300 Attachment 12

APPENDIX B

Residential Site Improvement Standards
New Jersey Administrative Code

Title 5

Chapter 21

Tables

[Amended 12-21-2010 by Ord. No. 1507]

TABLE 4.1 AVERAGE DAILY MOTOR VEHICLE TRAFFIC TRIP GENERATION PER DWELLING UNIT	
LAND USE	PEAK RATE
Single-family detached housing	10.2
Residential condominium/townhouse	5.9
High-rise residential condominium	4.3
Apartment	6.5
Low-rise apartment	7.2
Mid-rise apartment	5.5
High-rise apartment	5.0
Mobile home park	5.0
Retirement community	2.8
Recreational homes (owner occupied)	3.2
NOTE: The trip generation rates listed are guidelines only. The actual use of trip generation rates is derived by the use of regression analysis and should be computed only by professionals proficient in the use of the ITE Manual. The "Land Use" definitions are based on the ITE Manual with slight modifications to address inconsistencies contained within the ITE Manual.	
SOURCE: Institute of Transportation Engineers, *Trip Generation* (Washington, D.C.: ITE, 1982), 3rd Edition. The table was updated with data from the 5th Edition of the manual published by ITE in January 1991. The peak ADT rates take into consideration Saturday and Sunday rates, as well as weekday rates.	

TABLE 4.1 continued. DEFINITIONS	
LAND USE	**DEFINITION**
Single-family detached housing	Any single-family detached home on an individual lot.
Residential condominium/ townhouse	Condominiums or townhouses in single-family ownership units that have at least one other single-family-owned unit within the same structure.
High-rise residential condominium/ townhouse	Condominiums or townhouses in buildings that have three or more levels (floors).
Apartment	A rental dwelling unit located within the same building with at least three other dwelling units.
Low-rise apartment	Apartments (rental dwelling units) in rental buildings that have one or two levels (floors), such as garden apartments.
Mid-rise apartment	Apartments (rental dwelling units) in rental buildings that have more than two levels (floors) and less than ten levels.
High-rise apartment	Apartments (rental dwelling units) in rental buildings with ten or more levels (floors) and most likely with elevators.
Mobile home park	Generally trailers shipped, sited, and installed on permanent foundations and in areas that typically have community facilities, such as recreation rooms, swimming pools, and laundry facilities.
Retirement community	Residential units similar to apartments and condominiums usually restricted to adults or senior citizens, and located in self-contained villages. Special services such as medical, dining, and retail facilities may be available.
Recreational home	Dwellings usually located in a resort containing local services and complete recreational facilities. These are often second homes used by the owner or rented on a seasonal basis.

TABLE 4.2 RESIDENTIAL STREET HIERARCHY DEFINITIONS

STREET TYPE	DESCRIPTION	AVERAGE DAILY TRAFFIC (maximum)
RESIDENTIAL ACCESS**	Lowest order, other than rural street type, of residential streets. Provides frontage for access to lots and carries traffic with destination or origin on the street itself. Designed to carry the least amount of traffic at the lowest speed. All, or the maximum number of housing units, shall front on this class of street. *Residential access streets of "loop" configuration, that is, two ways out, should be designed so no section conveys an ADT greater than 1500. Each half of a loop street may be classified as a single residential access street, but the total traffic volume generated on the loop street should not exceed 1500 ADT, nor should it exceed 750 ADT at any point of traffic concentration.	1,500*
RESIDENTIAL NEIGHBORHOOD**	A type of residential access street conforming to traditional subdivision street design, and providing access to building lots fronting on a street and parking on both sides of street. **Applicant may choose either the RESIDENTIAL ACCESS or the RESIDENTIAL NEIGHBORHOOD street type for new streets. See section 4.8(b) for specific right-of-way and cartway width requirements for new streets that are a continuation of an existing street.	
MINOR COLLECTOR	Middle order of residential street. Provides frontage for access to lots and carries traffic of adjoining residential access streets. Designed to carry somewhat higher traffic volumes than lower-order streets such as rural and residential access streets, with traffic limited to motorists having origin or destination within the immediate neighborhood. Is not intended to carry regional traffic. Each half of a loop-configured minor collector may be classified as a single minor collector street, but the total traffic volume conveyed on the loop should not exceed 3,500 ADT, nor should it exceed 1750 ADT at any point of traffic concentration.	3,500
MAJOR COLLECTOR	Highest order of residential streets. Conducts and distributes traffic between lower-order residential streets and higher-order streets--arterials and expressways. Carries the largest volume of traffic at higher speeds. Function is to promote free traffic flow; therefore, parking should be prohibited and direct access to homes from this level of street should be avoided. Collectors should be designed so they cannot be used as shortcuts by non-neighborhood traffic.	7,500

TABLE 4.2 continued. RESIDENTIAL STREET HIERARCHY DEFINITIONS

STREET TYPE	DESCRIPTION	AVERAGE DAILY TRAFFIC (maximum)
SPECIAL PURPOSE STREETS		
Rural	When density is one dwelling unit per acre or lower, AND road primarily serves as access to abutting building lots, AND there is no on-street parking, AND lot-to-street access is designed so vehicles do not back out of lots onto the street.	500
Rural residential lane	A street serving a very low-density area (minimum two-acre zoning). The maximum ADT level limits the number of single-family units on this road to 20.	200
Alley	A service road that provides a secondary means of access to lots. On same level as residential access street, but different standards apply. No parking shall be permitted; alleys should be designed to discourage through traffic. ADT level shall not exceed that of a residential access street.	500
Cul-de-sac	A street with a single means of ingress and egress and having a turnaround, the design of which may vary. A divided-type entrance roadway to at least the first cross street with median of sufficient width to insure freedom of continued emergency access by lanes on one side, shall not be considered part of a cul-de-sac.	250
Marginal access street	A service street that runs parallel to a higher-order street and provides access to abutting properties and separation from through traffic. May be designed as residential access street or minor collector, according to anticipated daily traffic.	1,500 (residential access total) 3,500 (minor collector total)
Divided street	Municipalities may require streets to be divided to provide alternate emergency access, protect the environment, or avoid grade changes. Design standards should be applied to the combined dimensions of the two street segments, as required by the street class.	
Parking loop	A street with perpendicular parking that provides circulation and direct vehicle access to parking from the travel lane.	

TABLE 4.3 CARTWAY AND RIGHT-OF-WAY WIDTHS

STREET TYPE[a]	TOTAL AVG DAILY TRAFFIC	TRAV-ELED WAY	NO. OF PARK-ING LANES[b]	PARKING LANE WIDTH	CART-WAY WIDTH	CURB OR SHOULD-ER[h]	SIDE-WALK OR GRADED AREA[j]	RIGHT-OF-WAY WIDTH[l]
RESIDENTIAL ACCESS	1500*							
Low intensity	*(loop-750 each half)	20'	1	8'	28'	none	1 SW 1GA	50'
Medium		20'	1	8'	28'	curb	2 SW	50'
High (on-street parking)		20'	1	8'	28'	curb	2 SW	50'
High (off-street parking)		20'	0	0'	20'	none	2 SW	50'
NEIGHBOR-HOOD (All intensities)	1500	14'	2	16'	30'[c]	curb	2 SW	50'
MINOR COLLECTOR	3,500							
Low intensity[d] with no parking		20'	0	0'	20'	none	1 SW 1 GA	50'
Low with one parking lane		20'	1	8'	28'	curb	1 SW 1 GA	50'
Medium		20'	1	8'	28'	curb	2 SW	50'
High with one parking lane		20'	1	8'	28'	curb	2 SW	50'
High with two parking lanes		20'	2	16'	36'	curb	2 SW	60'
High with off-street parking		22'	0	0'	22'	curb or shoulder	2 SW	50'
MAJOR COLLECTOR	7,500							
Low intensity		24'	0	0'	24'	none	2 SW	50'
Medium and High		24'	0	0'	24'	curb or shoulder	2 SW	50' if curb, 54' if shoulder

TABLE 4.3 continued. CARTWAY AND RIGHT-OF-WAY WIDTHS

STREET TYPE[a]	TOTAL AVG DAILY TRAFFIC	TRAV-ELED WAY	NO. OF PARK-ING LANES[b]	PARKING LANE WIDTH	CART-WAY WIDTH	CURB OR SHOULD-ER[h]	SIDE-WALK OR GRADED AREA[j]	RIGHT-OF-WAY WIDTH[i]
SPECIAL PURPOSE STREETS								
Rural street[k]	500	20	0	0'	20'	none	2 GA	40'
Rural lane[k]	200	18'	0	0'	18'	none	2 GA	40'
Alley (one way)					9'			11'
Alley (two way)		18'	0	0'	18'	none	2 GA	22'
Cul-de-sac (stem)[e]	250							
Marginal access street[f]								
Divided street[g]								
Parking loop One-side parking		24'	1	18'		curb		42'
Two-side parking		24'	2	36'		curb		60'

NOTES:

[a] See Table 4.2 for definitions of street hierarchy and N.J.A.C. 5:21-4.2 for definitions of low, medium, and high intensity of development.

[b] Parking lane refers to parallel parking; except in the case of parking loop, which is perpendicular parking.

[c] The 30' cartway would accommodate two 8' parking lanes and one 14' moving lane.

[d] 20' minor collector cartways are permitted only when there is no direct building lot access to or from the street in question.

[e] Cartway and right-of-way widths of cul-de-sac stems and right-of-way requirements should conform to standards of residential access or residential neighborhood streets. Cul-de-sac turnarounds shall have a minimum cartway radius of 40' and a minimum right-of-way radius of 48'.

[f] Cartway and right-of-way widths of marginal access streets and right-of-way requirements should conform to standards of either residential access or minor collector streets, as dictated by average daily traffic. If the classification is a minor collector requiring a 36' cartway, cartway width may be reduced to 28' since frontage is restricted to one side of the street.

[g] Cartway widths of divided streets should conform to standards of street classification, as dictated by anticipated average daily traffic, and be applied to aggregate dimensions of two street segments.

[h] See N.J.A.C. 5:21-4.3(c) for additional requirements.

[i] Right-of-way width applies only to streets proposed for dedication.

[j] See N.J.A.C. 5:21 - 4.5(b) for additional requirements.

[k] Rural streets and rural lanes are permitted only within developments which do not exceed an average daily traffic count of 500 and 200 respectively.

TABLE 4.6 STREET GRADE AND INTERSECTION DESIGN CRITERIA					
	STREET HIERARCHY				
INTERSECTION STANDARD	SPECIAL PURPOSE STREET: ALLEY	SPECIAL PURPOSE STREET: CUL-DE-SAC	RURAL, RESIDENTIAL ACCESS, AND NEIGHBORHOOD	MINOR COLLECTOR	MAJOR COLLECTOR
MINIMUM GRADE	0.5%	0.5%	0.5%	0.5%	0.5%
MAXIMUM GRADE	15%	12%	12%	10%	8%
MAXIMUM GRADE WITHIN 50' OF INTERSECTION	5%	5%	5%	5%	5%
MINIMUM CENTER-LINE RADIUS	100'	100'	100'	150'	300'
MINIMUM TANGENT LENGTH BETWEEN REVERSE CURVES	0'	50'	50'	100'	150'
CURB RADII	20'	25'	25'	30'	35'
NOTE: *As measured from the nearest right-of-way level.					

TABLE 4.7 SUBGRADE CATEGORIES

A. BASED ON STRENGTH TEST

SUBGRADE CATEGORY	CALIFORNIA BEARING RATIO (CBR)	RESILIENT MODULES Mr VALUE
Good to excellent	+10	Above 15,000
Medium	+5 to 9	7,500 to 13,500
Poor	2 to 4	3,000 to 6,000

B. BASED ON SOIL CLASSIFICATION

SUBGRADE CATEGORY	MATERIAL	UNIFIED SYSTEM[a]	AASHTO SYSTEM[a]
Good to excellent	Gravels and sands	GW, GP, GM, GC, SW, SP, SM, SC	A-1, A-2-4, A-2-5, A-2-6, A-2-7, A-3
Good or poor	Silts and clays	ML, CL, OL, MH, CH, OH	A-4, A-5, A-6, A-7-5, A-7-6

NOTES: [a]Refers to categories of soil types and properties.

SOURCES: Per the Rutgers *Model Subdivision and Site Plan Ordinance* by David Listokin and Carole W. Baker, January 1987 - Original strength test and soil classification information derived from the Asphalt Institute, "Thickness Design -- Full-Depth Asphalt Pavement Structures for Highways and Streets", MS-1, 8th Edition, August 1970 in Robert F. Baker et al. (editor), *Handbook of Highway Engineering*. Inclusion of SW, SP, SC soil classifications based on information from the Portland Cement Association's *Thickness Design for Concrete Highway and Street Pavements*.

Revised CBR strength test and Mr value information are from the *Asphalt Handbook for County and Municipal Engineers*, November 1991 (Second Edition), published by the New Jersey Society of Municipal Engineers.