

CHAPTER 21

RESIDENTIAL SITE IMPROVEMENT STANDARDS

Authority

N.J.S.A. 40:55D-40.4.

Source and Effective Date

R.2007 d.359, effective October 24, 2007
See: 38 N.J.R. 4949(a), 39 N.J.R. 4925(a).

Chapter Expiration Date

Chapter 21, Residential Site Improvement Standards, expires on October 24, 2012.

Chapter Historical Note

Chapter 21, Uniform Standards Code for Mobile Homes, was adopted pursuant to authority of N.J.S.A. 52:2D-25.1 et seq. and was filed and became effective December 7, 1972, as R.1972 d.248. See: 4 N.J.R. 260(f), 5 N.J.R. 7(a).

Chapter 21, Uniform Standards Code for Mobile Homes, was amended by R.1974 d.275, effective January 1, 1975. See: 6 N.J.R. 343(a), 6 N.J.R. 427(b); and R.1975 d.166, effective July 1, 1975. See: 7 N.J.R. 200(a), 7 N.J.R. 306(a).

Chapter 21, Uniform Standards Code for Mobile Homes, was repealed by R.1982 d.7, effective February 1, 1982. See: 13 N.J.R. 717(a), 14 N.J.R. 142(a).

Chapter 21, Residential Site Improvement Standards, was adopted as R.1997 d.5, effective January 6, 1997 (operative June 3, 1997). See: 28 N.J.R. 2671(a), 28 N.J.R. 3491(a), 29 N.J.R. 159(a).

The name of Subchapter 1, General Provisions, was changed to General Guidelines by Administrative Correction. See: 29 N.J.R. 2816(a).

Petition for Rulemaking. See: 32 N.J.R. 2621(b).

Chapter 21, Residential Site Improvement Standards, was readopted as R.2002 d.197, effective May 30, 2002. See: 33 N.J.R. 3391(a), 34 N.J.R. 2311(b).

Chapter 21, Residential Site Improvement Standards, was readopted as R.2007 d.359, effective October 24, 2007. See: Source and Effective Date.

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SUBCHAPTER 1. GENERAL GUIDELINES

Law Review and Journal Commentaries

New Residential Site Improvement Standards. Thomas F. Carroll, III, 188 N.J.L.J. 18 (1997).

5:21-1.1 Title; division into subchapters

(a) These rules shall be known as the "New Jersey Residential Site Improvement Standards" and are referred to herein as "the rules."

(b) This chapter consists of the following subchapters:

1. "General Provisions," which may be cited throughout the rules as N.J.A.C. 5:21-1 and when referred to in subchapter 1 of this chapter, may be cited as "this subchapter."

2. "Application and Review Procedures," which may be cited throughout the rules as N.J.A.C. 5:21-2 and when referred to in subchapter 2 of this chapter, may be referred to as "this subchapter."

3. "Exceptions, Waivers, and Special Area Standards," which may be cited throughout these rules as N.J.A.C. 5:21-3 and when referred to in subchapter 3 of this chapter, may be referred to as "this subchapter."

4. "Streets and Parking," which may be cited throughout these rules as N.J.A.C. 5:21-4 and when referred to in subchapter 4 of this chapter, may be referred to as "this subchapter."

5. "Water Supply," which may be cited throughout these rules as N.J.A.C. 5:21-5 and when referred to in subchapter 5 of this chapter, may be referred to as "this subchapter."

6. "Sanitary Sewers," which may be cited throughout these rules as N.J.A.C. 5:21-6 and when referred to in subchapter 6 of this chapter, may be referred to as "this subchapter."

7. "Stormwater Management," which may be cited throughout these rules as N.J.A.C. 5:21-7 and when referred to in subchapter 7 of this chapter, may be referred to as "this subchapter."

8. "Referenced Standards," which may be cited throughout these rules as N.J.A.C. 5:21-8 and referred to in subchapter 8 of this chapter, may be referred to as "this subchapter."

5:21-1.2 Authority

These rules are promulgated by the Commissioner of the Department of Community Affairs pursuant to the authority of P.L. 1993, c.32 (N.J.S.A. 40:55D-40.1 et seq.)

5:21-1.3 Intent and purpose

(a) It is the intent and purpose of these rules:

1. To reduce the multiplicity of standards for residential subdivisions and site improvements which currently exists in this State in order to eliminate unnecessary increases in the cost of housing where there are noncommensurate gains in the protection of public health and safety;

2. To avoid unnecessary cost in the construction process, and to provide site improvement standards that are both sound and cost effective;

3. To ensure predictability in the site improvement standards applicable to residential construction;

4. To provide for development reviews of residential projects that are based, to the greatest extent possible, upon sound objective site improvement standards rather than upon discretionary design standards;

5. To streamline the development approval process and improve the efficiency of the application process by providing a uniform set of technical site improvement standards for land development;

6. To provide the widest possible range of design freedom and promote diversity through performance-oriented site improvement standards; and

7. To separate the policy-making aspects of development review from the making of technical determinations.

5:21-1.4 Definitions and abbreviations

The following words, terms, and abbreviations, when used in this chapter, shall have the following meanings, unless the context clearly indicated otherwise. Where a word or term is defined in this chapter and the Municipal Land Use Law (N.J.S.A. 40:55D-1 et seq.), then the definition of that word or term found in the Municipal Land Use Law shall govern. Words and terms found in the Municipal Land Use Law, and defined here for convenience, have been designated by the use of "(MLUL)" following their meaning.

"AASHTO" means American Association of State Highway and Transportation Officials.

"ABS" means acrylonitrile-butadiene-styrene.

"ACI" means American Concrete Institute.

"Administrative Officer" means the clerk of the municipality, unless a different municipal official or officials are designated by ordinance or statute. (MLUL).

"ADT" (see average daily traffic.)

"Aisle" means the traveled way by which cars enter and depart parking spaces.

"Alley" means a service road that provides a secondary means of access to lots.

"ANSI" means American National Standards Institute.

(b) The standards referenced in these rules and listed in N.J.A.C. 5:21-8 shall be considered a part of the requirements of these rules to the prescribed extent of each reference. Where differences occur between provisions of these rules and referenced standards, the provisions of these rules shall apply, except as provided in N.J.A.C. 5:21-1.5(e).

Administrative correction.
See: 29 N.J.R. 1296(a).
Administrative change.
See: 33 N.J.R. 691(b).

5:21-1.9 Violations

(a) Where any site improvement is required to meet any part of these rules pursuant to the requirements of any ordinance adopted pursuant to N.J.S.A. 40:55D-37, Subdivision and Site Plan Review and Approval, or N.J.S.A. 40:55D-62, Zoning, then any failure of any person to construct such site improvements in accordance with the requirements of these rules shall constitute a violation of the Municipal Land Use Law (N.J.S.A. 40:55D-1 et seq.). Any person responsible for such failure shall be subject to such penalties and enforcement procedures as are provided by that law and by any valid ordinance adopted pursuant thereto which may be initiated by the administrative officer designated by the ordinance (N.J.S.A. 40:55D-18).

(b) In addition to any remedy provided by (a) above, any failure to comply with the requirements of these rules, where compliance is required, shall constitute a failure to meet the conditions of the construction permit and/or certificate of occupancy issued pursuant to the State Uniform Construction Code Act (N.J.S.A. 52:27D-119 et seq.). Notification from the approving authority or from the municipal engineer acting on behalf of the approving authority that any of the requirements of these rules that are conditions of the Construction Permit and/or Certificate of Occupancy have not been met shall subject any person responsible for such failure to the remedies provided under the State Uniform Construction Code Act.

Administrative correction.
See: 29 N.J.R. 1296(a).

5:21-1.10 Operative date

(a) These rules shall be operative on June 3, 1997. The requirements of any municipal ordinances or rules adopted by any instrumentality deriving authority therefrom in effect on that date which establish rules or requirements for any matter within the scope of these regulations shall be deemed to have been repealed and of no further force or effect.

(b) Any project for which preliminary subdivision or site plan approval has been given prior to June 3, 1997 shall continue to be subject to the municipal development ordinance under which it was approved.

(c) Any project for which application is made after June 3, 1997 shall be governed by these rules.

(d) These rules shall not be construed as requiring the revision or amendment of any application for site plan or subdivision approval which is pending on June 3, 1997. Such pending applications may, however, be amended provided that any such amendments shall meet the requirements of these rules.

1. For any project for which a completed application has been submitted on or before the operative date of these rules, but which has not yet received preliminary approval, the applicant shall have the option of amending the application in its entirety to comply with these rules or of requesting that the municipality continue to review the application under the municipal ordinances in effect at the time of application.

(e) For a period of six months following the operative date of a technical revision to the standards, applicants may submit a complete application to be reviewed under the standards in effect immediately prior to the technical revision. Provided that the application is deemed complete within the meaning of the Municipal Land Use Law, the planning board or zoning board of adjustment, as appropriate, shall review the application based on the technical standards in force immediately prior to the operative date of the revision to the standards. This grace period shall only apply to technical revisions to the standards.

(f) In the case of a subdivision or project for which a complete application has been submitted but for which preliminary approval has not been issued by the operative date of any technical change to the standards, review shall continue and approval shall be granted based on the standards in force immediately prior to the operative date of the revision to the standards.

Amended by R.2004 d.35, effective January 20, 2004.
See: 35 N.J.R. 3981(a), 36 N.J.R. 447(a).
Added (e) and (f).

5:21-1.11 Validity

If any provision of these rules or the application thereof to any person or circumstances is held invalid, the invalidity shall not affect other provisions or applications of the rules which can be given effect, and to this end the provisions of the rules are severable.

APPENDIX

**NEW JERSEY MUNICIPALITIES
LIMESTONE AREAS†**

<u>County</u>		<u>Municipality</u>
Hunterdon	Alexandria Township	Hampton Borough
	Bethlehem Township	Holland Township
	Bloomsbury Borough	Lebanon Township
	Califon Borough	Tewksbury Township
	Clinton Township	Union Township
	Clinton Town	
Morris	Chester Township	Mount Olive Township
	Jefferson Township	Mt. Arlington Borough
	Mendham Township	Randolph Township

<u>County</u>		<u>Municipality</u>
	Mendham Borough	Rockaway Township
	Minehill Township	Roxbury Township
	Montville Township	Washington Township
	Morris Township	Wharton Borough
Passaic	Bloomington Borough	Wanaque Borough
	Ringwood Township	West Milford Township
Somerset	Bedminster Township	Peapack/Gladstone Borough
	Far Hills Borough	
Sussex	Andover Township	Lafayette Township
	Andover Borough	Montague Township
	Branchville Borough	Newton Town
	Byram Township	Ogdensburg Borough
	Frankford Township	Sandyston Township
	Franklin Borough	Sparta Township
	Fredon Township	Stillwater Township
	Green Township	Vernon Township
	Hamburg Borough	Walpack Township
	Hampton Township	Wantage Township
	Hardyston Township	
Warren	Allamuchy Township	Independence Township
	Alpha Borough	Knowlton Township
	Belvidere Township	Liberty Township
	Blairstown Township	Lopatcong Township
	Franklin Township	Mansfield Township
	Frelinghuysen Township	Oxford Township
	Greenwich Township	Phillipsburg Township
	Hackettstown Town	Pohatcong Township
	Hardwick Township	Washington Township
	Harmony Township	Washington Borough
	Hope Township	White Township

† Listing established by the Department of Environmental Protection, Division of Science and Research (April 1995)

Administrative correction.
See: 29 N.J.R. 2816(a).

SUBCHAPTER 2. APPLICATION AND REVIEW PROCEDURES

5:21-2.1 Application and review procedures

The procedure for municipal review and action on applications for residential subdivisions and/or site plans shall not be affected by anything contained in these rules, and shall continue to be as set forth in the Municipal Land Use Law (MLUL), N.J.S.A. 40:55D-1 et seq. and in municipal ordinances adopted pursuant to the MLUL. This review shall include a review for compliance with these rules.

5:21-2.2 Application form and checklist (Reserved)

SUBCHAPTER 3. EXCEPTIONS, WAIVERS, AND SPECIAL AREA STANDARDS

5:21-3.1 Exceptions

(a) The municipal approving authority may grant by resolution of the planning board or zoning board of adjustment such de minimis exceptions from the requirements of the site

improvement standards as may be reasonable and within the general purpose and intent of the standards if the literal enforcement of one or more provisions of the standards is impracticable or will exact undue hardship because of peculiar conditions pertaining to the development in question.

(b) An application for an exception pursuant to this section shall be filed in writing with the municipal approving authority and shall include:

1. A statement of the requirements of the standards from which an exception is sought;
2. A statement of the manner by which strict compliance with said provisions would result in practical difficulties; and
3. A statement of the nature and extent of such practical difficulties.

(c) Exceptions shall become a part of the construction documents and shall be retained by the municipal approving authority.

(d) Within 30 days of granting a de minimis exception request, a municipal approving authority agreeing to an exception pursuant to this section shall send a copy of the document(s) constituting the de minimis exception resolution and/or document to the New Jersey Department of Community Affairs, Division of Codes and Standards, 101 South Broad Street, PO Box 802, Trenton, NJ 08625-0802. Such notice shall be clearly marked "Site Improvement Exception(s)." A copy of the planning or zoning board's resolution of approval for the subdivision is sufficient notification of such exception, provided that it clearly identifies the requirement(s) of the site improvement standards from which the development varies and the reason(s) for the exception.

(e) An application for an exception may also be made by an officer or agency of the municipality.

(f) Examples of de minimis exceptions include, but are not limited to, the following:

1. Reducing the minimum number of parking spaces and the minimum size of parking stalls;
2. Reducing the minimum geometrics of street design, such as curb radii, horizontal and vertical curves, intersection angles, centerline radii, and others;
3. Reducing cartway width; and
4. Any changes in standards necessary to implement traffic calming devices.

(g) The municipal approving authority's granting of a request for a de minimis exception shall be based on a finding that the requested exception meets the following criteria:

1. It is consistent with the intent of the Site Improvement Act;

2. It is reasonable, limited, and not unduly burdensome;
3. It meets the needs of public health and safety; and
4. It takes into account existing infrastructure and possible surrounding future development.

Administrative correction.

See: 29 N.J.R. 1296(a).

Amended by R.2008 d.26, effective January 22, 2008.

See: 39 N.J.R. 4363(a), 40 N.J.R. 613(a).

In (a), inserted "by resolution of the planning board or zoning board of adjustment"; and in (d), added the last sentence.

Case Notes

Department of Community Affairs (DCA) was authorized to adopt standards different from those contained in a Model Subdivision and Site Plan Ordinance if those standards were supported by any academic or professional institution or organization. *New Jersey State League of Municipalities v. Department of Community Affairs*, 158 N.J. 211, 729 A.2d 21 (N.J. 1999).

5:21-3.2 Waiver request

(a) A municipality or developer may, in connection with a specific development, request a waiver of any site improvement standard adopted under this chapter in accordance with N.J.S.A. 40:55D-40.4(c). A waiver request may also be made jointly by a municipality and a developer.

(b) The Site Improvement Advisory Board may approve a request for a waiver based on any danger to public health and safety that would be caused by adherence to a standard specified in this chapter.

(c) The waiver request shall consist of the following:

1. A copy of the development application as submitted to the municipal approving authority; and
2. A brief memorandum to the Commissioner of the Department of Community Affairs containing sufficient information upon which to base a determination, including:
 - i. A short description of the project in narrative form;
 - ii. A citation to the particular site improvement standard from which waiver is requested;
 - iii. A clear description of the condition(s) giving rise to the request;
 - iv. A clear description of the anticipated result if the standard were to be followed;
 - v. The name, address, and telephone number of a contact person for the developer; and
 - vi. The name, address, and telephone number of a contact person for the municipal approving authority.

(d) The party requesting the waiver shall send the request to the New Jersey Department of Community Affairs,

Division of Codes and Standards, 101 South Broad Street, PO Box 802, Trenton, NJ 08625-0802.

(e) Where a waiver is requested by the developer, the developer shall send a copy of the request to the administrative officer of the municipality concerned. Where a waiver is requested by the municipality, the municipality shall send a copy of the request to the developer.

(f) A waiver may be requested by the developer or the municipal approving authority at any time during the pendency of a development application. The Site Improvement Advisory Board recommends submission of a waiver request early in the application process or prior to the submission of a formal development application. If the applicant or the municipal approving authority determines during the planning board review process that a waiver request is appropriate, the municipal approving authority shall give consideration whenever possible to the granting of an extension for the purpose of pursuing a waiver. In some cases it may be impracticable for the party requesting or appealing a waiver to complete the waiver process within the time guidelines of the Municipal Land Use Law (N.J.S.A. 40:55D-1 et seq.; see, for example, N.J.S.A. 40:55D-45.3, 46(c), 46.1, 47, 48 and 50). In such cases, the municipal approving authority may provide for the disposition of the waiver as a condition of its approval.

(g) There is no fee for requesting a waiver.

Amended by R.2008 d.26, effective January 22, 2008.

See: 39 N.J.R. 4363(a), 40 N.J.R. 613(a).

In the introductory paragraph of (c), deleted the former first sentence.

5:21-3.3 Waiver review

(a) The Commissioner shall review the waiver request to determine whether it appears on preliminary review that adherence to a particular standard would jeopardize the public health and safety.

1. If the waiver request on its face does not meet the requirements of this subsection, the Commissioner shall contact the requesting party within 20 days of receipt of the request and advise the requesting party of the waiver request rejection. Grounds for rejection shall be indicated in writing.

(b) Within 20 days of receipt of a waiver request, the Commissioner shall date and mark as justified for review each waiver request accepted for review. The Commissioner shall then direct each such waiver request to the Site Improvement Advisory Board's technical committee which consists of Board members who represent the New Jersey Society of Professional Engineers, the New Jersey Society of Municipal Engineers, and the New Jersey Builders Association (see N.J.S.A. 40:55D-40.4(c)).

(c) The Commissioner shall send notice of the Commissioner's determination of justification to designated contacts at the same time as the waiver request is sent to the technical committee.

(d) The technical committee shall render a decision by resolution within 30 days of the Commissioner's determination that the waiver request is justified.

(e) A waiver resolution adopted by the committee shall specify the grounds for granting or denying the waiver request.

(f) The Commissioner shall promptly notify the developer and the municipal approving authority of the committee's decision, and shall provide a copy of the resolution memorializing such decision to those parties and to the Site Improvement Advisory Board.

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).

5:21-3.4 Appeal of waiver decisions

(a) Any decision of the technical committee may be appealed to the Site Improvement Advisory Board. The party wishing to appeal shall notify the Board of its intention to appeal within 10 business days from receipt of the resolution memorializing the technical committee's decision. The Board shall hear appeals in a public session at regularly scheduled or special meetings announced in compliance with the Open Public Meetings Act (see N.J.S.A. 10:4-6 et seq.).

(b) For each hearing, the Site Improvement Advisory Board shall designate, by simple majority of the members present, a voting member of the Board to serve as presiding officer.

(c) Any documents and materials constituting the appeal shall be available for public inspection at the Department of Community Affairs, Division of Codes and Standards during normal business hours at least 10 days before the date of the hearing. Other documents, records, or testimony may be produced at the hearing to clarify or supplement materials previously submitted.

(d) The hearings shall be informal. Rules of evidence shall not apply, but the presiding officer may exclude irrelevant, immaterial, or unduly repetitious evidence.

(e) The testimony of all witnesses in a waiver appeal shall be under oath or affirmation and shall be recorded verbatim either mechanically or stenographically. Transcripts may be obtained at the expense of the requesting party and shall be certified by the transcriber to be accurate.

(f) The Site Improvement Advisory Board shall render a final decision within 10 days of the hearing. The Board's decision shall be in writing, and shall contain findings and conclusions. The Board shall mail a copy of the decision to the developer and to the municipal approving authority.

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).
Rewrote (a).

5:21-3.5 Special area standards

(a) The Commissioner and the Site Improvement Advisory Board as a matter of policy recognize the need for preservation and/or enhancement of community character in New Jersey municipalities. This section is intended to provide a procedure whereby a municipal approving authority may develop and recommend to the Board supplementary and/or alternative standards in the form of municipal ordinances for review and amendment to this chapter. The Site Improvement Advisory Board shall solicit the input of the Department of Environmental Protection, the Office of State Planning, and the Department of Transportation and may solicit input from public or private organizations and individuals as it deems appropriate during the process of review of special area standards.

(b) A special area designation may be applied by ordinance by a municipality or group of municipalities to an area or areas of a municipality or municipalities exhibiting or planned to exhibit a distinctive character or environmental feature that the municipality or municipalities by ordinance have identified and expressed a desire to preserve and enhance. Examples of a special area may include:

1. Designated redevelopment areas pursuant to N.J.S.A. 40A:12A-1 et seq.;
2. Designated special improvement districts pursuant to N.J.S.A. 40:56-65 et seq.;
3. Designated historic districts pursuant to N.J.S.A. 40:55D-65.1;
4. Municipalities in the Metropolitan Planning Area (Planning Area 1), and Regional Centers, villages, hamlets, or other Centers identified by the State Development and Redevelopment Plan or designated by the State Planning Commission;
5. Infill areas in urban settings;
6. Planned unit and planned unit residential developments, and residential clusters pursuant to N.J.S.A. 40:55D-39;
7. Areas where environmental systems such as watersheds may require special environmental controls;
8. Designated scenic corridors, pursuant to the Intermodal Surface Transportation Efficiency Act or other similar State or local initiatives; and
9. Rural preservation areas including, but not limited to, designated Agricultural Development Areas, pursuant to N.J.S.A. 4:1C, and in support of the rural preservation policies of the State Development and Redevelopment Plan.

(c) The Site Improvement Advisory Board shall consider at its regular or specially-scheduled public meetings special area standards submitted for approval by or on behalf of a municipality or municipalities. The following procedures

shall govern the review of special area standards submitted for approval:

1. Upon receipt of an application for approval of special area standards conforming to (e) below, the Department of Community Affairs, on behalf of the Board, shall prepare and file with the Office of Administrative Law, for publication in the New Jersey Register, a notice of receipt of the application, including a summary of its contents. Any such notice shall conform to the requirements applicable to petitions for rules set forth at N.J.A.C. 5:2-2. The notice shall indicate the time and place of any meeting that is to be held to consider the application and shall also indicate the address and telephone number at which persons may contact the Department in order to be placed on lists that the Department shall use to keep interested persons informed as to the status of any specific application or of special area standards applications generally.

i. The application shall be accompanied by proof of publication by the municipality, in its official newspaper, of either a copy of the application or a summary of its contents. If the municipality does not publish the full text of the application, it shall include in the published notice a statement that interested persons may review a copy of the application that is on file in the office of the municipal clerk, and may purchase copies of the application in accordance with the New Jersey Right-to-Know law, N.J.S.A. 47:1A-1.1 et seq., and that information concerning the date of any meeting at which the application will be considered will be available in the office of the municipal clerk once that determination has been made.

2. Upon receipt of an application for approval of special area standards, the Department, with the concurrence of the chairperson of the Board, shall refer the application to the appropriate Board committee. The committee shall consider the application at a meeting held at least 15 days following publication of notice of the application in the New Jersey Register. Notice of such meeting shall be sent to the municipal clerk and to all known parties in interest. The committee shall recommend such action to the Board as it may deem appropriate.

3. A notice of the action recommended by the committee, including the text of any recommended special area standards, shall be forwarded by the Department to the Office of Administrative Law for publication in the New Jersey Register as a public notice. The notice, copies of which shall be sent to the municipal clerk and to all known parties in interest, shall include the time and place of the meeting of the Board at which the application and the committee's recommendations thereon shall be considered.

i. Upon receipt of the notice, the municipality shall publish a copy of the notice in its official newspaper.

4. Prior to making a decision on any application for special area standards, the Board shall hold a public

hearing at which all interested persons shall be given an opportunity to testify and to present their views, both orally and in writing. A taped record shall be made of all statements made at the hearing, which record shall be made available by the Department to interested persons upon request. At the conclusion of the hearing, the Board shall either take action on the application or schedule the matter for further consideration at its next meeting. Any Board decision shall be by formal resolution. Notice of any Board decision shall be published in the New Jersey Register.

5. The Board and any of its committees shall meet at least monthly when any application for approval of special area standards is ripe for action before them.

(d) The Site Improvement Advisory Board shall review special area standards submitted for approval if:

1. The special area is delineated on the zoning map, adopted redevelopment plan, special improvement district ordinance, Center designation petition, or other duly authorized ordinance of the municipality or municipalities;

2. The special area is incorporated into the municipality's master plan;

3. Site improvement standards for use in the special area are consistent with the purposes of this chapter, deviations from the standards are identified, and a rationale is provided for each such deviation; and

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).

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 Public meetings

All meetings of the Board and of its committees shall be conducted in accordance with the Open Public Meetings Act, N.J.S.A. 10:4-6 et seq. The Department shall provide copies of meeting schedules, in accordance with N.J.S.A. 10:4-19, to any persons requesting such copies. Any such copies shall include a summary of the matters to be discussed at the meeting. Requests for such copies may be sent to the Secretary of the Site Improvement Advisory Board, Division of Codes and Standards, PO Box 802, Trenton, NJ 08625-0802.

New Rule, R.1998 d.400, effective August 3, 1998.
See: 30 N.J.R. 755(a), 30 N.J.R. 2861(b).

5:21-3.8 Changes to the standards

(a) The Site Improvement Advisory Board shall annually review the standards and recommend changes as the Board deems necessary.

(b) As part of its annual review of the standards, the Site Improvement Advisory Board shall consider any suggested changes to the rules that are submitted by the public provided they are submitted prior to January 1 of the year in which they are to be considered. Suggested changes received on or after January 1 shall be considered during the following calendar year. Committee members may introduce other changes to the rules at the same time that the committee is considering recommendations from the public.

Suggested changes shall be submitted on a standard form available from the Department, reproduced below.

(c) The Site Improvement Advisory Board shall provide an opportunity for proponents of suggested changes and other interested parties to testify before the Board at a regularly scheduled or special meeting of the Board. A public notice with the time, date and place of this meeting shall be published in the New Jersey Register at least two weeks prior to the scheduled meeting date.

(d) The Chairman of the Site Improvement Advisory Board shall assign each change to the appropriate committee of the Board for its review and recommendation.

(e) The committees shall make a recommendation to the Site Improvement Advisory Board on each suggested change that was submitted. The recommendations of the committees shall be made available to any interested party at least two weeks prior to the meeting at which the Board will vote on the proposed changes.

(f) At a regularly scheduled or special meeting, the Board shall vote on each suggested change. A simple majority of the Board shall be sufficient for the proposal to be submitted to the Commissioner with a recommendation that it be published in the New Jersey Register as a proposed rule change.

**DEPARTMENT OF COMMUNITY AFFAIRS
DIVISION OF CODES AND STANDARDS**

**RESIDENTIAL SITE IMPROVEMENT STANDARDS
CODE CHANGE PROPOSAL**

Sections must be presented with language proposed for deletion in brackets [] and language proposed for addition underlined _____.

Code Changes may be mailed to:

Michael Baier
Department of Community Affairs
Division of Codes and Standards
Post Office Box 802
Trenton, New Jersey 08625

Code Changes may be faxed to:

Michael Baier
Department of Community Affairs
Division of Codes and Standards
(609) 984-7717

Information may be obtained from the Code Development Unit at (609) 984-7609.

Code changes must be submitted by December 31, for consideration in the following calendar year.

Section Proposed For Change (Citation): _____.

Code Change Submitted By:

NAME: _____ Organization: _____

ADDRESS: _____

TELEPHONE: _____ FAX: _____

E-MAIL ADDRESS: _____

Proposed Code Change:

Supporting Statement (Reason for change should include an “authoritative source” and cost analysis where appropriate.):

Changes to the technical requirements in the standards must be based on recommended site improvement standards that are published by an academic or professional institution or organization, similar to those used in the original Rutgers Model Subdivision and Site Plan Ordinance.

New Rule, R.2001 d.352, effective October 1, 2001.
 See: 33 N.J.R. 1237(a), 33 N.J.R. 3427(a).

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 UNIT¹

<u>Land use²</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:

¹ 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.

² 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.

Administrative correction.

See: 29 N.J.R. 1296(a).

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).

Administrative correction.

See: 32 N.J.R. 684(b).

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 Figure 4.1, amended (1 of 5), (2 of 5) and (3 of 5).

Amended by R.2002 d.399, effective December 16, 2002.

See: 34 N.J.R. 2615(a), 34 N.J.R. 4412(a).

Added Figure 4.1 (4 of 6); the elements of Figure 4.1 redesignated from "of 5" to "of 6"; amended Figure 4.1 (3 of 6).

Public Notice: Notice regarding the Publication of two Notices of Adoption in the December 16, 2002 New Jersey Register.

See: 34 N.J.R. 4343(a), 4412(a), 35 N.J.R. 219(b).

Amended by R.2004 d.35, effective January 20, 2004.

See: 35 N.J.R. 3981(a), 36 N.J.R. 447(a).

In (c), amended 3, 5 and 6 of 6 in Figure 4.1.

Amended by R.2008 d.26, effective January 22, 2008.

See: 39 N.J.R. 4363(a), 40 N.J.R. 613(a).

Added (a)1, (a)2, and (d).

5:21-4.18 Sidewalks and bikeways construction standards

(a) The following apply to sidewalks and graded areas:

1. Sidewalks of concrete shall be four inches thick except at points of vehicular crossing, where they shall be at least six inches thick. At vehicular crossings, concrete sidewalks shall be reinforced with welded wire fabric mesh or an equivalent.

2. Concrete, air-entrained sidewalks shall be Class B concrete, having a 28-day verification strength of 4,500 p.s.i. Other materials may be permitted, depending on the design of the development.

3. Graded areas shall be planted with grass or treated with other suitable ground cover, and their width and cross slope shall correspond to that of sidewalks.

(b) The following apply to bikeways:

1. The construction of bikeways shall conform to the New Jersey Department of Transportation Planning and Design Guidelines for Bicycle Compatible Roadways and Bikeways (November 1995) and the AASHTO Guide for the Development of Bicycle Facilities (1999), incorporated herein by reference.

2. Bicycle-safe drainage grates shall be used in the construction of all residential streets.

Administrative correction.

See: 29 N.J.R. 1296(a).

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).

Rewrote (b)1.

Amended by R.2002 d.399, effective December 16, 2002.

See: 34 N.J.R. 2615(a), 34 N.J.R. 4412(a).

In (a)2, substituted "Class B concrete" for "Class C concrete" and substituted "4,500 p.s.i." for "4,000 p.s.i.".

Public Notice: Notice regarding the Publication of two Notices of Adoption in the December 16, 2002 New Jersey Register.

See: 34 N.J.R. 4343(a), 4412(a), 35 N.J.R. 219(b).

5:21-4.19 Street grade, intersections, pavement, and lighting construction standards

(a) The following apply to street grade:

1. Minimum street grade permitted for all streets shall be 0.5 percent.

2. Maximum street grade shall vary by road hierarchy with flatter grades required for roads with higher ADTs, in accordance with the requirements shown in Table 4.6. Where terrain makes it necessary, the allowable maximum grade may be increased by up to two percent, but shall not exceed a maximum grade of 16 percent.

(b) The following shall apply to intersections:

1. Street intersections shall be as nearly at right angles as possible and in no case shall be less than 75 degrees.

2. New intersections along one side of an existing street shall, if possible, coincide with any existing intersections on the opposite side of each street. Where provided, offsets for intersections along the same or opposite sides shall be at least 150 feet between right-of-way centerlines.

3. Intersections shall be rounded at the curbline with the street having the highest radius requirement, as shown in Table 4.6 below, determining the minimum standard for all curbines.

4. Intersections shall be designed with a flat grade wherever practical.

5. The minimum centerline radius, minimum tangent length between reverse curves, and curb radii shall be as shown in Table 4.6 below.

6. Sight triangles shall be in accordance with AASHTO's "A Policy on Geometric Design of Highways and Streets" standards and based on the speed limits established by the government agency having jurisdiction. Sight triangle easements shall be required and shall include the area on each street corner that is bounded by the line which connects the sight or "connecting" points located on each of the right-of-way lines of the intersecting street. The planting of trees or other plantings, or the location of structures exceeding 30 inches in height that would obstruct the clear sight across the area of the easements, shall be prohibited, and a public right-of-entry shall be reserved for the purpose of removing any object, material or otherwise, that obstructs the clear sight.

TABLE 4.6
STREET GRADE, CURVE AND INTERSECTION DESIGN CRITERIA

	Street Hierarchy		Rural, residential access, and <u>neighborhood</u>	Minor <u>collector</u>	Major <u>collector</u>
	Special purpose street: <u>alley</u>	Special purpose street: <u>cul-de-sac</u>			
Minimum Grade	0.5%	0.5%	0.5%	0.5%	0.5%
Maximum Grade	15%	12%	12%	10%	8%
Maximum Grade of Secondary Street within 50 feet of Intersection [†]	5%	5%	5%	5%	5%
Minimum Center-Line Radius	100 ft	100 ft	100 ft	150 ft	300 ft
Minimum Tangent Length between Reverse Curves	0 ft	50 ft	50 ft	100 ft	150 ft
Curb Radii	20 ft	25 ft	25 ft	30 ft	35 ft

Note: [†]As measured from the nearest right-of-way line.

(c) Pavement shall be designed using either Figures 4.2 through 4.5, the structural number method, or the alternate pavement design methods referenced in (c)3 below.

1. Pavement design using figures: Pavement design for special-purpose streets (cul-de-sac, rural, etc.), residential access, neighborhood, minor collector, and major collector shall follow the specifications shown in Figures 4.2 through 4.5 based on the street type. Subgrade categories are shown in Table 4.7 below.

2. Structural number method: As an alternative to using Figures 4.2 through 4.5, applicants may design pavement using the structural numbers found in Table 4.9 below.

i. The designated structural number must be achieved by choosing the appropriate layers of bituminous stabilized surface course (Mix I-4, Mix I-5), bituminous stabilized base course (Mix I-2, stone mix), bituminous stabilized base course (Mix I-2, gravel mix), dense graded aggregate base course, soil aggregate base course, and subbase. The structural values and minimum layer thicknesses for the various materials are listed in Table 4.8 below.

TABLE 4.8
PER-INCH STRUCTURAL VALUE FOR VARIOUS PAVING MATERIALS

<u>Layer material</u>	<u>Structural value per-inch thickness</u>	<u>Minimum thickness</u>
Bituminous stabilized concrete surface (Mix I-4, Mix I-5) ¹	0.44	2 inches
Bituminous stabilized base course (Mix I-2, stone mix) ²	0.44	3 inches
Bituminous stabilized base course (Mix I-2, gravel mix) ²	0.37	3 inches
Dense graded aggregate base course ²	0.14	4 inches
Soil aggregate base course ²	0.11	4 inches
Subbase	0.08	6 inches

Notes:

¹ Materials for asphalt concrete surface shall conform to Section 404.02 or 406.02 of the New Jersey Department of Transportation's Standard Specifications for Road and Bridge Construction (1989).

² Materials for asphalt concrete base shall conform to Sections 301.02 and 304.02 or 406.02 of the New Jersey Department of Transportation's Standard Specifications for Road and Bridge Construction (1989).

ii. Thicknesses shall be provided in 0.5 inch increments.

TABLE 4.9
STRUCTURAL NUMBER VALUES AS A FUNCTION OF ADT AND M_r¹

Maximum <u>ADT</u> ²	SN ₀ prior to two-inch asphalt concrete surface course		
	M _r = 3,000 psi	M _r = 5,000 psi	M _r = 7,500 psi
	<u>Poor</u> <u>Subgrade</u>	<u>Medium</u> <u>Subgrade</u>	<u>Good/Excellent</u> <u>Subgrade</u>
200	1.60	1.15	0.84
250	1.69	1.23	0.91
500	1.99	1.49	1.14
750	2.17	1.65	1.29
1,000	2.31	1.77	1.40

Maximum ADT ²	SN ₀ prior to two-inch asphalt concrete surface course		
	M _r = 3,000 psi	M _r = 5,000 psi	M _r = 7,500 psi
	<u>Poor</u> <u>Subgrade</u>	<u>Medium</u> <u>Subgrade</u>	<u>Good/Excellent</u> <u>Subgrade</u>
1,250	2.42	1.87	1.48
1,500	2.52	1.95	1.55
1,750	2.60	2.02	1.61
2,000	2.67	2.08	1.67
2,250	2.73	2.13	1.72
2,500	2.79	2.18	1.76
2,750	2.84	2.23	1.80
3,000	2.89	2.27	1.84
3,250	2.93	2.31	1.88
3,500	2.97	2.35	1.91
3,750	3.17	2.52	2.06
4,000	3.21	2.55	2.09
4,250	3.24	2.58	2.12
4,500	3.28	2.61	2.15
4,750	3.31	2.64	2.17
5,000	3.34	2.67	2.20
5,250	3.37	2.69	2.22
5,500	3.40	2.72	2.24
5,750	3.42	2.74	2.26
6,000	3.45	2.76	2.28
6,250	3.48	2.79	2.30
6,500	3.50	2.81	2.32
6,750	3.52	2.83	2.34
7,000	3.55	2.85	2.36
7,250	3.57	2.87	2.38
7,500	3.59	2.89	2.39

Notes:

¹ All subgrades shall be considered "poor," unless the applicant proves otherwise through CBR testing or field evaluation of soil classification. Test results shall be reviewed by the municipal engineer.

² ADT ranges for street types listed in the standards are as follows:

Rural Lane	0-200
Cul-de-sac	0-250
Rural Street	0-500
Alley	0-500
Multifamily Access Cul-de-sac	0-1,000
Residential Access	0-1,500
Residential Neighborhood	0-1,500
Minor Collector	1,501-3,500
Major Collector	3,501-7,500

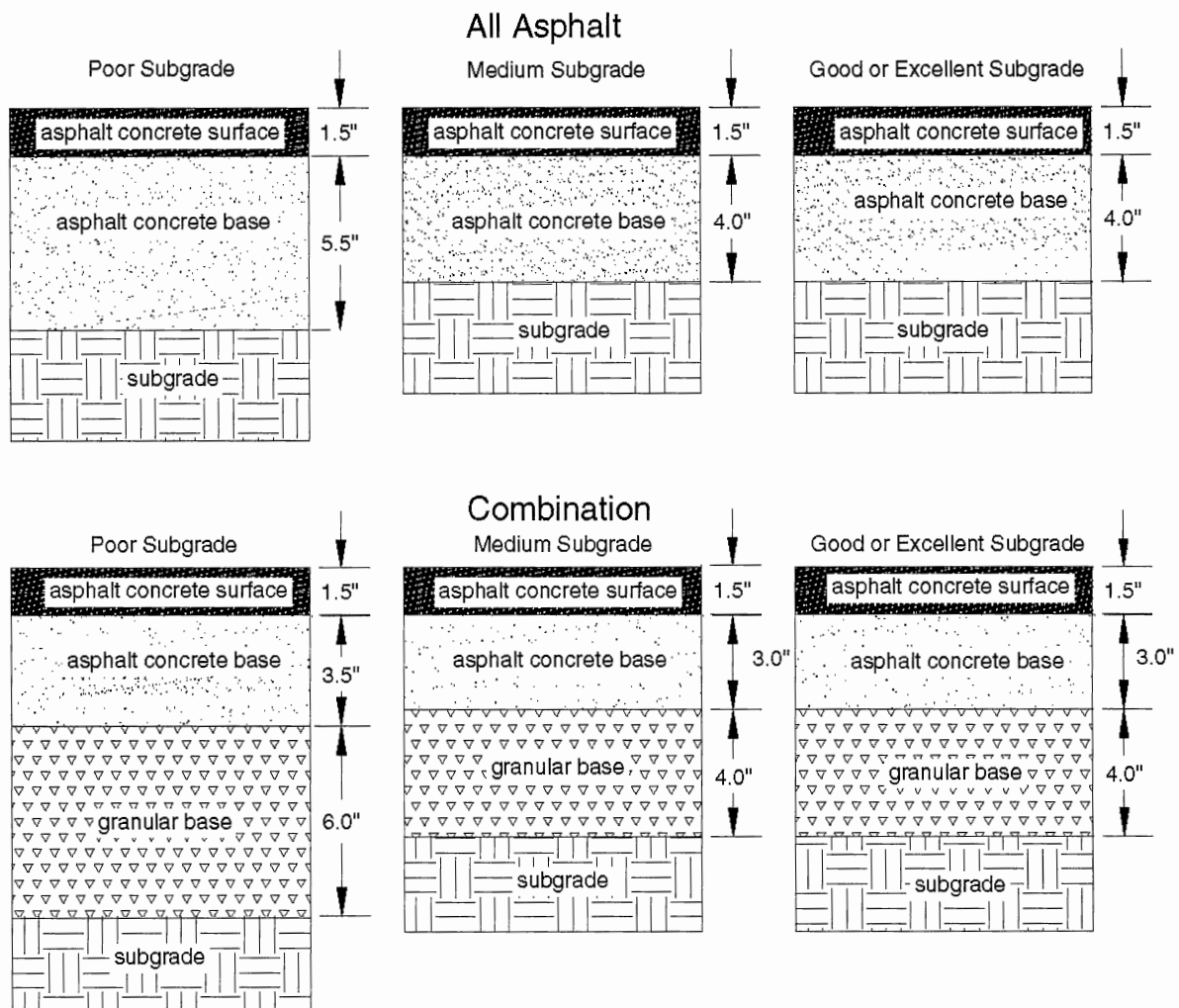
Source: The Table is derived from the AASHTO Guide for Design of Pavement Structures (1993).

3. Alternate pavement design: Alternate pavement design shall be allowed provided it conforms with one of the following: AASHTO Method of Flexible Pavement Design, AASHTO Method of Rigid Pavement Design, Fa-

tigue Strength Method of Design, Multilayer Elastic Analysis, or the National Crushed Stone Association Design, incorporated herein by reference.

(d) Lighting (Reserved)

Figure 4.2
Pavement Sections for Rural Lanes, Rural Streets, Cul-de-Sacs, and Alleys
(ADT \leq 500) (EAL \leq 30,000)

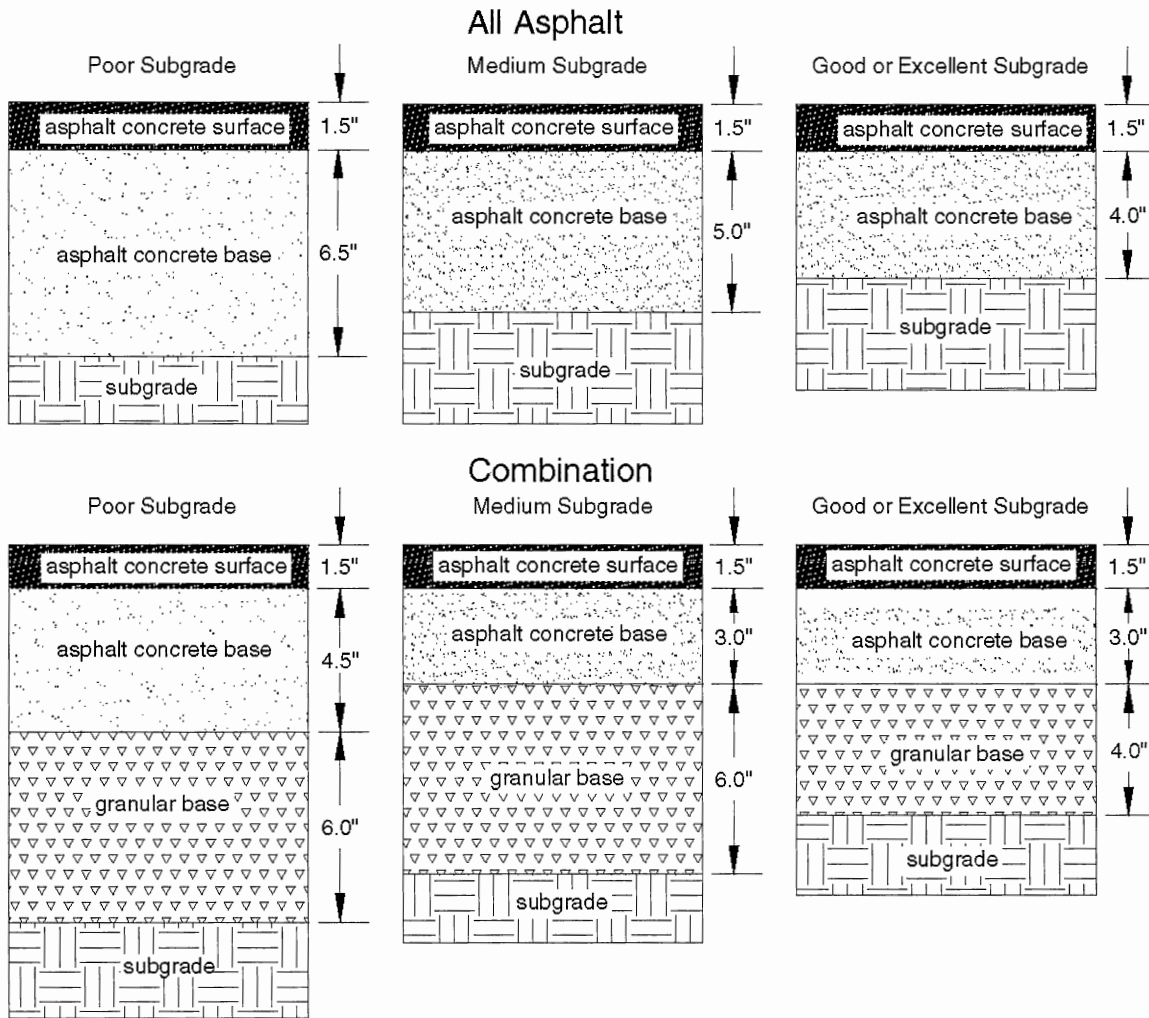


Source: N.J.S.M.E., *Asphalt Handbook for County and Municipal Engineers*, 3rd Edition, March 2000. The figures were derived by applying the Asphalt Institute's *Thickness Design – Full Depth Asphalt Pavement Structures for Highways and Streets*.

NOTES:

1. Materials for the asphalt concrete surface shall conform to Section 404.02 or 406.02 of the New Jersey Department of Transportation's Standard Specification for Road and Bridge Construction.
2. Materials for asphalt concrete base shall conform to Sections 301.02 and 304.02 or 406.02 of the N.J. Department of Transportation's Standard Specification for Road and Bridge Construction.
3. Thickness may have to be constructed in multiple lifts, based on equipment capabilities.
4. The granular base shall be dense graded aggregate conforming to Section 901.08 or soil aggregate designated I-5 conforming to Section 901.09 and shown in Table 901-2 of the New Jersey Department of Transportation's Standard Specifications for Road and Bridge Construction.
5. All subgrades shall be considered "poor" unless the applicant proves otherwise through CBR testing or field evaluation of soil classification. Test results shall be reviewed by the municipal engineer.
6. Subgrade compaction shall be approved by the municipal engineer.
7. Drawings are based on the following design assumption: A 20-year design period with staged construction use. Base courses are designed to withstand the construction traffic anticipated during the 3-year construction period and have a residual life of 17 years at the end of the 3-year period. The entire pavement section, base course plus finish course, is designed to withstand the traffic loading for the remaining 17 years of the 20-year design period.

Figure 4.3
 Pavement Sections for Residential Access and Neighborhood Streets
 (ADT ≤ 1,500) (EAL ≤ 80,000)

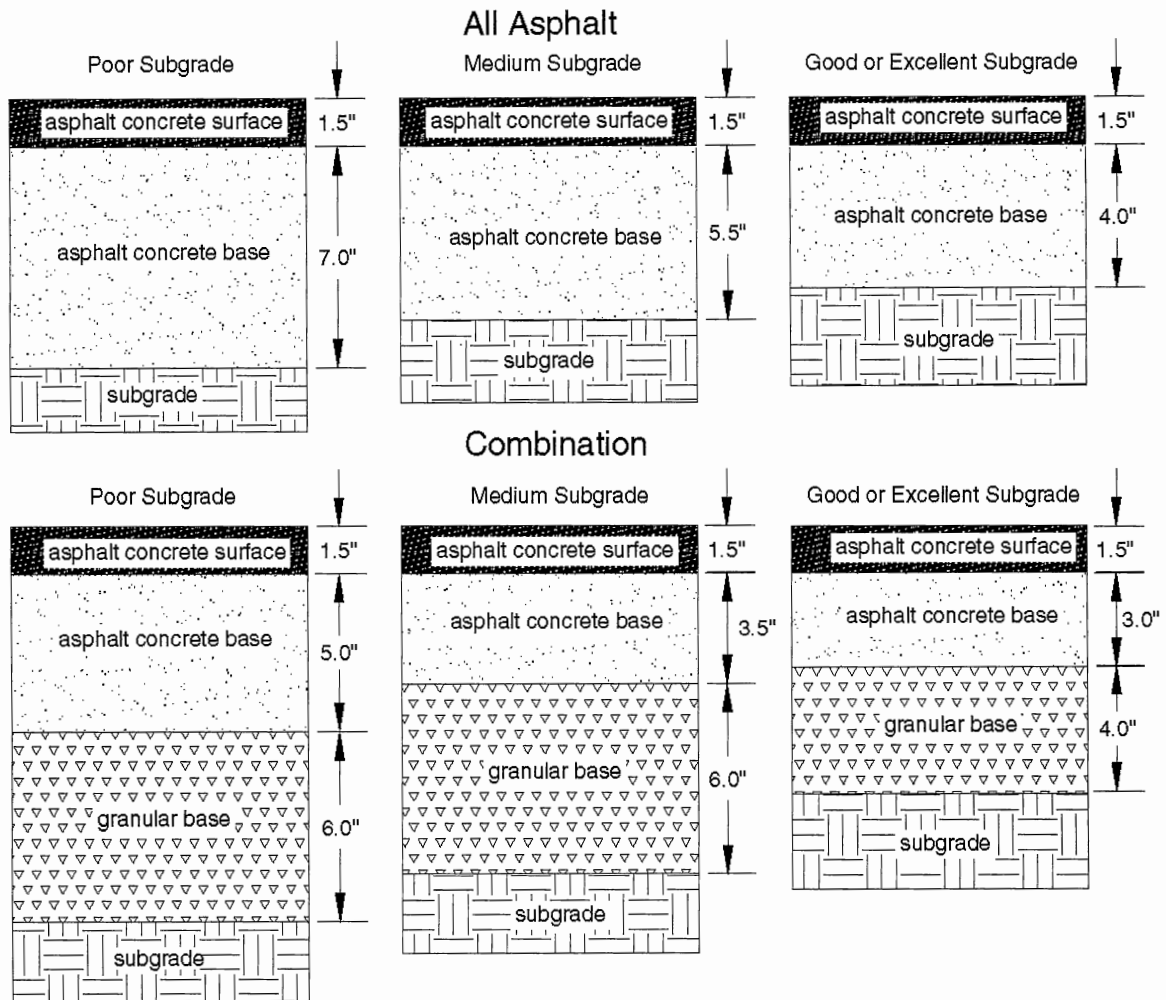


Source: N.J.S.M.E., *Asphalt Handbook for County and Municipal Engineers*, 3rd Edition, March 2000. The figures were derived by applying the Asphalt Institute's *Thickness Design – Full Depth Asphalt Pavement Structures for Highways and Streets*.

NOTES:

1. Materials for the asphalt concrete surface shall conform to Section 404.02 or 406.02 of the New Jersey Department of Transportation's Standard Specification for Road and Bridge Construction.
2. Materials for asphalt concrete base shall conform to Sections 301.02 and 304.02 or 406.02 of the N.J. Department of Transportation's Standard Specification for Road and Bridge Construction.
3. Thicknesses may have to be constructed in multiple lifts, based on equipment capabilities.
4. The granular base shall be dense graded aggregate conforming to Section 901.08 or soil aggregate designated I-5 conforming to Section 901.09 and shown in Table 901-2 of the New Jersey Department of Transportation's Standard Specifications for Road and Bridge Construction.
5. All subgrades shall be considered "poor" unless the applicant proves otherwise through CBR testing or field Evaluation of soil classification. Test results shall be reviewed by the municipal engineer.
6. Subgrade compaction shall be approved by the municipal engineer.
7. Drawings are based on the following design assumption: A 20-year design period with staged construction use. Base courses are designed to withstand the construction traffic anticipated during the 3-year construction period and have a residual life of 17 years at the end of the 3-year period. The entire pavement section, base course plus finish course, is designed to withstand the traffic loading for the remaining 17 years of the 20-year design period.

Figure 4.4
Pavement Sections for Minor Collectors (ADT ≤ 3,500) (EAL ≤ 200,000)

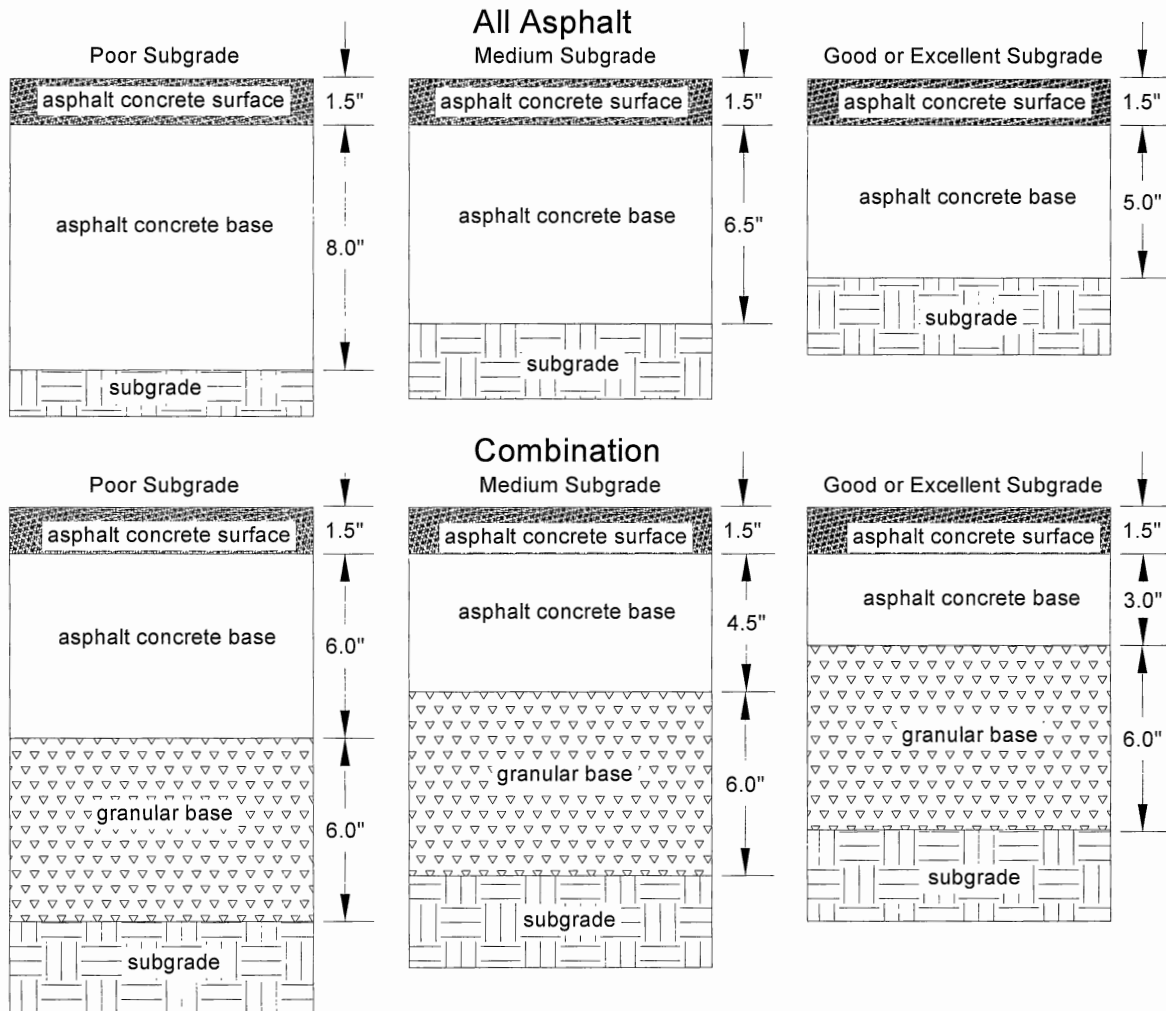


Source: N.J.S.M.E., *Asphalt Handbook for County and Municipal Engineers*, 3rd Edition, March 2000. The figures were derived by applying the Asphalt Institute's *Thickness Design – Full Depth Asphalt Pavement Structures for Highways and Streets*.

NOTES:

1. Materials for the asphalt concrete surface shall conform to Section 404.02 or 406.02 of the New Jersey Department of Transportation's Standard Specification for Road and Bridge Construction.
2. Materials for asphalt concrete base shall conform to Sections 301.02 and 304.02 or 406.02 of the N.J. Department of Transportation's Standard Specification for Road and Bridge Construction.
3. Thicknesses may have to be constructed in multiple lifts, based on equipment capabilities.
4. The granular base shall be dense graded aggregate conforming to Section 901.08 or soil aggregate designated I-5 conforming to Section 901.09 and shown in Table 901-2 of the New Jersey Department of Transportation's Standard Specifications for Road and Bridge Construction.
5. All subgrades shall be considered "poor" unless the applicant proves otherwise through CBR testing or field evaluation of soil classification. Test results shall be reviewed by the municipal engineer.
6. Subgrade compaction shall be approved by the municipal engineer.
7. Drawings are based on the following design assumption: A 20-year design period with staged construction use. Base courses are designed to withstand the construction traffic anticipated during the 3-year construction period and have a residual life of 17 years at the end of the 3-year period. The entire pavement section, base course plus finish course, is designed to withstand the traffic loading for the remaining 17 years of the 20-year design period.

Figure 4.5
 Pavement Sections for Major Collectors (ADT ≤ 7,500) (EAL ≤ 400,000)



Source: N.J.S.M.E., *Asphalt Handbook for County and Municipal Engineers*, 3rd Edition, March 2000. The figures were derived by applying the Asphalt Institute's *Thickness Design -- Full Depth Asphalt Pavement Structures for Highways and Streets*.

NOTES:

1. Materials for the asphalt concrete surface shall conform to Section 404.02 or 406.02 of the New Jersey Department of Transportation's Standard Specification for Road and Bridge Construction.
2. Materials for asphalt concrete base shall conform to Sections 301.02 and 304.02 or 406.02 of the N.J. Department of Transportation's Standard Specification for Road and Bridge Construction.
3. Thicknesses may have to be constructed in multiple lifts, based on equipment capabilities.
4. The granular base shall be dense graded aggregate conforming to Section 901.08 or soil aggregate designated I-5 conforming to Section 901.09 and shown in Table 901-2 of the New Jersey Department of Transportation's Standard Specifications for Road and Bridge Construction.
5. All subgrades shall be considered "poor" unless the applicant proves otherwise through CBR testing or field evaluation of soil classification. Test results shall be reviewed by the municipal engineer.
6. Subgrade compaction shall be approved by the municipal engineer.
7. Drawings are based on the following design assumption: A 20-year design period with staged construction use. Base courses are designed to withstand the construction traffic anticipated during the 3-year construction period and have a residual life of 17 years at the end of the 3-year period. The entire pavement section, base course plus finish course, is designed to withstand the traffic loading for the remaining 17 years of the 20-year design period.

TABLE 4.7
SUBGRADE CATEGORIES
A. BASED ON STRENGTH TEST

Subgrade category	California	Resilient Modules
	Bearing Ratio (Cbr)	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: ^aRefers 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 M[r] 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.

Administrative correction.

See: 29 N.J.R. 1296(a).

Administrative correction.

See: 29 N.J.R. 2816(a).

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)2; and in Table 4.6, deleted Intersection Standard heading, and substituted a reference to Maximum Grade of Secondary Street for a reference to Maximum Grade.

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).

Rewrote (c); amended Figures 4.2 and 4.3; and inserted Figures 4.4 and 4.5.

Amended by R.2002 d.399, effective December 16, 2002.

See: 34 N.J.R. 2615(a), 34 N.J.R. 4412(a).

Added new (c), including Tables 4.8 and 4.9; deleted former (c); recodified former (d) as new (c)3; added new Figures 4.2 through 4.5 and deleted former Figures 4.2 through 4.5.

Public Notice: Notice regarding the Publication of two Notices of Adoption in the December 16, 2002 New Jersey Register.

See: 34 N.J.R. 4343(a), 4412(a), 35 N.J.R. 219(b).

Administrative correction.

See: 35 N.J.R. 2494(a).

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

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

Amended by R.2006 d.47, effective February 6, 2006.

See: 37 N.J.R. 3878(a), 38 N.J.R. 925(a).

In (b)2, added "for intersections along the same or opposite sides"; in (b), added "CURVE" to the heading of Table 4.6.

Amended by R.2007 d.177, effective June 4, 2007.

See: 38 N.J.R. 3698(a), 39 N.J.R. 2234(a).

In footnotes 1 and 2 of Table 4.8, inserted "or 406.02"; and in footnotes 1 and 2 of Figures 4.2 through 4.5, inserted "or 406.02" and deleted "(1989)" from the end.

Administrative correction.

See: 39 N.J.R. 4395(a).

Amended by R.2008 d.26, effective January 22, 2008.

See: 39 N.J.R. 4363(a), 40 N.J.R. 613(a).

In footnote 4 of Figures 4.2 through 4.5, substituted "Specifications" for "Specification" and deleted "(1989)" from the end.

5:21-4.20 Curves

(a) Vertical curves shall be designed in accordance with AASHTO's "A Policy on Geometric Design of Highways and Streets" standards, incorporated herein by reference.

(b) Sight easements on vertical and horizontal curves shall be required and determined based on the sight distance requirements contained in AASHTO's "A Policy on Geometric Design of Highways and Streets" standards, taking into consideration the speed limits established by the government agency having jurisdiction. Residential access, residential neighborhood, and rural street design shall be based on a speed limit of 25 miles an hour. Minor collector street design shall be based on a speed limit of 30 miles per hour. Major collector design shall be based on a speed limit of 30 miles per hour or five miles over the anticipated posted speed limit, whichever is higher.

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 (b), substituted "shall" for "should" in the second and third sentences, deleted "and major" following "Minor" in the third sentence, and the last sentence was added.

Administrative correction.

See: 35 N.J.R. 2494(a).

Amended by R.2006 d.47, effective February 6, 2006.

See: 37 N.J.R. 3878(a), 38 N.J.R. 925(a).

In (a), deleted "and horizontal" following "Vertical."

SUBCHAPTER 5. WATER SUPPLY

5:21-5.1 Water supply system

Water supply systems, where installed, shall conform to the standards contained in this subchapter.

5:21-5.2 Capacity

(a) The water supply system shall be adequate to handle the necessary flow, based on complete development of the tract.

(b) When plans for future development necessitate over-sizing of the water supply system, the municipality or utility authority may enter into an agreement with the developer to address the fair share of the costs.

(c) The demand rates for all uses shall be considered in computing the total system demand. Where fire protection is provided in accordance with (e) below, the system shall be capable of providing the required fire demand plus the required maximum daily residential demand, or the peak hour flows indicated in Table 5.2 below, whichever is greater. The maximum daily demand shall be calculated by multiplying the average daily residential demand indicated in Table 5.1 by a factor of 1.5.

(d) Average daily residential consumption shall be computed in accordance with the housing unit type and size data shown in Table 5.1. The peak daily flows shall be computed by applying a peaking factor of three times the average daily residential consumption. The municipality may require deviations in the peaking factor value provided appropriate documentation and justification for the deviation from the standards is provided.

(e) The design of the on-site water distribution system shall be adequate to provide fire protection as per ISO standard, *Fire Suppression Rating Schedule*, or per AWWA M31, "Manual of Water Supply Practices—Distribution System Requirements for Fire Protection," ISO method on pages 3-9, incorporated herein by reference.

**TABLE 5.1
WATER DEMAND/GENERATION BY
TYPE /SIZE OF HOUSING**

Type/size housing	Number of residents	Residential Water Demand ^a (daily) (gallons per day)
Single-family detached		
2 bedroom	2.13	215
3 bedroom	3.21	320
4 bedroom	3.93	395
5 bedroom	4.73	475
Garden Apartment		
1 bedroom	1.57	120
2 bedroom	2.33	175
3 bedroom	3.56	270
Townhouse		
1 bedroom	1.69	125
2 bedroom	2.02	150
3 bedroom	2.83	210
4 bedroom	3.67	275

Type/size housing	Number of residents	Residential Water Demand ^a (daily) (gallons per day)
High-rise		
studio	1.07	80
1 bedroom	1.34	100
2 bedroom	2.14	160
Mobile home		
1 bedroom	1.73	130
2 bedroom	2.01	150
3 bedroom	3.47	260

Notes: ^a Based on 100 gallons per person per day for single-family detached units and 75 gallons per person per day for other housing types (rounded).

Source: U.S. Census, Public Use File—New Jersey (Units built 1975-1980).

**TABLE 5.2
DESIGN STANDARDS FOR PEAK HOUR FLOW**

Total houses served	Peak hourly rates (gallons per minute per house)
5	8.0
10	5.0
50	3.0
100	2.0
250	1.3
500	0.8
750	0.7
1,000 or more	0.6

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 (c); and in Table 5.2, added Peak Hourly Rate for 1,000 or more Total Houses Served.

5:21-5.3 System design and placement

(a) System design and placement shall comply with the following construction specifications, incorporated herein by reference: all applicable NJ Department of Environmental Protection (NJDEP) rules, the American Water Works Association (AWWA) standards, and in the Pinelands Area, the Standards of the Pinelands Comprehensive Management Plan, with the strictest standards governing.

(b) Distribution mains of the overall system shall be connected into loops so that the supply may be brought to the consumer from more than one direction. In balancing loops in a design, the Hardy-Cross, or an equivalent, method shall be used (see subchapter Appendix incorporated herein by reference). Manning roughness coefficients listed in Table 7.2 in N.J.A.C. 5:21-7.3 may be used in these calculations. Dead-end lines shall be permitted within the design of a looped system provided that there are no more than 20 dwelling units permanently, or no more than 50 dwelling units temporarily, on a dead-end line. When dead-

end lines are used, they shall be provided with a hydrant or blow off at the terminus as a means of flushing.

(c) Valves, except on a permitted dead end, shall be located on distribution mains so that no more than one hydrant would be out of service as a result of a single water main break. They shall be located in all small branches off larger mains; and where eight-inch or larger mains lines intersect, a valve shall be located in each branch. At street intersections, valves shall be located near pipe intersections for ease in finding in the event of a water main break.

(d) In addition to the above requirements, water mains shall be valved so that not more than one-fifth of a mile would be affected by a single water main break. Geared valves on 16-inch mains or larger shall be furnished when required by the municipality.

(e) Gate valves shall be cast-iron body with double-disc gates, bronze mounted conforming to AWWA C500 or resilient-seated wedge, non-rising stem mechanical joint conforming to AWWA C509. Butterfly valves shall conform to AWWA C504. The type of valve to be used shall be as specified by the municipality or utility authority. Valve interior openings shall be full size, and valves on 16-inch mains or larger shall be geared and have suitable bypasses. Valve boxes shall be of the adjustable type with the cover marked "water" and direction of valve operation indicated.

(f) No pipe shall be placed on private property unless the owner of the land is to own or operate the pipe, or an easement deeded to the municipality or utility authority is obtained. All easements shall be a minimum of 20-foot wide unless depth of pipe, soil conditions, or additional utilities require wider. Where the easement is located adjacent to a right of way, the municipality or authority may approve a narrower easement.

(g) A building service connection shall be comprised of a corporation stop at the main, a curb stop, and a water meter. When the meter is located outside a building, an additional shut-off valve shall be installed on the discharge side of the meter. When the meter is located inside a building, valving shall be in accordance with the Plumbing Subcode of the Uniform Construction Code (N.J.A.C. 5:23-3.15). Curb stops and water meters shall be located as specified by the public or private water supplier.

1. Common water service connections shall be permitted where allowed by the Plumbing Subcode of the Uniform Construction Code (N.J.A.C. 5:23-3.15).

(h) Where water system extensions are constructed by developers and meter fees are not paid by the developer, the water meter(s) shall be furnished by the developer and shall be of a manufacture and type approved by the municipality or utility authority. The meter(s) shall read in volume units as determined by the municipality or utility authority. Where meter fees are paid by the developer, the meter(s) shall be furnished by the municipality or utility authority.

(i) Pipe size shall comply with the following requirements:

1. Water mains shall be a minimum diameter of eight inches except at the end of a permanent cul-de-sac, unless another size is required for fire flow and other criteria. A six-inch main may be used when it serves not more than 20 dwelling units and only one fire hydrant.

2. Building service connection pipe shall be a minimum diameter of three-quarter inch.

3. Design capacity of water mains shall be such as to maintain a minimum pressure of 20 pounds per square inch (psi) at street level under all flow conditions.

(j) Pipe materials used in the construction of water mains shall be cement-lined ductile iron, prestressed concrete cylinder pipe, reinforced concrete pressure pipe, or PVC pipe. All pipe and appurtenances shall comply with the applicable AWWA standards in effect at the time of application. All standards referenced in this section are incorporated herein by reference.

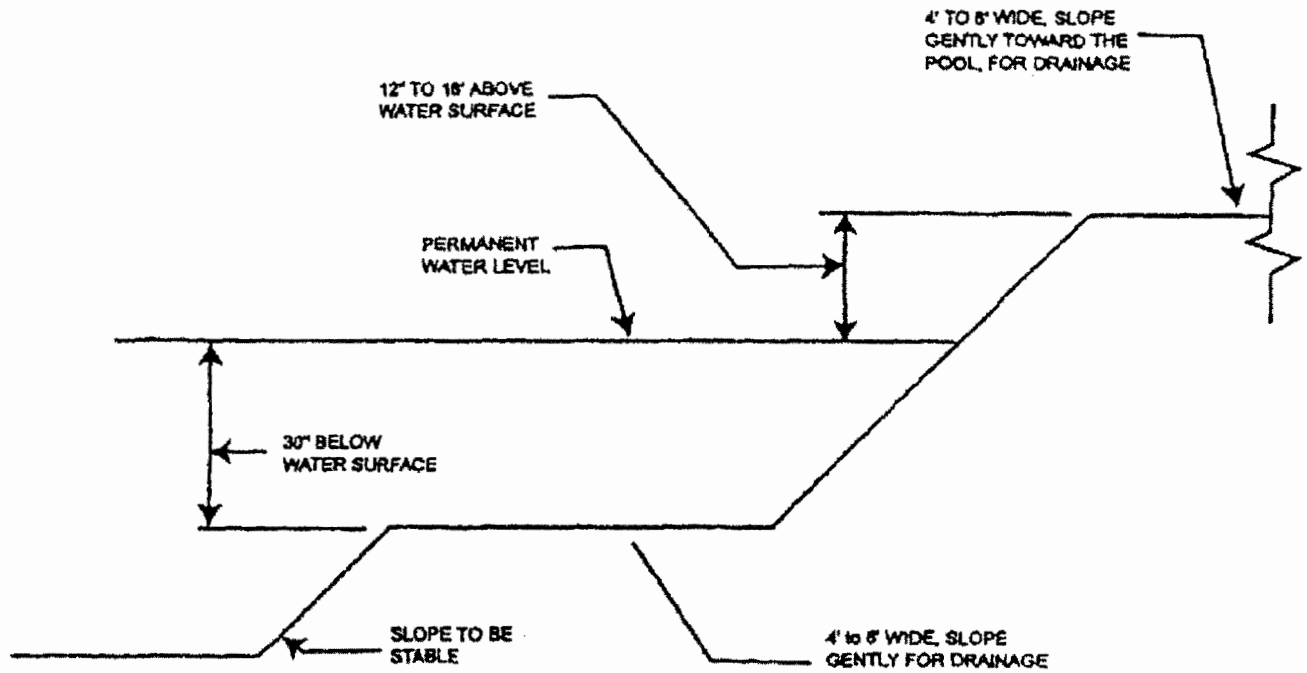
1. Ductile iron pipe, appurtenances, and fittings shall comply with ANSI/AWWA C110/A21.10 (fittings), C111/A21.11 (gasket joints), C115/A21.15 (flanged joints), and C151/A21.51 (pipe). Thickness shall be designed in accordance with ANSI/AWWA C150/A21.50. It shall be cement-mortar lined in accordance with ANSI/AWWA C104/A21.4. Joints shall be gasketed push-on joints or mechanical joints in conformance with ANSI/AWWA C111/A21.11. The exterior of the ductile iron pipe shall be covered with an asphaltic epoxy-type coating. In aggressive soils, ductile iron pipe wrapped in polyethylene in accordance with ANSI/AWWA C105/A21.5 shall be used.

2. Prestressed concrete cylinder pipe with rubber and steel joints shall conform to ANSI/AWWA C301; reinforced concrete pressure pipe (steel cylinder type) shall meet ANSI/AWWA C300; concrete pressure pipe (bar wrapped steel cylinder type) shall meet ANSI/AWWA C303.

3. PVC pipe, appurtenances, and fittings shall conform to ANSI/AWWA C900 or AWWA C909 for pipe sizes four inches to 12 inches and shall conform to AWWA C905 for sizes 14 inches through 36 inches. Joints shall be elastomeric-gasket couplings of a corresponding size. Laboratory performance requirements, as specified in ASTM D3139, shall be met. Solvent-cement couplings shall not be permitted. PVC pipe installations shall be provided with a metallic locator tape.

4. Where transitions to flanged fittings are made, adapters approved by the municipality or water purveyor shall be used.

5. Building service connection pipe shall be type K copper or polyethylene (PE) pressure pipe that complies with ANSI/AWWA C901.



NOTE: NOT DRAWN TO SCALE

NOTE: FOR BASINS WITH PERMANENT POOL OF WATER ONLY

New Rule, R.2005 d.56, effective February 7, 2005.
See: 36 N.J.R. 4025(a), 37 N.J.R. 481(c).

SUBCHAPTER 8. REFERENCED STANDARDS

5:21-8.1 Referenced standards

(a) The following is a list of the standards referenced in this chapter. The standards are listed by the promulgating agency of the standard, the standard identification, the edition of the standard, the title of the standard, and the section(s) of this code that reference(s) the standard. The standards listed in this chapter are not adopted or to be used in their entirety unless the rules specifically so state. The use of the standards included in this chapter is limited to those specific areas of the standard for which this chapter directs the user to the standard.

1. American Association of State Highway and Transportation Officials (AASHTO), Suite 249, 444 North Capitol Street, N.W., Washington, D.C. 20001. Tel. (202) 624-5800 or (800) 231-3475.

<u>Standard reference number</u>	<u>Title</u>	<u>Referenced in N.J.A.C. section number</u>
M33-93	Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type)	Figure 4.1 (Concrete Vertical Curb)
M43-88	Standard Specification for Sizes of Aggregate for Road and Bridge Construction	Figure 6.1
M114-91	Building Brick (Solid Masonry Units Made from Clay or Shale)	5:21-6.2(c)11vii(1)
M213-92	Standard Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)	Figure 4.1 (Concrete Vertical Curb)
M252-02	Standard Specification for Corrugated Polyethylene Drainage Tubing	5:21-7.3(h)3
M294-04	Standard Specification for Corrugated Polyethylene Pipe, 12- to 60-in. Diameter	5:21-7.3(h)3
T99-94	Standard Method of Test for the Moisture-Density Relations of Soils Using a 5.5-lb. (2.5 kg) Rammer and a 12-in. (305 mm) Drop	5:21-7.3(d)3
2001 Edition	A Policy on Geometric Design of Highways and Streets	5:21-4.19(b)6 5:21-4.20(a) 5:21-4.20(b)
1999 Edition	AASHTO Guide for the Development of Bicycle Facilities	5:21-4.2(e) Table 4.3
1993 Edition	Guide for Design of Pavement Structures	5:21-4.18(b) Figure 4.2 Figure 4.3 Figure 4.4 Figure 4.5 Table 4.9

2. American Concrete Pipe Association, Suite 105, 8618 Westwood Center Drive, Vienna, Virginia 22182. Tel. (703) 821-1990. Concrete Pipe Association of New Jersey, Post Office Box 1013, Dover, New Jersey 07802-1013. Tel. (201) 328-8723.

<u>Standard reference number</u>	<u>Title</u>	<u>Referenced in N.J.A.C. section number</u>
Minimum Cover (Minimum Depth of Coverage over Concrete Pipe)	Published in Concrete Pipe Association of New Jersey Newsletter, "The Pipeline," September/October 1985; table derived from information provided by the American Concrete Pipe Association	Table 7.4

3. American Society for Testing and Materials (ASTM) 100 Barr Harbor, West Conshohocken, Pennsylvania 19428. Tel. (610) 832-9500.

<u>Standard reference number</u>	<u>Title</u>	<u>Referenced in N.J.A.C. section number</u>
A48-92	Standard Specification for Gray Iron Castings	5:21-6.2(c)11v 5:21-7.4(f)
A536-84	Standard Specification for Ductile Iron Castings	5:21-6.2(c)11v
C33-93	Standard Specification for Concrete Aggregates	Figure 6.1
C76-90	Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe	5:21-6.2(c)6i 5:21-7.3(d)1i
C150-92	Standard Specification for Portland Cement	5:21-6.2(c)11vii(2)

<p>C909-98 ANSI/AWWA M31 ©1992 Second Edition</p>	<p>through 36 in. Molecularly Oriented Polyvinyl Chloride (PVCO) Pressure Pipe, 4 in. through 12 in. (100 mm through 300 mm), for Water Distribution Manual of Water Supply Practices—Distribution System Requirements for Fire Protection</p>	<p>5:21-5.3(j)3 5:21-6.2(c)8 5:21-5.2(e)</p>
<p>6. Asphalt Institute, Research Park Drive, Post Office Box 14052, Lexington, Kentucky 40512-4052. Tel. (606) 288-4960.</p>		
<p>Standard <u>reference number</u> MS-1, 8th Edition August 1970</p>	<p><u>Title</u> Thickness Design—Full-Depth Asphalt Pavement Structures for Highways and Streets</p>	<p>Referenced in N.J.A.C. section <u>number</u> Table 4.7</p>
<p>7. Institute of Transportation Engineers (ITE), Suite 410, 525 School Street, S.W., Washington, D.C. 20024-2729. Tel. (202) 554-8050.</p>		
<p>Standard <u>reference number</u> Pub. No. IR-016C 7th Edition 2003</p>	<p><u>Title</u> Residential Street Design and Traffic Control Trip Generation</p>	<p>Referenced in N.J.A.C. section <u>number</u> 5:21-1.5(d)2 5:21-4.1(b) Table 4.1</p>
<p>8. Insurance Services Office, Inc. (ISO), 545 Washington Boulevard, Jersey City, New Jersey 07310-1686. Tel. (201) 469-2000 or (800) 888-4476.</p>		
<p>Standard <u>reference number</u> ©1980 Edition 6-80</p>	<p><u>Title</u> Fire Suppression Rating Schedule</p>	<p>Referenced in N.J.A.C. section <u>number</u> 5:21-5.2(e)</p>
<p>9. National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, Massachusetts 02269. Tel. (617) 770-3000.</p>		
<p>Standard <u>reference number</u> Standard 291-1995 Standard 1963-1993</p>	<p><u>Title</u> Fire Flow Testing and Marking of Hydrants Fire Hose Connections</p>	<p>Referenced in N.J.A.C. section <u>number</u> 5:21-5.4(b)2 5:21-5.4(b)1</p>
<p>10. New Jersey Department of Agriculture, State Soil Conservation Committee, John Fitch Plaza, PO Box 330, Trenton, New Jersey 08625. Tel. (609) 292-5540.</p>		
<p>Standard <u>Reference Number</u> April 1987</p>	<p><u>Title</u> Standards for Soil Erosion and Sediment Control in New Jersey</p>	<p>Referenced in N.J.A.C. section <u>number</u> 5:21-7.1(d)9iii 5:21-7.1(h) 5:21-7.2(a) 5:21-7.2(d) 5:21-7.3(b) 5:21-7.5(c)3 5:21-7.5(f)1v 5:21-7.5(f)4x 5:21-7.8(d)2iii</p>
<p>11. New Jersey Department of Environmental Protection (NJDEP), Bureau of Revenue, Maps and Publications Sales Office, 428 East State Street, PO Box 438, Trenton, New Jersey 08625. Tel. (609) 777-1038.</p>		

<u>Standard Reference Number</u>	<u>Title</u>	<u>Referenced in N.J.A.C. section number</u>
April 2004	New Jersey Stormwater Best Management Practices Manual	5:21-7.1(f) 5:21-7.8(a) 5:21-7.8(e)
Revised September 1995	Technical Manual for Land Use Regulation Program (DEP's Bureaus of Inland and Coastal Regulations, Stream Encroachment Permits)	Table 7.2
August 1995	Pinelands Comprehensive Management Plan (New Jersey Pinelands Commission)	5:21-5.3(a) 5:21-6.2(a)

12. New Jersey Department of Transportation (NJDOT), PO Box 600, 1035 Parkway Avenue, Trenton, New Jersey 08625-0600. Tel. (609) 530-2000.

<u>Standard reference number</u>	<u>Title</u>	<u>Referenced in N.J.A.C. section number</u>
November 2001	Standard Specifications for Road and Bridge Construction	5:21-4.17(b) Figure 4.2 Figure 4.3 Figure 4.4 Figure 4.5 Table 4.8 5:21-6.2(c)6.ii(5) 5:21-7.3(h)1v 5:21-7.4(a)
November 2001	Roadway Design Manual	5:21-7.2(c)2ii(2) 5:21-7.2(c)3 Figure 7.1 Figure 7.2
April 1996	Bicycle-Compatible Roadways and Bikeways Planning Design Guidelines	5:21-4.18(b)1 5:21-7.4(b)1

13. New Jersey Society of Municipal Engineers (NJSME), 196 West State Street, Trenton, New Jersey 08608. Tel. (609) 393-0102.

<u>Standard reference number</u>	<u>Title</u>	<u>Referenced in N.J.A.C. section number</u>
Second Edition November 1991	Asphalt Handbook for County and Municipal Engineers	Table 4.7

14. Portland Cement Association, 5420 Old Orchard Road, Skokie, Illinois 60076-0726. Tel. (847) 966-6200

<u>Standard reference number</u>	<u>Title</u>	<u>Referenced in N.J.A.C. section number</u>
©1984	Thickness Design for Concrete Highway and Street Pavements	Table 4.7

15. United States Army Corps of Engineers, Water Resources Support Center, The Hydrologic Engineering Center, 609 Second Street, Davis, California 95616. Tel. (916) 756-1104.

<u>Standard Reference Number</u>	<u>Title</u>	<u>Referenced in N.J.A.C. section number</u>
† Version 2.2, May 2003	HEC-HMS Hydrologic Modeling System	5:21-7.2(c)1v 5:21-7.2(d)

† Documents obtainable from the National Technical Information Service, Springfield, Virginia 22161. Tel. (703) 605-6000 or (800) 553-6847.

16. United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), Post Office Box 2890, Washington, D.C. 20013. Tel. (202) 205-0026. Documents can be downloaded from the following Internet address: <http://www.info.usda.gov/CED/Default.cfm?xSbj=ALL&xAud=24>.

<u>Standard reference number</u>	<u>Title</u>	Referenced in N.J.A.C. section <u>number</u>
April 2002	National Engineering Handbook, Part 630	5:21-7.2(c)4
Technical Release No. 20 PB83-223768 May 1982	Computer Program for Project Formulation—Hydrology	5:21-7.8(d)4vii(2)
Technical Release No. 55 PB87-101580/AS 2nd Edition June 1986	Urban Hydrology for Small Watersheds	5:21-7.2(c)1iv 5:21-7.2(d) 5:21-7.2(a) 5:21-7.2(c)1iii 5:21-7.2(c)3 5:21-7.2(c)7 5:21-7.2(d) 5:21-7.2(e)
Technical Release No. 56 PB85-239622 December 1974	Guide for Design and Layout of Vegetative Wave Protection for Earth Dam Embankments	5:21-7.8(d)4ii(5)
Technical Release No. 69 PB85-245165 February 1983	Riprap for Slope Protection Against Wave Action	5:21-7.8(d)4ii(5)
PB96-111570 June 1, 1990	Engineering Field Handbook Chapter 2—Estimating Runoff and Peak Discharges (corrected version)	5:21-7.2(c)4
PB85-175164/LT July 1, 1984	Engineering Field Handbook Chapter 6— Structures	5:21-7.8(d)4vii(2)
PB 243 644/AS	National Engineering Handbook Section 5 Hydraulics Section	5:21-7.2(c)4
PB 243 645/LT	11— Drop Spillways Section 14—Chute Spillways	5:21-7.8(d)4vii(2)
PB 279 759/LT		
New Jersey Bulletin No. NJ210-3-1	Engineering Field Handbook Supplement – Dimensionless (Delmarva) Unit Hyrdograph	5:21-7.2(c)1vi
September 8, 2003		
New Jersey Bulletin No. NJ210-4-1	Engineering Field Handbook Supplement - Rainfall Frequency Data	5:21-7.2(c)1vi
September 8, 2004		

17. United States Department of Commerce (USDOC), Bureau of the Census, Washington, D.C. 20233. Tel. (202) 482-2000.

<u>Standard reference number</u>	<u>Title</u>	Referenced in N.J.A.C. section <u>number</u>
1975-1980 (Data tabulated by Rutgers University)	Public Use File—New Jersey	Table 4.4 Table 5.1

18. United States Department of Transportation (USDOT), Federal Highway Administration (FHWA), 820 First Street, S.E., Washington, D.C. 20002. Tel. (301) 322-4961.

<u>Standard Reference Number</u>	<u>Title</u>	Referenced in N.J.A.C. section <u>number</u>
†Hydraulic Engineering Circular No. 15 Report No. FHWA-EPD-86-111 PB86-184835 October 1975	Design of Stable Channels with Flexible Linings	5:21-7.8(d)2iii
†Report No. FHWA-TS-79-225 PB83-259903 August 1979	Design of Urban Highway Drainage, The State of the Art	Table 3
†Second Edition FHWA-NHI-01-021 August 2001	HEC-22 Urban Drainage Design Manual	5:21-7.2(c)2ii(1)
†Hydraulic Design Series No. 5 Report No. FHWA-IP-85-15 PB86-196961 September 1985	Hydraulic Design of Highway Culverts	5:21-7.3(d)
‡1988 Edition	Manual on Uniform Traffic Control Devices for Streets and Highways	5:21-4.13(a)

‡ Documents obtainable from the National Technical Information Service, Springfield, Virginia 22161. Tel. (703) 605-6000 or (800) 553-6847.

‡ Documents obtainable from the United States Government Printing Office, Superintendent of Documents, PO Box 371954, Pittsburgh, Pennsylvania 15250-7954. Tel. (202) 512-1800 or (866) 512-1800.

19. Urban Land Institute (ULI), Suite 500 West, 1025 Thomas Jefferson Street, N.W., Washington, D.C. 20007-5201. Tel. (800) 321-5011.

Standard Reference Number	Title	Referenced in N.J.A.C. section number
ULI-ASCE-NAHB 1975	Residential Storm Water Management: Objectives, Principles, and Design Considerations	Table 7.5
<p>Administrative correction. See: 29 N.J.R. 1296(a). Administrative correction. See: 29 N.J.R. 2816(a). 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 the section. Administrative correction. See: 32 N.J.R. 684(b). 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). Added designation (a) to the main paragraph; amended tables in 1, 3, 5, 7, 12 and 13. Amended by R.2002 d.399, effective December 16, 2002. See: 34 N.J.R. 2615(a), 34 N.J.R. 4412(a). Rewrote the section. Public Notice: Notice Regarding the Publication of two Notices of Adoption in the December 16, 2002 New Jersey register. See: 34 N.J.R. 4343(a), 4412(a), 35 N.J.R. 219(b). Amended by R.2004 d.35, effective January 20, 2004.</p>	<p>See: 35 N.J.R. 3981(a), 36 N.J.R. 447(a). In (a)1, inserted "Table 4.9" in tabular column "Referenced in N.J.A.C. section number". Amended by R.2005 d.56, effective February 7, 2005. See: 36 N.J.R. 4025(a), 37 N.J.R. 481(c). Rewrote the section. Amended by R.2007 d.177, effective June 4, 2007. See: 38 N.J.R. 3698(a), 39 N.J.R. 2234(a). In the table in (a)7, substituted "7th Edition" for "6th Edition" and "2003" for "First Printing 1997"; in the table in (a)12, inserted "5.21-7.3(h)1v"; in the introductory paragraph of (a)16, inserted "(NRCS)"; and in the table in (a)16, inserted entries for "New Jersey Bulletin No. NJ210-3-1 September 8, 2003" and "New Jersey Bulletin No. NJ210-4-1 September 8, 2004". Amended by R.2008 d.26, effective January 22, 2008. See: 39 N.J.R. 4363(a), 40 N.J.R. 613(a). In the introductory paragraph of (a), substituted "reference(s)" for "reference"; in the table in (a)1, substituted row "M252-02" for row "M252-94" and row "M294-04" for row "M294-94"; in the table in (a)3, substituted row "D2321-05" for row "D2321-89" and row "D3350-05" for row "D3350-93"; and substituted "(h)3" for "(d)3" throughout the tables in (a)1 and (a)3.</p>	