

4. Site improvement standards for use in the special area are set forth in an ordinance or draft ordinance that has been referred to the Board for approval by resolution of the municipal governing body. Municipalities may submit their existing codes and plans to satisfy these requirements; provided, however, that no ordinance setting forth special area standards shall be effective unless and until it is approved by the Board.

(e) The application of the municipality for Site Improvement Advisory Board approval of its special area standards shall consist of:

1. A resolution of the governing body as described in (b) above;
2. The standards;
3. A copy of the ordinance, or of the draft ordinance and supporting resolution, adopting the standards;
4. An identification and narrative rationale for the deviations from the standards of this chapter; and
5. Any maps, exhibits, or supporting documentation.

(f) Developers, nonprofit groups, and other agencies may submit applications for special area status on behalf of the municipalities if duly authorized by the municipal governing body.

(g) The Site Improvement Advisory Board's decision on municipal special area standards shall be rendered in writing.

(h) The Site Improvement Advisory Board shall incorporate into its annual review of this chapter a review of approved municipal special area standards and shall recommend to the Commissioner any appropriate changes in the rules (see N.J.S.A. 40:55D-40.4(d)).

(i) The Site Improvement Advisory Board may approve or deny, in whole or in part, special area standards submitted for consideration by a municipality or municipalities.

(j) The Site Improvement Advisory Board's review is limited in scope to those areas within its purview pursuant to N.J.S.A. 40:55D-40.4, that is streets, off-street parking, water supply, sanitary sewers, and stormwater management in the context of residential development.

(k) The Board's review of a municipal special area standards ordinance shall be based on the following criteria. Standards set forth in an ordinance submitted for review by the Board:

1. Shall be consistent with the intent of the Site Improvement Standards Act,
2. Shall be reasonable and not unduly burdensome,
3. Shall meet the needs of public health and safety, and
4. Shall take into account existing infrastructure and surrounding development possibility.

(l) A developer whose application is complete on or before the date of approval of a special area standard shall have the option of complying with that standard or complying with the standard in effect prior to the date of approval of the special area standard.

Petition for Rulemaking: Notice of Receipt of a Petition for Rulemaking.  
See: 29 N.J.R. 3900(a).

Amended by R.1998 d.400, effective August 3, 1998.

See: 30 N.J.R. 755(a), 30 N.J.R. 2861(b).

In (c), rewrote the introductory paragraph and added new 1 through 5; in (d), rewrote 4; in (e), inserted "or of the draft ordinance and supporting resolution" preceding "adopting the standards;" in 3; and added a new (l).

Amended by R.1999 d.374, effective November 1, 1999 (operative May 1, 2000).

See: 31 N.J.R. 477(a), 31 N.J.R. 3259(a).

Rewrote (e)1.

Public Notice: Special area standards.

See: 33 N.J.R. 130(a), 897(a).

Public Notice: Special area standards.

See: 34 N.J.R. 4224(a).

Public Notice: Special area standards.

See: 36 N.J.R. 220(a).

Public Notice: Special area standards.

See: 40 N.J.R. 757(a).

Amended by R.2009 d.185, effective June 15, 2009.

See: 41 N.J.R. 913(a), 41 N.J.R. 2463(a).

In (a), substituted "Smart Growth" for "State Planning".

#### 5:21-3.6 Agreement to exceed standards

(a) A standard set forth in these rules may be exceeded when both the developer and the municipal approving authority agree that such exceeding of a standard is desirable under the specific circumstances of a proposed residential development.

(b) Any agreement between developer and municipal approving authority to exceed a standard set forth in these rules shall be placed in writing by the developer.

(c) The developer shall transmit forthwith to the Department notification of each agreement with a municipal approving authority to exceed any of the standards set forth in these rules.

(d) The Department shall review each agreement between a developer and a municipal approving authority wherein they mutually agree to exceed a standard otherwise set forth in the Residential Site Improvement Standards. Each such agreement shall be reviewed for consistency with the intent and purpose of the Act and these rules.

(e) The Department shall apprise the Site Improvement Advisory Board periodically of all agreements to exceed the standards, together with a summary of the review described in (d) above for each such agreement.

#### 5:21-3.7 (Reserved)

Recodified to N.J.A.C. 5:21-1.12 by R.2009 d.185, effective June 15, 2009.

See: 41 N.J.R. 913(a), 41 N.J.R. 2463(a).

Section was "Public meetings".

**5:21-3.8 (Reserved)**

Recodified to N.J.A.C. 5:21-1.13 by R.2009 d.185, effective June 15, 2009.  
 See: 41 N.J.R. 913(a), 41 N.J.R. 2463(a).  
 Section was "Changes to the standards".

**SUBCHAPTER 4. STREETS AND PARKING**

**Subchapter Historical Note**

Administrative change. See: 35 N.J.R. 609(b).

**5:21-4.1 Street hierarchy**

(a) Streets shall be classified in a hierarchy with design tailored to function. The street hierarchy definitions contained within this section are applicable only to local residential streets and are not to be considered related to the U.S. Department of Transportation, Federal Highway Administration's Functional Classification of Highways.

(b) The street hierarchy system shall be defined by road function and average daily traffic (ADT), calculated by trip generation rates from the current edition of "Trip Generation" by the Institute of Transportation Engineers, as indicated in Table 4.1 below. Trip generation rates from other sources may be used if the applicant demonstrates to the appropriate approving authority that these sources better reflect local conditions. In addition, the applicant shall investigate the opportunities for, and availability of, transit facilities and, if appropriate, consider their impact(s) on motor vehicle traffic trip generation rates per dwelling unit.

(c) Each residential street shall be classified and designed to meet the standards for one of the street types defined in Table 4.2 below. The entire length of the street need not be designed based on the highest ADT where the ADT varies along the street's length. However, each street segment between intersections shall be designed based on the highest ADT served in that segment.

(d) The municipality and the developer shall determine the highest order street required to be used in a given residential development, considering all of the following:

1. The size of the development (number and type of units). For example, using size to determine the highest order of street required, a development of up to 150 single-family detached units would not require any minor collectors or streets of a higher order;
2. The actual or potential development of adjacent sites (whether there is likely to be traffic passing through from neighboring developments). A "potential" development means a development having approvals granted, applications pending, or undergoing preliminary review; and
3. The streets proposed for that area, if any, as contained in the municipal master plan.

TABLE 4.1

**AVERAGE DAILY MOTOR VEHICLE TRAFFIC TRIP GENERATION PER DWELLING UNIT<sup>1</sup>**

<u>Land use<sup>2</sup></u>	<u>Peak rate</u>
Single-family detached housing	10.1
Townhouse	5.9
Low-rise apartment	7.2
Mid-rise apartment	5.5
High-rise apartment	5.0
Mobile home park	5.0
Senior Adult Housing - Detached	3.7
Senior Adult Housing - Attached	3.5
Continuing Care Retirement Community, Congregate Care, Assisted Living, & Other	2.8
Age-Restricted Housing	
Recreational homes (owner occupied)	3.2

Notes:

<sup>1</sup> 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 Trip Generation manual. The "Land Use" definitions are based on the ITE manual with slight modifications to address inconsistencies contained within the ITE manual.

<sup>2</sup> For two-family dwellings (duplexes), apply the values for single-family dwellings to each unit.

Source: Institute of Transportation Engineers, Trip Generation (Washington, D.C.: ITE, 2003, 7th Edition. The peak ADT rates take into consideration Saturday and Sunday rates, as well as weekday rates.

**DEFINITIONS**

<u>Land use</u>	<u>Definition</u>
Single-family detached housing	Any single-family detached home on an individual lot.
Townhouse	Attached multiple-family dwelling units where the only separation between units is vertical.
Apartment	A dwelling unit located within the same building with at least three other dwelling units.
Low-rise apartment	Apartments in buildings that have one or two levels (floors).
Mid-rise apartment	Apartments in buildings that have more than two levels (floors) and less than ten levels.
High-rise apartment	Apartments in buildings with ten or more levels (floors).
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.

(k) Pipe bedding and backfill shall be installed in accordance with the pipe manufacturer's recommendations.

1. The municipality or the authority may require the developer to provide an opinion of a professional engineer relative to the suitability of the on-site material to be used as backfill. The municipality or authority shall rely on this opinion.

2. Where the on-site material is deemed suitable, the opinion shall specify the appropriate installation methods for the material. Where the on-site material is deemed not suitable, the opinion shall specify modification or replacement of the material and the appropriate installation for the specified material.

Amended by R.1999 d.374, effective November 1, 1999 (operative May 1, 2000).

See: 31 N.J.R. 477(a), 31 N.J.R. 3259(a).

Inserted a new (e); recodified former (e) through (j) as (f) through (k); in the new (f), added a third sentence; in the new (h), substituted a reference to volume in units for a reference to gallons and cubic feet; and rewrote the new (j).

Amended by R.2000 d.480, effective December 4, 2000 (operative June 3, 2001).

See: 32 N.J.R. 2670(b), 32 N.J.R. 4277(a).

In (d), substituted "one-fifth" for "one-quarter" in the first sentence and added "when required by the municipality" in the second sentence; in (g), rewrote 1 and deleted 2; and in (j)3 inserted reference to AWWA C909.

Amended by R.2005 d.56, effective February 7, 2005.

See: 36 N.J.R. 4025(a), 37 N.J.R. 481(c).

In (b), amended the table and N.J.A.C. references.

#### 5:21-5.4 Fire hydrants

(a) Hydrants shall be spaced to provide necessary fire flow. The average building area served per hydrant shall not exceed 120,000 square feet. In addition, the distance between any dwelling and a hydrant shall not exceed 400 feet when measured along the street right-of-way.

(b) Size, type, and installation of hydrants shall conform to the following specifications, incorporated herein by reference, as appropriate:

1. Size, type, and installation of hydrants shall be in accordance with the requirements of the municipality or the water purveyor or shall conform to the AWWA Standard for Dry Barrel Fire Hydrants, ANSI/AWWA C502. Hydrants shall have at least three outlets; one outlet shall be a pumper outlet; the other outlets shall be at least two-and-one-half-inch nominal size. The pumper outlet shall face the street. All outlet nozzles shall be at least 12 inches above the adjoining grade. When a concrete slab is provided around the hydrant riser, the flange where the hydrant connects to the riser shall be at least two inches above adjacent grade. Street main connections shall not be less than six inches in diameter. Hose threads on outlets shall be compatible with existing municipal equipment and shall either conform to NFPA 1963 or shall match existing municipal requirements. A valve shall be provided on connections between hydrants and street

mains. All pipe, fittings, and appurtenances supplying fire hydrants shall be AWWA or ASTM approved.

2. All fire hydrants shall conform to NFPA Standard 291.

Amended by R.1999 d.374, effective November 1, 1999 (operative May 1, 2000).

See: 31 N.J.R. 477(a), 31 N.J.R. 3259(a).

Rewrote (b)1.

## APPENDIX

### HARDY-CROSS METHOD

The Hardy-Cross method is a trial-and-error method in which the adjustments to be made in the assumed values are computed and are therefore controlled. Convergence of errors is often rapid, and sufficient precision in the results can ordinarily be had by three adjustments. Two methods may be used: the method of balancing heads or the method of balancing flows. The method of balancing heads is as follows:

1. Assume any distribution of discharge.
2. Compute the head loss in each element by means of Eq. (1):  $h = kq_0^x$ .
3. With due attention to sign, compute the total head loss around each elementary closed circuit:  $\Sigma h = \Sigma kq_0^x$ .
4. Compute also for each elementary circuit without reference to sign the sum:  $\Sigma xkq_0^{(x-1)}$ .
5. To balance the head in each circuit (so that  $\Sigma kq^x = 0$ ), set up a counterbalancing flow equal to
 
$$\Delta = \frac{\Sigma kq_0^x \text{ (with due attention to direction of flow)}}{\Sigma xkq_0^{(x-1)} \text{ (without reference to direction of flow)}} \quad (4)$$
6. Compute the revised flows, and repeat the process until the desired accuracy is obtained.

The flow correction  $\Delta$  for each circuit places the heads for that circuit substantially in balance if  $\Delta$  is small. Since some elements of each circuit are common to other circuits, however, the balance of heads in each circuit is disturbed by subsequent adjustments in other circuits. Hence several traverses of the system are required before satisfactory precision is obtained. The proof of the method is as follows:

$$q = q_0 + \Delta$$

in which  $q$  = actual discharge for any element

$q_0$  = assumed discharge

$\Delta$  = required flow correction

Then

$$kq^x - k(q_0 + \Delta)^x = k(q_0^x + xq_0^{(x-1)} \Delta + \dots)$$

The remaining terms in the preceding expansion may be neglected if  $\Delta$  is small as compared with  $q_0$ . For a single circuit,

$$\Sigma kq^x = 0$$

and from above,

$$\Sigma kq^x = \Sigma kq_0^x + \Delta \Sigma xkq_0^{(x-1)}$$

Therefore,

$$\Delta = - \frac{\Sigma kq_0^x}{xkq_0^{(x-1)}} \quad (4)$$

If  $\Delta$  is large compared with  $q_0$ , Eq. (4) does not give a close approximation of the value of  $\Delta$  because of the neglect of the terms beyond the second term in the expansion. This neglect is not usually important, however, particularly if subsequent adjustments bring rapid convergence.