

2006. 11. 6

PART 1 : Best Walkway / Sidewalk Pictures

PART 2 : Summary of the planning process

PART 3 : USDOT's Sidewalk Design Guidelines

PART 4 : NY State, Pedestrian Facility Design

PART 5 : NEW YORK City, Highway Rules

## Part 1 : Best Walkway / Sidewalk Pictures

# Part 1 : Best Walkway / Sidewalk Pictures

---



# Part 1 : Best Walkway / Sidewalk Pictures

---



# Part 1 : Best Walkway / Sidewalk Pictures

---





## Part 1 : Best Walkway / Sidewalk Pictures



## Part 2 : Summary of the planning process



## Part 2 : Summary of the planning process

---

- 1.1 Before passage of ISTEA in 1991, transportation planning and investment decisions were focused on national transportation priorities that favored automobile travel, such as the completion of the Interstate system.
- 1.2 ISTEA placed a greater focus on the concepts of intermodalism and multimodalism, increased funding opportunities for transportation projects promoting alternatives to the automobile, and emphasized the importance of involving the community in the planning process.

## Part 2 : Summary of the planning process

---

- 1.3 A multimodal system must also be intermodal.  
Intermodalism integrates all forms of transportation, such as highways, public transit systems, sidewalks, and bicycle facilities, into one seamless system.
- 1.4 The trend toward more integrated, multimodal transportation systems has improved transportation options for people with disabilities, especially those who do not drive automobiles.

## Part 2 : Summary of the planning process

---

- 2.1 Since ISTEA was passed, budgets for pedestrian facilities have increased dramatically.
- 2.2 “ modification of sidewalks to comply with the Americans with Disabilities Act of 1990 ” are eligible for Surface Transportation Program funds, the biggest single source of transportation funding for States in the legislation
- 2.3 During the development of the long-range plans and the TIPs, citizens can request funding for sidewalk and trail projects.

## Part 2 : Summary of the planning process

---

2.4 Each State DOT is required to have a pedestrian / bicycle coordinator position.

- Planning and managing new non-motorized facilities and programs
- Creating safety and promotional information for the public
- Helping to develop State and MPO pedestrian and bicycle facility plans
- Serving as the principal liaison among Federal, State, and local agencies and the press, citizen organizations, and individuals on bicycling and walking issues

2.5 Federal legislation requires transportation agencies to engage the public throughout the planning process. The “ public ” consists of a diverse web of people whose varied activities and presence make up the fabric of a community.

## Part 3 : USDOT's Sidewalk Design Guidelines

## Part 3 : USDOT's Sidewalk Design Guidelines

---

1. When sidewalks are not available, pedestrians are forced to share the street with motorists, access to public transportation is restricted, and children might not have safe play areas.
2. Because Federal regulations do not require agencies to build sidewalks, the decision is left to States and local agencies. Some agencies prioritize sidewalk installation, while others do not.
3. The decision to install sidewalks should not be optional. “Sidewalks should be built and maintained in all urban areas, along non–Interstate public highway rights–of–way, in commercial areas where the public is invited, and between all commercial transportation stops and public areas”



# Part 3 : USDOT's Sidewalk Design Guidelines

## 4. Guidelines for sidewalks were compiled in Tables 4–2.1 to 4–2.4.

**Table 4-2.1:**

*Federal Accessibility Guidelines for Accessible Routes*

Source	Maximum Allowable Running Grade without Handrails %	Maximum Grade with Handrails and Level Landings %	Maximum Allowable Running Cross-Slope m	Minimum Clearance Width %	Minimum Clearance Width m	Maximum Allowable Vertical Change in Level mm	Minimum Allowable Vertical Clearance (Overhead) m
ADA Standards for Accessible Design <sup>1</sup> (US DOJ, 1991)	5.0 <sup>2</sup>	8.33 <sup>2</sup>	9.1	2.0	0.915 <sup>3</sup>	6 <sup>4</sup>	2.030
UFAS (US DoD, et al, 1984)	5.0 <sup>2</sup>	8.33 <sup>2</sup>	9.1	2.0	0.915 <sup>3</sup>	6 <sup>4</sup>	2.030

<sup>1</sup> The ADA Standards for Accessible Design are identical in content to ADAAG Sections 1–10. However, the Design Standards are enforceable by the U.S. Department of Justice.

<sup>2</sup> The ADA Standards for Accessible Design require people to use the least slope possible on accessible routes.

<sup>3</sup> Minimum clearance width may be reduced to 0.815 m (32 in) at an obstruction for a maximum length of 0.610 m (24 in).

<sup>4</sup> Changes in level between 5 mm (.25 in) and 13 mm (.5 in) are permitted if beveled with a maximum slope of 50 percent.

**Table 4-2.2:**

*ADAAG-Proposed Section 14 (1994) Accessibility Guidelines for Public Rights-of-Way*

Source	Maximum Allowable Running Grade %	Maximum Grade for a Specified Distance (Run) %	Maximum Allowable Running Cross-Slope m	Minimum Clearance Width %	Maximum Allowable Vertical Change in Level mm	Minimum Allowable Vertical Clearance (Overhead) m
ADAAG-proposed Section 14 (1994) (U.S. Access Board, 1994b)	n/a <sup>1</sup>	n/a	n/a	2.0	0.915	6 <sup>2</sup>

<sup>1</sup> Sidewalk slopes may be consistent with the slope of the adjacent roadway.

<sup>2</sup> Changes in level between 5 mm (.25 in) and 13 mm (.5 in) are permitted if beveled with a maximum slope of 50 percent.

# Part 3 : USDOT's Sidewalk Design Guidelines

Table 4-2.3:

State Guidelines for Sidewalks

Source	Maximum Allowable Running Grade	Maximum Grade for a Specified Distance (Run)	Maximum Allowable Running Cross-Slope	Minimum Clearance Width	Maximum Allowable Vertical Change in Level	Minimum Allowable Vertical Clearance (Overhead)
	%	% m	%	m	mm	m
FL Ped. Planning and Dgn. Guidelines (University of NC Hwy. Safety Research Ctr., 1996)	5.0	n/a <sup>1</sup> n/a <sup>1</sup>	2.0	1.220	n/a	n/a
Oregon Pedestrian Design Guidelines	5.0	8.33 9.1	2.0	1.0	n/a	2.1
Architectural Barriers Act (Texas Department of Licensing and Regulation, 1997)	5.0	8.33 9.1	2.0	0.915	6 <sup>2</sup>	2.030

<sup>1</sup> Florida directs people to the ADA for maximum grade requirements.

<sup>2</sup> Changes in level between 6 mm (.25 in) and 13 mm (.5 in) are permitted if beveled with a maximum slope of 50 percent.

Table 4-2.4:

Additional Recommendations for Sidewalks

Source	Maximum Allowable Running Grade without Handrails	Maximum Grade with Handrails and Level Landings	Maximum Allowable Running Cross-Slope	Minimum Clearance Width	Maximum Allowable Vertical Change in Level	Minimum Allowable Vertical Clearance (Overhead)
	%	% m	%	m	mm	m
Accessibility for Elderly and Handicapped Peds. (Eamhart and Simon, 1987)	5.0	8.33 9.1	2.0	0.915	6 <sup>1</sup>	2.030
ANSI A117.1-1980 (ANSI, 1980)	5.0	8.33 9.1	2.0	0.915	6 <sup>1</sup>	2.030
ANSI A117.1-1992 (Council of American Building Officials, 1992)	5.0	8.33 9.1	2.1	0.915	6 <sup>1</sup>	2.030
Dgn. and Safety of Ped. Facilities (ITE Tech. Council Comm. SA-5, 1998)	8.0	8.0 9.1	2.1	0.915	n/a	n/a

<sup>1</sup> Changes in level between 6 mm (.25 in) and 13 mm (.5 in) are permitted if beveled with a maximum slope of 50 percent.

## Part 3 : USDOT's Sidewalk Design Guidelines

---

- 5.1 The design guidelines produced by the AASHTO focus primarily on vehicle use, whereas ADAAG (American with Disabilities Act Accessibility Guidelines) emphasizes accessible design for pedestrians.

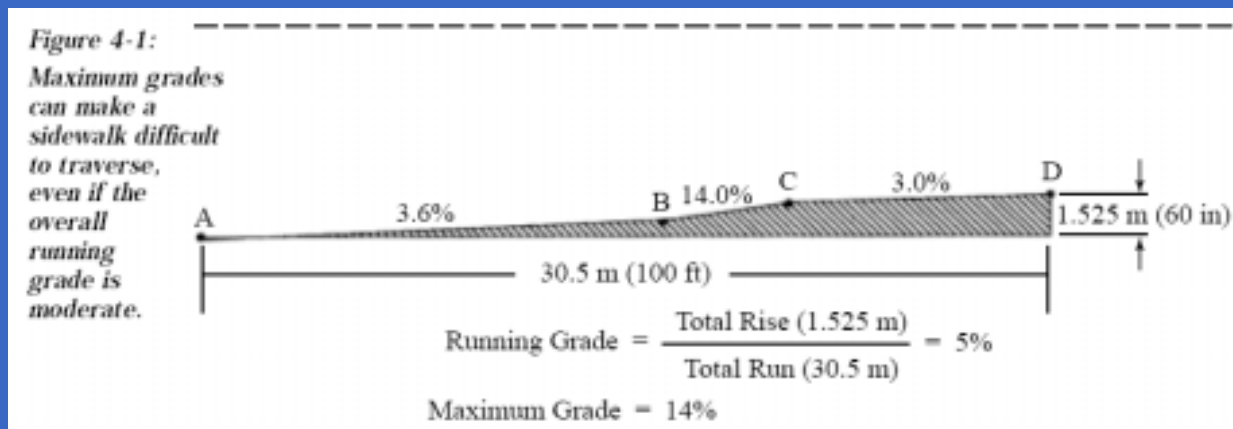
# Part 3 : USDOT's Sidewalk Design Guidelines

---

- The Federal accessibility guidelines (the ADA Standards for Accessible Design and UFAS) were originally developed for accessible routes in buildings and on building sites. In 1994, the U.S. Access Board developed draft accessibility guidelines, proposed by ADAAG (1994), that specifically applied to public rights-of-way. Even though proposed Section 14 (1994) is now reserved, some State DOTs have adopted it as their accessibility standard for public rights-of-way.
- Some State and local transportation agencies have also developed their own standards for sidewalk design because traditional guidelines, such as the *AASHTO Green Book*, do not include comprehensive sidewalk recommendations.
- Other organizations, such as the Institute of Transportation Engineers and the Federal Highway Administration, have also developed sidewalk and curb ramp design recommendations.

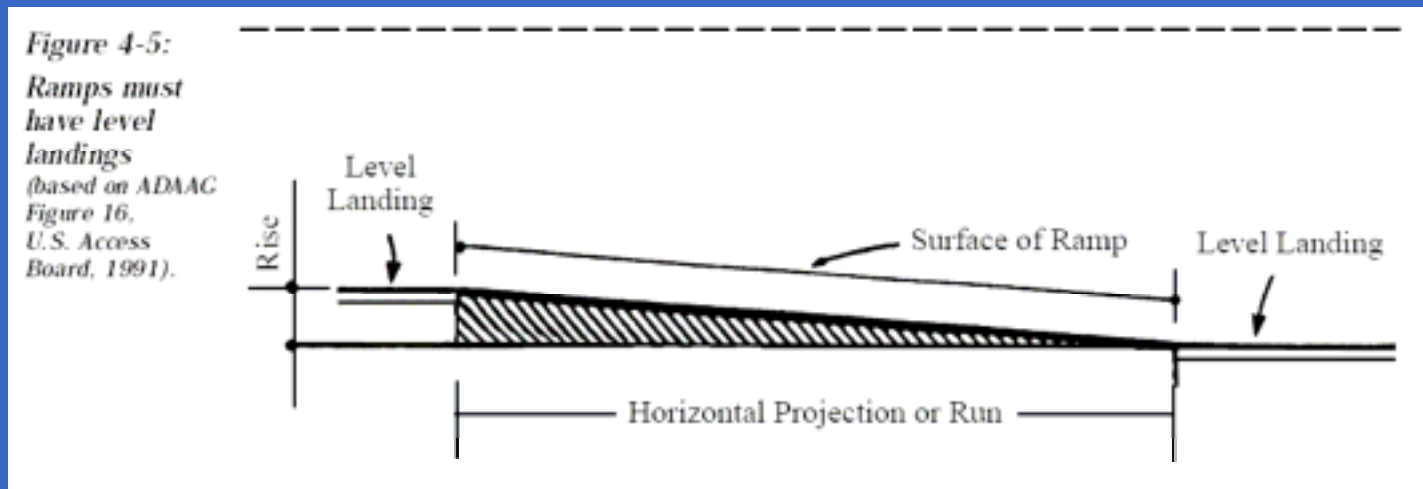
# Part 3 : USDOT's Sidewalk Design Guidelines

- 6.1 *Running grade 5% WHR/WOHR* is defined as the average grade along a contiguous grade. *Maximum grade* is defined as a limited section of path that exceeds the typical running grade. In the pedestrian environment, maximum grade should be measured over 0.610 m (24 in) intervals
- 6.2 Measuring running grade only does not give an accurate understanding of the sidewalk environment because small steep sections may not be detected.



## Part 3 : USDOT's Sidewalk Design Guidelines

6.4 ADAAG and UFAS specify that the maximum grade of an accessible route on a building site be no more than 8.33 percent with a maximum rise of 0.760 m (30 in).





## Part 3 : USDOT's Sidewalk Design Guidelines

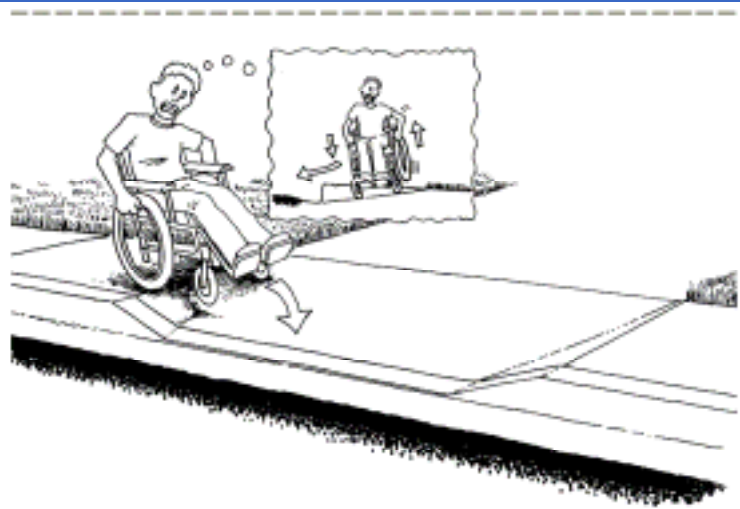
---

- 7.1 Steep cross-slopes can make it difficult for wheelchair or crutch users to maintain lateral balance and can cause wheelchairs to veer downhill or into the street. Cross-slope is determined by taking measurements at intervals throughout a section of sidewalk and then averaging the values.
- 7.2 *Running cross-slope* is defined as the average cross-slope of a contiguous section of sidewalk. Often within the typical running cross-slope, there are inaccessible *maximum cross-slopes* that exceed the running cross-slope. The distance over which a maximum cross-slope occurs significantly influences how difficult a section of sidewalk is to negotiate.

## Part 3 : USDOT's Sidewalk Design Guidelines

7.3 *Rate of change of cross-slope* is defined as the change in cross-slope over a given distance. Rate of change of cross-slope can be measured by placing a digital level a specified distance before and after a maximum cross-slope. The specified distance should be about 0.610m (2ft) to represent the approximate stride of a pedestrian or the wheelbase of a wheelchair. A cross-slope that changes so rapidly that there is no planar surface within 0.610m (2ft) could create a safety hazard.

Figure 4-6:  
When  
cross-slopes  
change rapidly  
over a short  
distance,  
wheelchair  
use becomes  
extremely  
unstable.



## Part 3 : USDOT's Sidewalk Design Guidelines

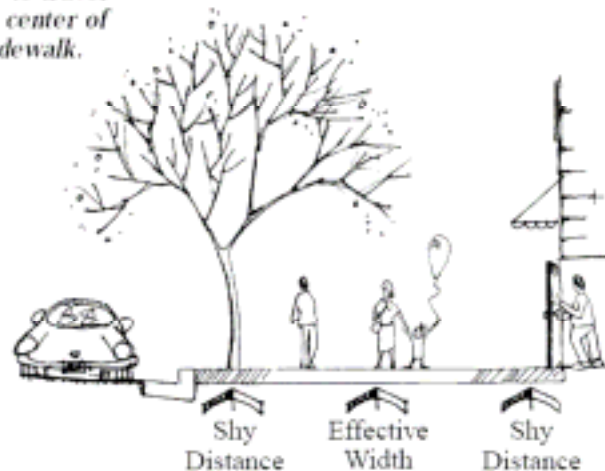
8. The widths of sidewalks not only affect pedestrian usability but also determine the types of access and other pedestrian elements that can be installed.

8.1 *Minimum clearance width* is defined as the narrowest point on a sidewalk. 0.915m

### 8.2 Shy Distance

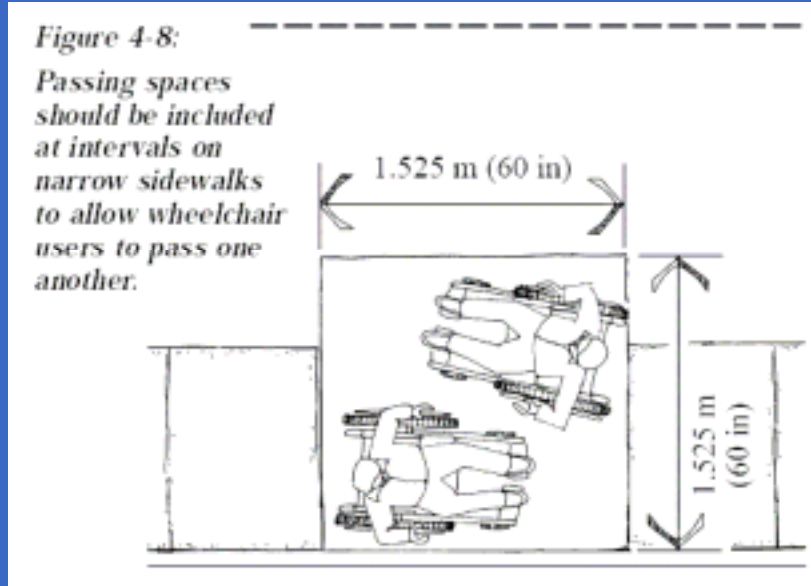
Figure 4-7:

*Most pedestrians prefer to travel in the center of the sidewalk.*



## Part 3 : USDOT's Sidewalk Design Guidelines

9.1 *Passing space* is defined as a section of path wide enough to allow two wheelchair users to pass one another or travel abreast (Figure 4–8).



## Part 3 : USDOT's Sidewalk Design Guidelines

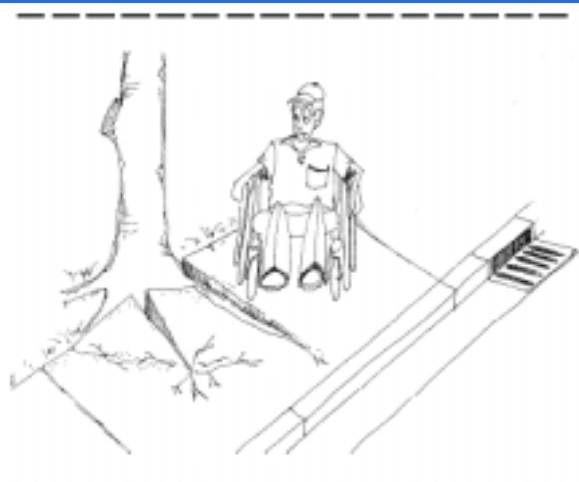
---

10. *Vertical clearance* is defined as the minimum unobstructed vertical passage space required along a sidewalk. The guidelines and recommendations that were reviewed for minimum allowable vertical clearance are included in Tables 4–2.1 through 4–2.4

## Part 3 : USDOT's Sidewalk Design Guidelines

*11. Changes in level* are defined as vertical height transitions between adjacent surfaces or along the surface of a path. In the sidewalk environment, curbs without curb ramps, cracks (Figure 4–10), and dislocations in the surface material are common examples of changes in level. Changes in level also can result at expansion joints between elements such as curb ramps and gutters.

**Figure 4-10:**  
*Changes in level are often caused by tree roots that break through the sidewalk surface.*





## Part 3 : USDOT's Sidewalk Design Guidelines

---

12.1 *Surface* is defined as the material on which a person walks or wheels in the pedestrian environment. Most guidelines for accessibility adhere to ADAAG, which defines accessible surfaces as firm, stable, and slip-resistant.

12.2 A slip-resistant surface provides enough frictional counterforce to the forces exerted in ambulation to permit effective travel (ibid.). For example, a slip-resistant surface prevents a person's shoes, crutch tips, or tires from sliding across the surface while bearing weight. A broom finish is used on many concrete sidewalks to provide sufficient slip resistance for pedestrians.

13. Curb ramps provide critical access between the sidewalk and the street for people with mobility impairments.

## Part 4 : NY State, Pedestrian Facility Design

## Part 4 : NY State, Pedestrian Facility Design

---

- 1.1 Current Department policy is consistent with federal policy and design guidance and states that: “ NYSDOT must make pedestrians integrated elements of our intermodal transportation system. ”
- 1.2 It is Department policy to consider the accommodation of pedestrians, including persons with disabilities, during the earliest scoping stage of Department projects. “ Considerations ” of pedestrian needs should include, at a minimum, a presumption that pedestrians will be accommodated, unless pedestrian access is prohibited by law, deemed unfeasible based on anticipated use, and/or an absence of need is determined.

## Part 4 : NY State, Pedestrian Facility Design

---

- 1.3 This aligns with FHWA policy (23 CFR 652.5) which requires that the safe accommodation of pedestrians and persons with disabilities should be given full consideration during the planning, design, and construction phases of federalaid highway projects.
- 1.4 The Department has determined that this policy also applies to all projects, regardless of the fund source, including 100% state-funded
2. The Department has a duty to construct, maintain, monitor, and update, any facility it owns or maintains to meet the most current ADA standards.

## Part 5 : New York City, Highway Rules

# Part 5 : New York City, Highway Rules

---

## 1. Contents

### 1.1 Definitions

### 1.2 Permits

- a) Initial permit application
- b) General conditions for all permits
- c) Display of permits and signs at worksite
- d) Corrective action request
- e) Orders
- f) Fees
- g) Notice of street operations
- h) Work site safety
- i) Waivers
- j) Suspension of application review
- k) Permit revocation and refusal to renew permit
- l) Refusal to issue permit
- m) Embargo periods
- n) Voiding and reissuing of permits



# Part 5 : New York City, Highway Rules

---

## 1.3 Schedule of fees

## 1.4 Canopies

- a) Permit required
- b) Permit fees
- c) Conditions
- d) Maintenance
- e) Permit expiration, renewal and transferability
- f) Placement of canopies
- g) Design criteria
- h) Application
- i) Removal of unauthorized canopies
- j) Miscellaneous

## Part 5 : New York City, Highway Rules

---

### 1.5 Construction activity

- a) Permit required
- b) Permit requirements
- c) Conditions
- d) Conditions for the placement or storage of construction material and equipment (other than cranes) on the street
- e) Temporarily closing sidewalk
- f) Temporary pedestrian walkway in roadway
- g) Temporarily closing roadway
- h) Placement of shanties or trailers on the street
- i) Crossing a sidewalk
- j) Placement of cranes and derricks on street
- k) Format to be used for irrevocable stand-by letter of credit
- l) Crane restricted area

## Part 5 : New York City, Highway Rules

---

### 1.6 Land contour work

- a) Permit required
- b) Conditions
- c) Exceptions
- d) Application
- e) Approval required

### 1.7 Underground street access covers, transformer vault covers, and gratings

- a) General conditions
- b) Maintenance requirements
- c) Work in critical roadways

# Part 5 : New York City, Highway Rules

---

## 1.8 Newsracks

- a) Definitions
- b) Placement
- c) Unlawful locations
- d) Size, shape and appearance
- e) Maintenance
- f) Indemnification and insurance
- g) Violations and removal
- h) Notices

## Part 5 : New York City, Highway Rules

---

### 1.9 Sidewalk, Curb and Roadway Work

- a) Compliance with requirements
- b) Professional self–certification
- c) Coordination with capital projects—all city, state and federal agencies and public authorities
- d) Required submissions
- e) Waiver
- f) Sidewalk
- g) Curb (concrete, steel faced, stone)
- h) Roadway

## Part 5 : New York City, Highway Rules

---

### 1.10 Street furniture

- a) Permit required
- b) Permit requirements
- c) General conditions
- d) Application
- e) Design criteria
- f) Planters
- g) Non - electrical sidewalk sockets
- h) Bicycle racks
- i) Maintenance required by the permittee or property owner
- j) Temporary security structures

## Part 5 : New York City, Highway Rules

---

### 1.11 Street openings and excavations

- a) Permit required
- b) Permit requirements
- c) Conditions
- d) Application
- e) Excavation and restoration requirements
- f) Excavations and street openings in protected streets
- g) Emergency street openings and excavations

### 1.12 Vacant lots

- a) Property owners' responsibility
- b) Failure to comply
- c) Reinspection
- d) Permit requirements

# Part 5 : New York City, Highway Rules

---

## 1.13 Vaults

- a) Vault defined
- b) Exceptions
- c) License required
- d) Permit required
- e) Applications
- f) Adjustments to license fee
- g) Limitations
- h) Curb
- i) Arched or covered vault
- j) Hoistway openings
- k) Boiler room exit
- l) Sidewalks over vaults
- m) Doors and gratings
- n) Defective covers
- o) Abandoned vaults
- p) Historic districts



## Part 5 : New York City, Highway Rules

---

### 1.14 Miscellaneous

- a) Public pay telephones
- b) Banners
- c) Bandstands and temporary platforms
- d) Helicopter lifts
- e) Temporary festoon/holiday lighting and/or other temporary lighting
- f) Commercial refuse containers
- g) Storage boxes

### 1.15 Removal of unauthorized encroachments

### 1.16 Reserved

### 1.17 Adjudications

## Part 5 : New York City, Highway Rules

---

2.1 Property owners shall, at their own cost, install, repave, reconstruct and maintain in good repair, at all times, the sidewalk abutting their properties, including, but not limited to the intersection quadrant for corner property, in accordance with the specifications of the Department.

Upon failure of a property owner to install, repave, reconstruct or repair the sidewalk pursuant to a Notice of Violation issued by the Department after an inspection, the Department may perform the work or cause it to be performed and shall bill the property owner pursuant to § 19 - 152 of the New York City Administrative Code.

## Part 5 : New York City, Highway Rules

---

### 2.2 General Sidewalk Requirements.

- Except as otherwise authorized, all sidewalks shall be concrete. Sidewalks shall consist of a single course of concrete, 4" in thickness, laid upon a foundation 6" in thickness; in driveways and corner quadrants the concrete slab shall be 7" in thickness.
- The foundation material shall consist of clean 3/4" broken stone, recycled concrete, gravel or clean granular materials meeting the standard specifications. The foundation material shall be tamped and compacted according to the specifications,

2.3 Cores shall be required for all sidewalks in excess of 100 lineal feet. A core shall be required for each 500 square feet of sidewalk or fraction thereof. A minimum of 2 cores is required. Core evaluation reports by an approved laboratory shall be submitted to the Department.

## Part 5 : New York City, Highway Rules

---

2.4 Expansion joints are typically placed at 20' intervals and at the property or lot line. Expansion joints shall be placed between curb and sidewalk.

2.5 Transverse Slope. Sidewalks shall be laid to pitch from the building line toward the curb except in special cases as noted. The minimum slope, calculated on a line perpendicular to the curb, shall be 1" in 5', and the maximum shall be 3" in 5'. Minimum slopes shall be used wherever possible.

## Part 5 : New York City, Highway Rules

---

2.6 Corner Treatment. The two slope lines meeting at the intersection of the two building lines shall drop from a common point at the building corner toward their respective curbs at a rate within the limits prescribed by these regulations.

2.7 Pedestrian Ramps. Any person constructing, reconstructing or repairing a corner shall install pedestrian ramps in accordance with the specifications and in accordance with the latest revision of Standard Drawing H - 1011.

## Part 5 : New York City, Highway Rules

---

2.8 No trees shall be planted in the sidewalk area unless a Street Opening Permit is issued by the Department. No such permit shall be issued by the Department unless the prior written consent of the Department of Parks and Recreation authorizing the tree planting is furnished. Tree pits shall be constructed in accordance with the specifications.

## Part 5 : New York City, Highway Rules

---

### 2.9 Substantial Defects

- a) One or more flags missing or sidewalk never built.
- b) One or more flag(s) cracked to such an extent that one or more pieces of the flag(s) may be loosened or readily removed.
- c) An undermined flag below which there is a visible void or a loose flag that rocks or seesaws.
- d) A trip hazard where the vertical differential between adjacent flags is greater than or equal to 1/2" or where a flag contains one or more surface defects of one inch or greater in all horizontal directions and is 1/2" or more in depth.
- e) Improper slope, which shall mean a) a flag that does not drain toward the curb and retains water, b) flag(s) that shall be replaced to provide for adequate drainage or c) a cross slope exceeding established standards.