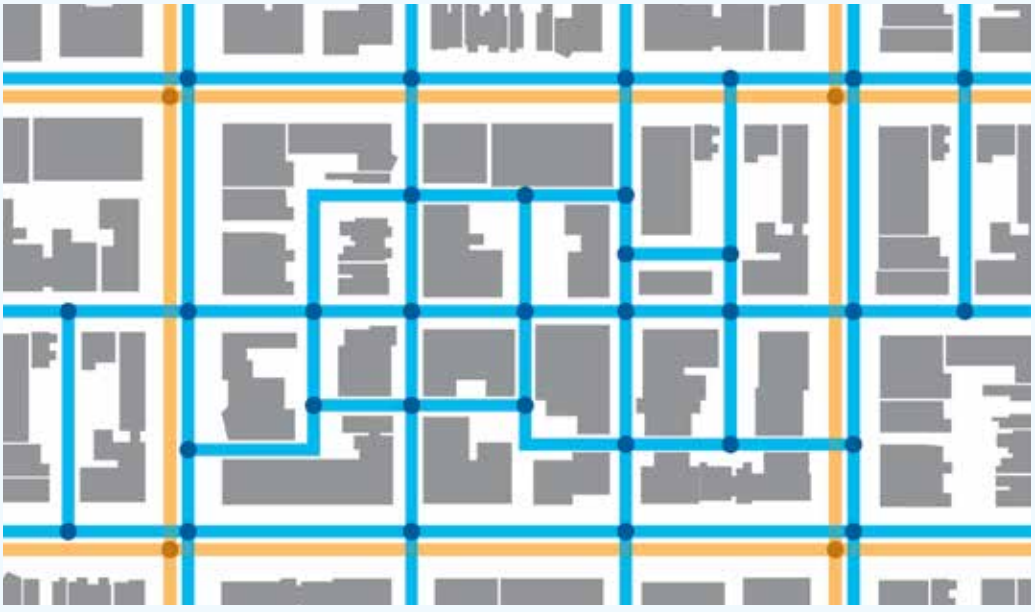
4. Divide the second measure by the first to calculate a prioritized connectivity ratio.

Scope

Within the development and to the centerline of peripheral streets.

Data Source

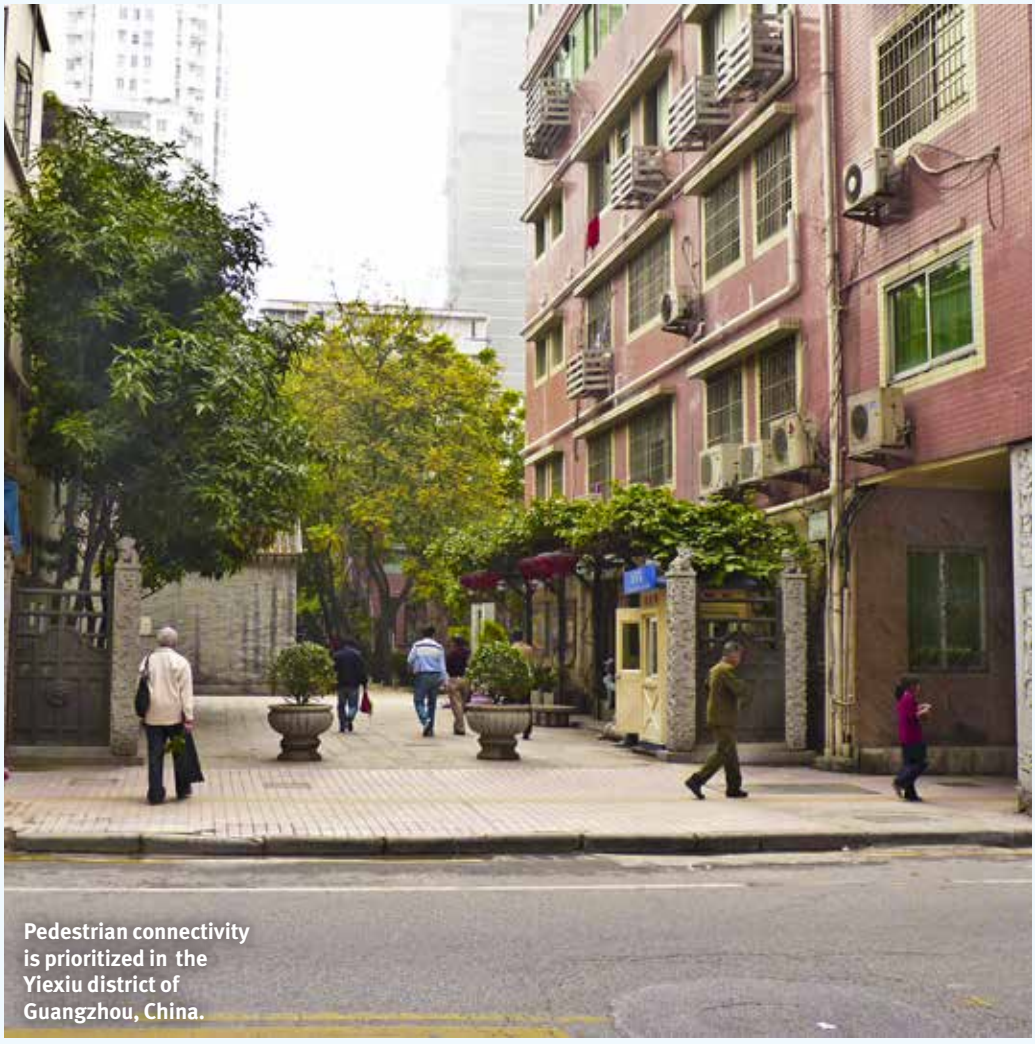
Maps/plans and designs of development, area maps, aerial/satellite photography.



Blue lines indicate the pedestrian and cycling network with multiple intersections and direct access to the core. Orange lines indicate vehicular traffic, keeping cars just outside the core.

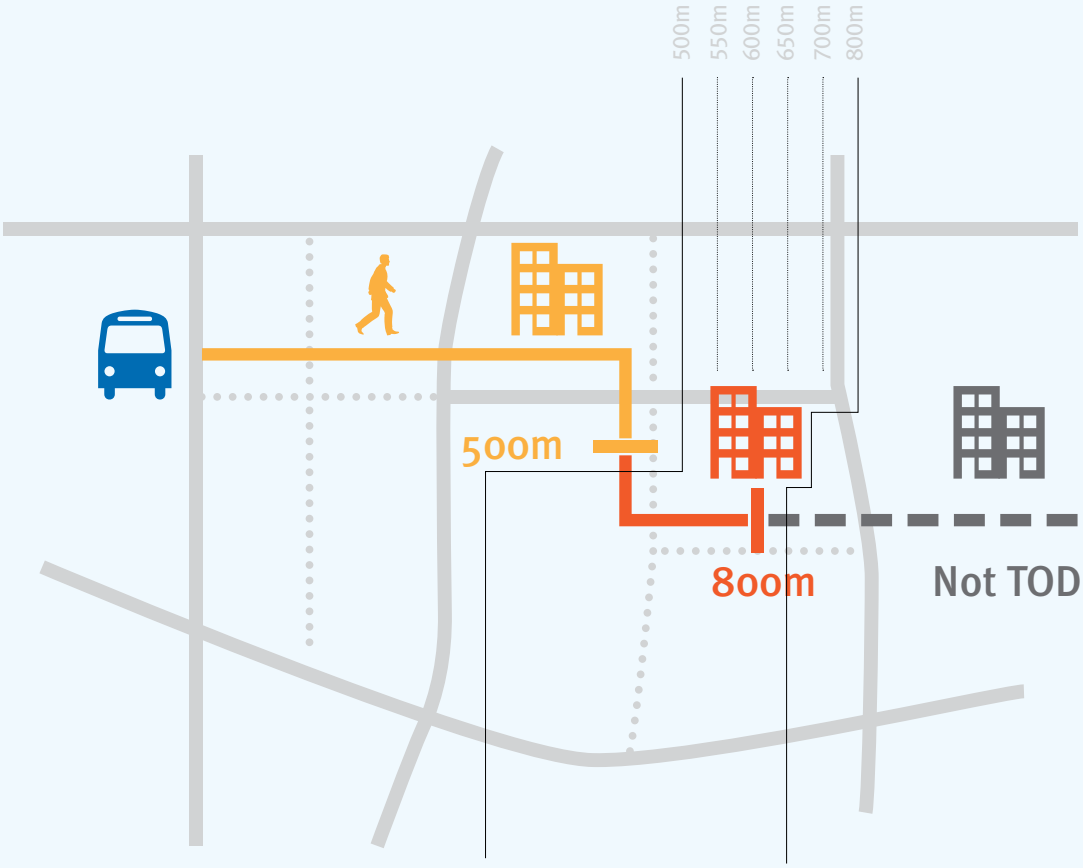
CONNECT: Create dense networks of streets and paths

B: Walking and cycling routes are shorter than motor vehicle routes



Pedestrian connectivity is prioritized in the Yiexiu district of Guangzhou, China.

PRIORITIZED CONNECTIVITY	POINTS
Prioritized connectivity ratio is 3 or higher	3
Prioritized connectivity ratio is 2 or higher	2
Prioritized connectivity ratio is 1 or higher	1
Prioritized connectivity ratio is lower than 1	0



Maximum Walk Distance to Transit METRIC 4.1

Maximum walk distance (meters) from the development to the nearest high-capacity transit station (Metro, Tram, BRT).

- Measure actual walk distance through permanently public areas and walkways (not a straight line) between a building entrance and a transit station.

- Applicable transit can also include local bus service stops if that is the highest-capacity public transport option within the region.

TRANSIT: Locate development near high-quality transit

A: High-quality transit is accessible by foot

This dual transport mode corridor in the Hammarby Sjöstad district of Stockholm, Sweden, features dedicated right of way for buses and trams.

Measurement Method

1. Identify high-capacity transit stations nearby the development.

2. Identify buildings that are farthest away from these transit stations.

3. Quantify the walking distance from those building entrances to their nearest transit station.

Scope

The development and nearby transit stations.

Data Source

Maps/plans and designs of development, area maps, aerial/satellite photography.

MAXIMUM WALK DISTANCE TO TRANSIT	POINTS
Maximum walk distance is 500m or less	0
Maximum walk distance is 501m or more	-1
Maximum walk distance is 550m or more	-2
Maximum walk distance is 600m or more	-3
Maximum walk distance is 650m or more	-4
Maximum walk distance is 700m or more	-5
Maximum walk distance is 800m or more	Not TOD

Average Walk Distance to Transit METRIC 4.2

Weighted average walk distance between buildings in the development and the nearest high-capacity transit station (Metro, Tram, BRT).

- The average walk distance from each building to the nearest transit station is weighted against the floor area of each building. This calculation assumes that buildings with higher densities have more occupants, therefore the average walk distance for higher-density buildings is more significant than the average walk distance for lower-density buildings.
- High-capacity transit can also include frequent local bus service if that is the highest-capacity public transport option within the region.
- Use the primary entrance of buildings as starting point.

Measurement Method

1. Identify the primary entrance of each building.

2. Quantify the total floor area in each building.

3. Quantify the walking distance from the primary entrance of each building to the nearest qualifying transit station.

4. Multiply the floor area of each building by the walking distance to transit, and add all together.

5. Divide the fourth measure by the total floor area of all buildings to calculate the weighted average walk distance.

Scope

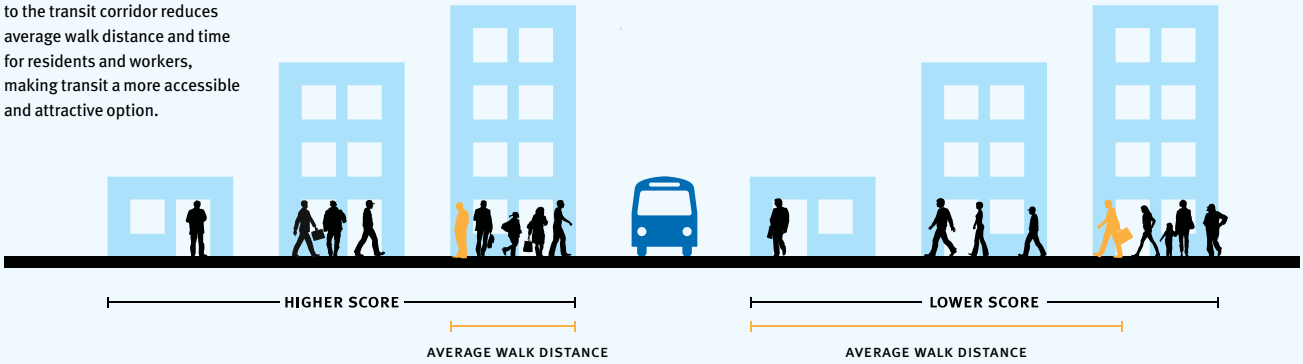
Buildings within the development.

Data Source

Maps/plans and designs of development, area maps, aerial/satellite photography.

WEIGHTED AVERAGE WALK DISTANCE TO TRANSIT	POINTS
Weighted average walk distance is 300m or less	5
Weighted average walk distance is 350m or less	4
Weighted average walk distance is 400m or less	4
Weighted average walk distance is 450m or less	2
Weighted average walk distance is 500m or less	1
Weighted average walk distance is more than 500m	0

Building more densely closer to the transit corridor reduces average walk distance and time for residents and workers, making transit a more accessible and attractive option.



The Hammarby Sjöstad mixed use development in Stockholm, Sweden, places the most dense buildings closest to transit.

Complementary Uses METRIC 5.1

Residential and non-residential uses combined within same or adjacent blocks.

Use mix can be:

- Internally complementary, i.e., mixed uses within the development, or
- Contextually complementary, i.e., mixed uses within the surrounding neighborhood.

- To be "internally complementary", residential uses must account for no less than 25% and no more than 85% of the total developed floor area.

- To be "contextually complementary", more than 50% of the floor area of a development in a predominantly residential area must consist of non-residential uses, or more than 50% of the floor area of a development in a predominantly non-residential area must consist of dwelling units.

Measurement Method

1. Identify the balance of residential and non-residential uses included within the proposed development.

2. Determine if the proposed development would improve the residential/non-residential balance of the surrounding area.

Scope

Within the development (internally complementary) and within the same and adjacent blocks (externally complementary).

Data Source

Plans and designs of development, building documentation, on-site survey.

COMPLEMENTARY USES	POINTS
Development is internally complementary	5
Development is contextually complementary	5
Development is both internally and contextually complementary	10
Development is neither internally nor contextually complementary	0

MIX: Plan for mixed use

A: Trip lengths are reduced by providing diverse and complementary uses

Residential, commercial, and work spaces are combined within the same or adjacent blocks in the Chelsea district of New York City, USA (above) and the Tianhe district of Guangzhou, China (below).

A neighborhood supermarket in Bordeaux, France, provides fresh produce.

Accessibility to Food METRIC 5.2

Percentage of buildings that are within 500 meters walk of an existing, or planned, source of fresh food.

- Fresh food includes fresh fruits and vegetables, dairy products, meat and seafood.
- Sources of fresh food include any and all small and large commercial grocery stores, public markets and street vendors, or any documentable weekly or more frequent local source of fresh food.
- If these sources do not currently exist on the development but are planned, they can be scored.
- Sources of fresh food outside the development and within 500 meters walking distance are also eligible sources.

Measurement Method

1. Map all buildings and primary building entrances within the development.

2. Map all sources of fresh food in the development and near the development.

3. Mark all buildings with entrances within 500 meters walking distance (not a straight line) from these fresh food sources.

Scope

Within the development, and/or a 500 meters walking distance from the development.

Data Source

Plans and designs of development and area maps and listings, on-site survey.

ACCESSIBILITY TO FOOD	POINTS
80% or more of buildings are within walking distance to a source of fresh food	1
79% or less of buildings are within walking distance to a source of fresh food	0

This development in the SOMA district of San Francisco, California, USA, includes affordable housing and commercial uses with active frontage.

Affordable Housing METRIC 5.3

Percentage of residential units provided as affordable housing.

- Use local affordable housing standards to define affordable units.
- If local standards are not available, affordable housing includes units that have a monthly rent equivalent to 18% of median monthly wages. (This is calculated by identifying the median income level for the region, and calculating 60% of the median income which represents lower-income groups, and subsequently calculating 30% of the lower-income group's income).

Measurement Method
1. Quantify the number of residential units in the development.

2.Quantify the number of affordable residential units (see details above).

3. Divide the second measure by the first to calculate an affordable housing percentage.

Scope
Residential units within the development.

Data Source
Plans and designs of development, building documentation.

AFFORDABLE HOUSING	POINTS
20% or more of all residential units are affordable	4
15% or more of all residential units are affordable	3
10% or more of all residential units are affordable	2
5% or more of all residential units are affordable	1
4% or less of all residential units are affordable	0

Dense residential developments were retrofitted with street level retail in the Tianhe district of Guangzhou, China.

Residential Density METRIC 6.1

Residential density measured in dwelling units per net hectare (DU/NHa) of developable land.

- Developers are encouraged to seek variances from regulations mandating lower floor area ratio (FAR) caps to obtain full points.
- Net developable land excludes right of ways, bodies of water, and parks and plazas over 0.2 hectares.

Measurement Method
1. Quantify the total number of dwelling units.

2. Quantify the total hectare of net developable land for the development.

3. Divide the first measure by the second to calculate the DU/NHa ratio.

Scope
Dwelling units within the development.

Data Source
Plans and program of development, official documentation, local and professional media, on-site survey.

RESIDENTIAL DENSITY	POINTS
DU/NHa is 140 or more	10
DU/NHa is 130 or more	9
DU/NHa is 120 or more	8
DU/NHa is 110 or more	7
DU/NHa is 100 or more	6
DU/NHa is 90 or more	5
DU/NHa is 80 or more	4
DU/NHa is 70 or more	3
DU/NHa is 60 or more	2
DU/NHa is 50 or more	1
DU/NHa is 49 or less	0

A dense mix of office and residential buildings in the Chelsea district of New York City.

Non-Residential Density METRIC 6.2

Non-residential density measured in gross floor area per net hectare (GFA/NHa) for the project.

- Developers are encouraged to seek variances from regulations mandating lower floor area ratio (FAR) caps to obtain full points.
- Net developable land excludes right of ways, parking, bodies of water, and parks and plazas over 0.2 hectares.

Measurement Method

1. Quantify the total square meters of non-residential floor area in the development, exclusive of any areas dedicated to parking or vehicle circulation.

2. Divide by 10,000 to convert to hectares.

3. Quantify the total hectares of net developable land for the development.

4. Divide floor area measure by the land area measure to calculate the GFA/NHa ratio.

Scope

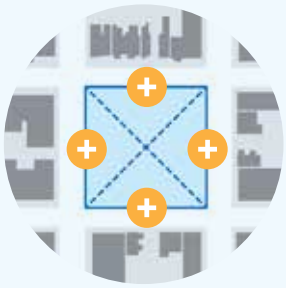
Within the development.

Data Source

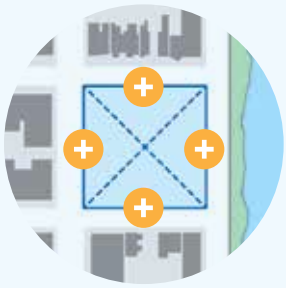
Plans and program of development, official documentation, local and professional media, on-site survey.

NON-RESIDENTIAL DENSITY	POINTS
GFA/NHa is 4.0 or more	5
GFA/NHa is 3.5 or more	4
GFA/NHa is 3.0 or more	3
GFA/NHa is 2.5 or more	2
GFA/NHa is 2.0 or more	1
GFA/NHa is 1.9 or less	0

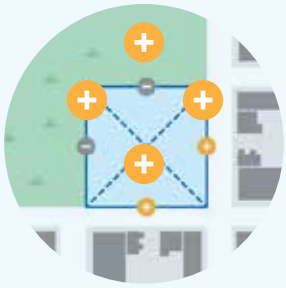
THESE PLANS EARN A FULL SCORE



4 sides adjoin built-up sites (10 points)



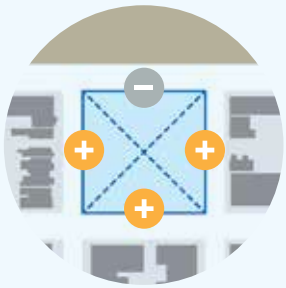
3 sides adjoin built-up sites and 1 side adjoins a water body (10 points)



2 sides adjoin built-up sites and 2 sides adjoin a designated park (10 points)

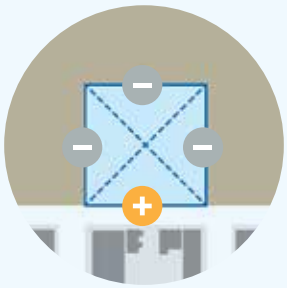
an irregular development plot, where each 25% of the side of the development adjoins a built-up site (10 points)

THESE PLANS EARN LOWER OR NEGATIVE SCORES

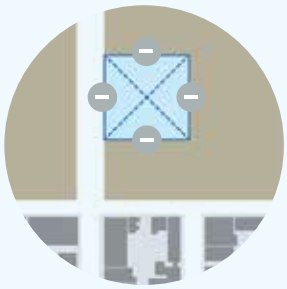


3 sides adjoin built-up sites (7 points)

2 sides adjoin built-up sites (4 points)



1 side adjoins built-up sites (0 points)



no sides adjoin built-up sites (-15 points)

Urban Site METRIC 7.1

Number of sides of the development adjoining existing built-up sites.

- "Built-up" adjoining sites/property is defined as containing either residential uses of a density no less than 10 Dwelling Units per Net Hectare (DU/NHa), or non-residential uses of a density no less than 0.25 floor area ratio (FAR).
- Adjoining properties that include transport infrastructure, protected landscape, water bodies (lake, rivers) or other natural topography that inhibits development should be considered "built-up".

Measurement Method

1. Divide the development site boundaries into four sections (each equaling approximately 25% of the total length of the development boundary).

2. Count number of sides that adjoin existing built-up sites.

Scope

Edges of the development site.

Data Source

Plans and designs of development, area maps, aerial/satellite photography.

URBAN SITE	POINTS
4 sides adjoin built-up sites	10
3 sides adjoin built-up sites	7
2 sides adjoin built-up sites	4
1 side adjoins built-up sites	0
No sides adjoin built-up sites	-15

COMPACT: Create compact regions with short commutes

A: The development is in an existing urban area

Infill development in Central London, UK, makes efficient use of land and creates denser districts to support economic activity and transit capacity.

Short Commute METRIC 7.2

Average peak-time commute by transit to the nearest urban center (minutes).

- "Urban center" is defined as a concentration of employment, local institutions, higher education and specialized activities, services, and shopping, which is regarded as a regional destination.
- The closest urban center is not necessarily the City center. There may be more than one urban center in an urban area.
- If the development is already located within an urban center it scores full points.

Measurement Method

1. Quantify the shortest walk distance between the development's center and the nearest high-capacity transit station.

2. Convert this distance to time, using 3km/h as an average urban walk speed.

3. Quantify peak-hour, transit trip duration to the closest urban center station, based on information from timetables or field surveys.

4. Quantify peak-hour transit headway, based on information from timetables or field surveys, and add to the transit trip duration and average walk time above.

Scope

Regional urban area.

Data Source

Public transport maps and timetables, city and area maps, aerial/satellite photography; on-site survey.

SHORT COMMUTE	POINTS
Transit commute is 20 minutes or less	5
Transit commute is 25 minutes or less	4
Transit commute is 30 minutes or less	3
Transit commute is 35 minutes or less	2
Transit commute is 40 minutes or less	1
Transit commute is 41 minutes or more	0

A bus rapid transit station in Curitiba, Brazil, takes passengers directly to the urban center.

Off-Street Parking METRIC 8.1

Total off-street area dedicated to parking as a percentage of total development land area.

- Include total parking land area (surface parking lots) and floor area (structured parking facilities) and related driveways (from the street line).

- Do not include parking reserved for people with disabilities and essential service vehicles, such as ambulance and fire truck parking, emergency parking for medical staff, parking for construction and maintenance services and loading docks.

Measurement Method

1. Quantify the cumulative area of all off-street parking areas (excluding essential parking noted above) in the development, including all related driveways, starting at the street line.

2. Quantify the total land area of the development site.

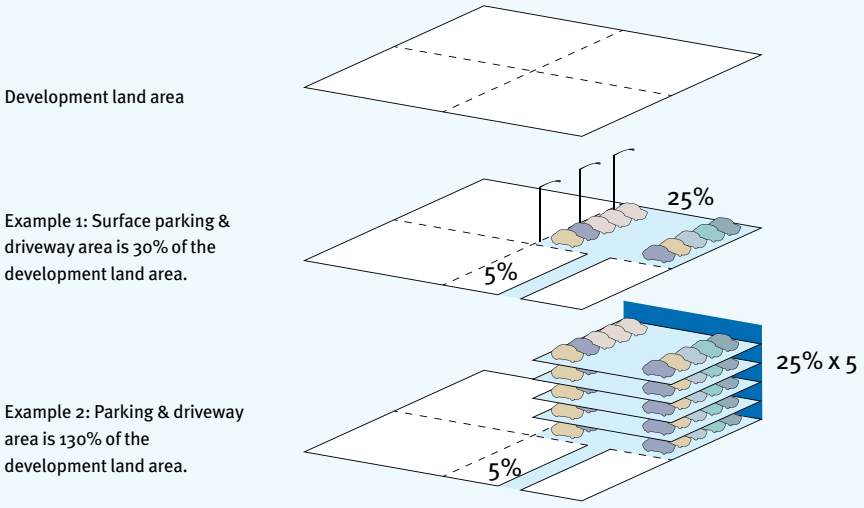
3. Divide the first measure by the second to calculate the ratio of parking area to development land area.

Scope

Within the development.

Data Source

Plans, designs, other documentation of the development.



OFF-STREET PARKING	POINTS
100% of parking area is dedicated to essential service vehicles and citizens with disabilities	15
Non-essential parking area is 15% or less of site area	5
Non-essential parking area is 20% or less of site area	4
Non-essential parking area is 25% or less of site area	3
Non-essential parking area is 30% or less of site area	2
Non-essential parking area is 35% or less of site area	1
Non-essential parking area is 36% or more of site area	0

SHIFT: Increase mobility by regulating parking and road use

A: The area of land occupied by motor vehicles is minimized

On-Street Parking and Traffic Area METRIC 8.2

Total road area used for motor vehicle travel and on-street parking as percentage of total development land area.

- Excludes lanes or streets dedicated to cycling, buses and pedestrian priority streets.
- Where exact lengths and areas are not available, use estimates.

Measurement Method

1. Quantify the total area of traffic lanes, including but not double-counting intersection space, and subtracting marked crosswalk space.

2. Quantify the total area of parking lanes.

3. Sum both measures.

4. Quantify the total land area of the development site, extended to the centerline of peripheral streets.

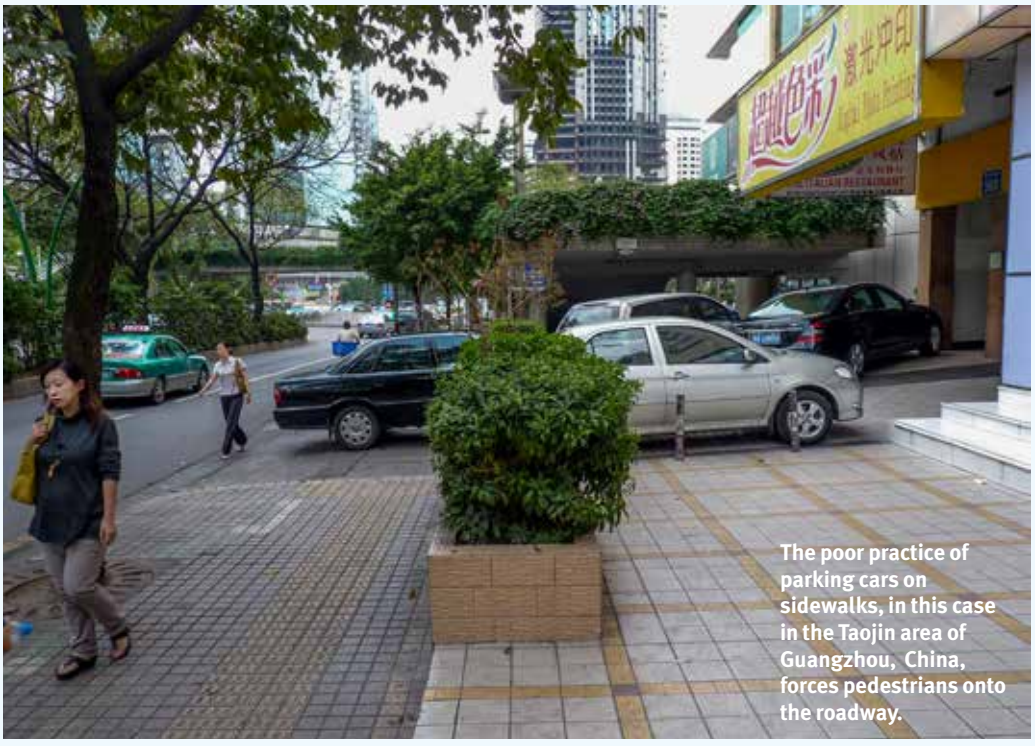
5. Divide the third measure by the fourth to calculate a percentage of land paved for on-street parking and traffic.

Scope

Within the development and to the centerline of peripheral streets.

Data Source

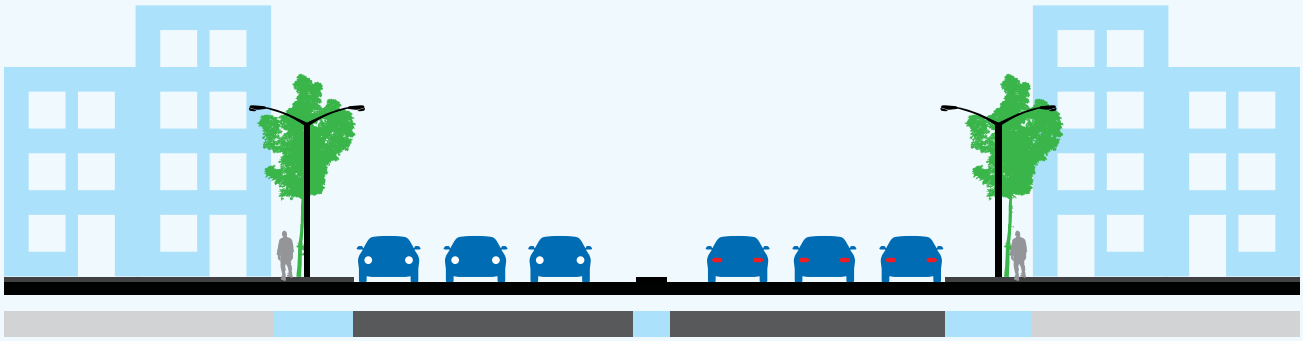
Development plans, aerial and satellite photography, on-site survey.



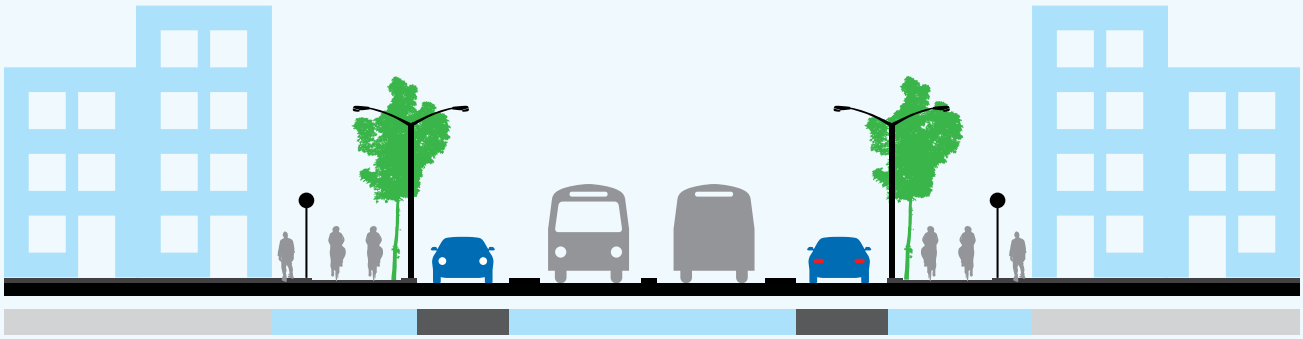
The poor practice of parking cars on sidewalks, in this case in the Taojin area of Guangzhou, China, forces pedestrians onto the roadway.

SHIFT: Increase mobility by regulating parking and road use

A: The area of land occupied by motor vehicles is minimized



More road area is given to less efficient motor vehicle travel



More road area is given to more efficient modes of non-motorized transport

ON-STREET PARKING AND TRAFFIC AREA	POINTS
Motor vehicle area is 12% or less of site area	5
Motor vehicle area is 14% or less of site area	4
Motor vehicle area is 16% or less of site area	3
Motor vehicle area is 18% or less of site area	2
Motor vehicle area is 20% or less of site area	1
Motor vehicle area is 21% or more of site area	0

Using the TOD Standard

The TOD Standard is a scoring system based on measurable metrics and quantitative data available about an urban development. Scoring a project requires collecting a range of data from the lengths of streets and blocks to information about local policy and site characteristics. The following chapter sets out a suggested step-by-step guide to scoring a development in detail.

Pre-Scoring Preparation

The initial step is to collect as much detailed information about the development as possible. We have created a list of the recommended sources of information on the following page (Table 1). Basic data to collect includes:

i. *Total area of the development site*
ii. *Total number and length of all blocks*
iii. *Total length of all streets within the development and the peripheral streets*
iv. *The maximum vehicle speed on all streets*
v. *Number and location of transit stations nearby the development*
vi. *Number of residential units (and afford- able housing units)*
vii. *Amount of non-residential floor area*
viii. *Location of nearest regional urban center (e.g., a central business district)*

If the project is being scored with a view to obtaining project recognition, these sources of information must be organized and provided to the TOD Standard Technical Committee for verification.

Desk Research

In the first instance, we recommend using the information collated in the form of plans, designs, maps and reports to score as many metrics of the TOD Standard as possible. Some metrics require measurement and calculation, others require simple counts.

In some cases, it will not be possible to score the metric with the information available in these documents and will require visits to the site itself, or interviews with other people who are familiar with the project.

Site Surveys & Scoring

All team members going on site should have a TOD Standard Scoresheet, a copy of the TOD Standard and a camera. If maps are not available for the project, you may want to take tools for measuring distances as several metrics provide points based on distances and areas. We recommend taking notes with as much information as possible (e.g., actual distances, observational notes) and photos of the elements of the site which are being scored. Relevant notes and photos should also be submitted as evidence for recognition purposes. Following a site survey, team members should compare notes and collectively decide what points can be awarded to the project based on their observations on site.

Other sources

Collecting information in the form of reports and observations on the site visit should provide all the data needed to score the project. However, there may still be gaps in information and it may be necessary to contact relevant groups such as: local planning authorities, NGOs and other research organizations, architects/designers/planners and engineers who designed the project, and local residents and businesses. If this is required, collect the information in a way that allows the Technical Committee to verify that a record of what was said by the interviewees is accurate.

Table 1. Sources of Data

The sources of information are listed in order of preference in terms of the quality of information provided — the most preferred source of information is listed first.

SOURCES OF INFORMATION	RELEVANT METRICS	OTHER COMMENTS
Maps, plans and/or design reports of the development	All Walk metrics 2.1 Cycle Network 2.2 Cycle Parking at Transit Stations 2.3 Cycle Parking at Buildings All Connect metrics All Transit metrics All Densify metrics All Shift metrics	These are detailed plans/ drawings of the buildings, open spaces and other infrastructure in the context of the local site/area. This would provide a high level of accurate detail about the project.
Local policy/codes/bylaws	2.4 Cycle Access in Buildings 5.3 Affordable Housing All Densify metrics All Shift metrics	Local policies/codes/bylaws or other requirements/ guidelines produced by local government will have detailed information that may be relevant to the development.
Local map of the area	2.1 Cycle Network 2.2 Cycle Parking at Transit Stations 2.3 Cycle Parking at Buildings All Transit metrics All Mix metrics 7.1 Urban Site	A map showing the streets, blocks and local transport stations and lines can provide good information. Maps can be dated, so the information may need to be checked for accuracy.
Tenant information (provided by developer/management company)	All Mix metrics All Densify metrics	A list of tenants and the uses of their spaces is a reliable source of information.
Local transport maps	2.1 Cycle Network 2.2 Cycle Parking at Transit Stations 2.3 Cycle Parking at Buildings All Transit metrics 7.2 Short Commute	Some transport maps include detailed routes for cycle lanes and parking, as well as local bus, light and heavy rail lines. Maps can be dated, so the information may need to be checked for accuracy.
Regional/Local cycling maps	2.1 Cycle Network 2.2 Cycle Parking at Transit Stations 2.3 Cycle Parking at Buildings	Some areas provide cycle maps that provide detailed routes for the local and regional cycle network, lanes and parking. Maps can be dated, so the information may need to be checked for accuracy.
Third-party sources (e.g., reports by NGOs/interest groups, media)	All metrics	Reports or case studies produced by groups who have an interest in these principles can be detailed and provide a good source of information. However, the information may be dated and require updating.
Latest aerial/satellite images (eg. Google Earth, Google Map and Google Street View)	1.1 Walkways 1.2 Crosswalks 1.4 Visually Active Frontage 1.6 Shade & Shelter 3.1 Pedestrian Intersection Density 3.2 Small Blocks All Transit metrics All Compact metrics 8.2 On-Street Parking & Traffic Area	Satellite imagery can be very helpful and is a very accessible source of information, but images can be dated and the low resolution can mean that project details are not visible.

Glossary

Note: Terms in the TOD Standard terms may be employed with more restrictive definitions than in common usage.

Active Frontage
See Frontage.

Block
An area of enclosed land surrounded by publicly accessible walkways (regardless of vehicular access).

Block Frontage
See Frontage.

Crosswalk
A marked and protected crossing point designated for pedestrians (and cyclists) across a road with vehicular speeds above 15 km/h. Crosswalks are basic elements of complete streets. Crosswalks should be designed for safe and easy crossing and implemented to maintain pedestrian connectivity across slow and fast vehicular roads.

Curb Ramp
An incline designed to accommodate pedestrian transition between a road and a sidewalk or walkway. Curb ramps are key to universal accessibility and pedestrian comfort. They should be designed to be in line with the walkways they connect while restricting motor vehicle access to pedestrian areas.

Cycleway
A right of way, or portion of a right of way, designated to accommodate bicycle traffic; includes but is not limited to physically separated cycle lanes, striped cycle lanes, lanes marked for shared traffic and off-street paths and trails. Cycleways should be designed for safe and comfortable cycling.

Cycling Network
Network of safe cycling facilities including designated cycleways, slow streets (safely shared between cycles and motor vehicles at speeds under 30km/h) and pedestrian-priority streets (safely shared by pedestrians, cycles and motor vehicles at speeds under 15km/h).

Segregated Cycleways
Cycleways restricted to cyclists; typically created through striping (road painting) or physical barriers.

Driveway
A motor vehicle access point across public pedestrian areas or between a roadway and off-street motor vehicle parking, loading and service areas. Driveways should be designed for pedestrian priority and safety, and compatible vehicle speed.

Driveway Density
The number of driveways on a specified block frontage; typically used to assess the impact of off-street motor vehicle facilities on the continuity of walkways and cycleways.

Essential Service Motor vehicles
Motor vehicles required for essential maintenance or health reasons that should be accommodated in all street types for parking and travel. These vehicles include emergency vehicles, authorized security vehicles, local access freight vehicles and authorized disabled person vehicles.

Frontage
The physical edge of a building or block facing a peripheral walkway or street at, or close to, the property line. Ground-level frontage is of primary interest because it defines the building edges and determines the character of public space for walking. Building and block frontage should be designed for active uses and interesting design details that improve the walking experience and stimulate pedestrian activity.

Active Frontage
Building or block frontage that provides direct visual connection to interior building space through windows, doorways or other similar open or transparent façade elements. For scoring purposes, a block that is a park or plaza, with no buildings, is counted as having active frontage.

Block Frontage
The physical edge of a block facing a peripheral walkway or street at, or close to, the property line.

Permeable Frontage
Building frontage that incorporates points of passage between walkways and active, interior building spaces; typically takes the form of main building entrances and entrances to retail establishments and other ground floor level goods and services. A block that is a public

park or plaza, with no buildings or other physical barriers, is considered to have permeable frontage.

Gross Floor Area (GFA)
The cumulative measure of the area of each floor within the external walls of a building, including sub-surface levels, but not including the roof.

Floor Area Ratio (FAR)
The floor area of a building or development, divided by the Net Developable Land area of the site or property on which it is located.

High-Capacity Transit
See Transit.

Intersection
A point at which two or more rights-of-way intersect each other.

Pedestrian intersection
Intersection of walkways, including pedestrian paths, pedestrian priority streets and street sidewalks. Streets with two or more sidewalks count as one for the purpose of counting pedestrian intersections.

Intersection Density
The number of intersections within a given area; typically used to assess connectivity and route-diversity within a street or path network.

Mode Share
The percentage of total trips completed via a particular travel mode (walk, cycle, drive, ride transit, etc.).

Net Developable Land
A measure of the total land area available for development within a site or property. It excludes rights of way, other public spaces and protected land.

Non-Motorized Transport (NMT)
Transport independent of motorized power, typically used to refer to walking, cycling and pedicab.

Pedestrian
A person walking, or moving with walking aids or substitutes, such as a wheelchair or a baby stroller.

Pedestrian Crossing Refuge
A raised median or island within a road, designed to allow pedestrians to stop safely mid-crossing.

Pedestrian Priority (or Shared) Street
See Street.

Pedestrian Street Crossing
An area within a street where pedestrians cross from one side to the other; including crosswalks and all areas designed as pedestrian-priority (or shared) streets.

Walkway
A right of way, or portion of a right of way, specifically designated to accommodate pedestrians. It includes, but is not limited to, sidewalks, shared streets and off-street paths.

Peripheral Streets
See Street.

Permeable Frontage
See Frontage.

Public Transit
See Transit.

Public Transport
Referred to as public transit in this document. See Transit.

Residential Density
The number of residents, or dwelling units, within a specific measure of land area (typically hectare or square kilometer)

Right of way
Public right of passage of any morphological type such as path, alley, street or road, although this right may be restricted to specific transport modes.

Road
See Street.

Segregated Cycleway
See Cycleway.

Sidewalk
See Pedestrian.

Slow Street
See Street.

Street
A right of way through developed or developable urban land. A street normally accommodates all travel modes and should be designed to prioritize direct, safe and comfortable sustainable transport modes (walk, cycle and transit). Accommodation of personal motor vehicles is optional (see Pedestrian Streets) but streets must accommodate local freight and essential vehicle access. A street fulfills functions beyond mobility (public, community, cultural and commercial space) that are crucial to the attractiveness and productivity of walking as a travel mode, and to the long-term viability of pedestrian-friendly environments.

Street Centerline
The mid-point of a street's width, marking the center of the street. This is a conceptual line that is not necessarily physically marked.

Street Segment (Street Link)
The segment or portion of a street located between adjacent intersections.

Slow Street
A street designed to allow free and safe integration of motorized and non-motorized vehicles within a single right of way, including design elements intended to maintain motorized travel at or below 30 km/h.

Pedestrian-Priority (or Shared) Street
A street or space designed to allow free and safe integration of all transport modes within a single right of way, at a pedestrian-compatible speed of 15 km/h or less.

Pedestrian Street
A street restricted to pedestrians, with the exception of slow-moving cyclists and essential vehicles yielding to pedestrians.

Peripheral Streets
The streets adjacent to, or surrounding, a particular block, building, development, property or site.

Road
A right of way with a paved area for the use of motor vehicles. The term "road" is typically associated with motor vehicle access. The term "street" puts emphasis on pedestrian access and activity.

Roadway
The part of a right of way intended primarily for the use of motor vehicles, in contrast to walkways, cycleways and pedestrian-priority spaces.

Transit
The transport of passengers on any and all vehicles that are designed for multiple passengers and are not personal vehicles. This includes all shared vehicles, public or otherwise, chauffeured or self-driven.

Public Transit
Transit designed for use by all members of the general public, regardless of public or private ownership, management and operation responsibilities.

High-Capacity Transit
Large-scale transport systems designed to carry many passengers. This includes light or heavy rail passenger services, or rapid bus transit services (BRT). The definition of BRT is available in the BRT Standard (also produced by ITDP).

Vehicle Kilometers Traveled (VKT)
The number of kilometers traveled by vehicles originating within a specified area and during a specified period of time. VKT refers to motor vehicle kilometers traveled unless specified otherwise.

Walkway
See Pedestrian.

SITE/PROJECT NAME **CITY/COUNTRY**

	CATEGORY		POSSIBLE POINTS LOWEST	POSSIBLE POINTS HIGHEST	DATA	SCORE	NOTES
WALK	1.1 Walkways	Percentage of block frontage with complete, wheelchair-accessible walkways.	-10	0			
	1.2 Crosswalks	Percentage of intersections with complete, wheelchair-accessible crosswalks in all directions.	-5	0			
	1.3 Driveway Density	Average number of driveways per 100m of block frontage.	0	1			
	1.4 Visually Active Frontage	Percentage of block frontage with visual connection to interior building activity.	0	10			
	1.5 Physically Permeable Frontage	Average number of shops and building entrances per 100m of block frontage.	0	2			
	1.6 Shade and Shelter	Percentage of walkway segments that are shaded or sheltered.	0	2			
			-15	15	**Walk Score:**		
CYCLE	2.1 Cycle Network	Percent of total street length with safe and complete cycleways	-5	0			
	2.2 Cycle Parking at Stations	Secure multi-space cycle parking provided at all transit stations	0	2			
	2.3 Cycle Parking at Buildings	Percentage of new buildings that provide secure, weatherized cycle parking.	0	2			
	2.4 Cycle Access in Building	Buildings allow cycle storage within tenant-controlled spaces.	0	1			
			-5	5	**Cycle Score:**		
CONNECT	3.1 Pedestrian Intersection Density	Intersections of pedestrian routes per km².	-10	2			
	3.2 Small Blocks	Percentage of blocks that are no more than 150m in length.	0	5			
	3.3 Prioritized Connectivity	Ratio of pedestrian- and cycle-only intersections to motor vehicle-accessible intersections.	0	3			
			-10	10	**Connect Score:**		
TRANSIT	4.1 Maximum Walk Distance to Public Transport	Maximum walk distance from development to the nearest high-capacity transit station.	-5	0			
	4.2 Average Walk Distance to Public Transport	Weighted average walk distance between buildings in the development and the nearest high-capacity transit station.	0	5			
			-5	5	**Transit Score:**		

BRIEF DESCRIPTION OF THE PROJECT SITE

CATEGORY		POSSIBLE POINTS LOWEST	HIGHEST	DATA	SCORE	NOTES
5.1 Complementary Uses	Presence of residential and non-residential uses combined within same or adjacent blocks.	0	10			
5.2 Fresh Food	Percent of dwelling units that are within 500m of an existing or specifically planned source of fresh food.	0	1			
5.3 Affordable Housing	Percentage of residential units provided as affordable housing. *(If local affordable-housing standards not available: Monthly rent is no more than 18% of median monthly wages for the region)*	0	4			
		0	15	**Mix Score:**		
6.1 Residential Density	Dwelling units per net hectare (DU/NHa) of developable land.	0	10			
6.2 Non-Residential Density	Non-residential density measured in gross floor area per net hectare (GFA/NHa) for the project.	0	5			
		0	15	**Densify Score:**		
7.1 Urban Site	Number of sides of the development adjoining existing built-up sites.	-15	10			
7.2 Short Commute	Average peak-time commute by transit to the nearest urban center (minutes).	0	5			
		-15	15	**Compact Score:**		
8.1 Off-Street Parking	Total off-street area dedicated to parking (including total m² of structured parking facilities) as a percentage of development land area.	0	15			
8.2 On-Street Parking and Traffic Area	Total area dedicated to motor vehicle travel and on-street parking as percentage of development land area.	0	5			
		0	20	**Shift Score:**		

MIX

DENSIFY

COMPACT

SHIFT

Scorecard TOD STANDARD

-50	100	**Total Points:**	
0	5	**Bonus Points:**	