

Registrar of Regulations	Date/Time Filed with Registrar of Regulations
<b>AUTHORIZATION TO FILE DOCUMENTS INCORPORATED BY REFERENCE BY DESCRIPTION</b>	REGISTRAR OF REGULATIONS 12 SEP <del>5 AM 4:21</del> <sup>7 PM 3:42 p.m.</sup> / <i>Jane Chaffis</i>

Agency: Virginia Soil and Water Conservation Board

Regulation Numbers: 4VAC50-20  
 Title of Regulation: Impounding Structure Regulations

Effective Date of Regulation: November 8, 2012

Name of Document Incorporated by Reference:  
Trip Generation, 8th Edition, An ITE Informational Report

Attach a summary of the document incorporated by reference, including publication date and a copy of the cover page.

Document available for inspection at the following location:  
Dept. of Conservation and Recreation  
203 Governor St., Suite 302  
Richmond, VA 23219

Copy of referenced document may be procured from:  
Institute of Transportation Engineers  
1627 Eye Street, NW, Suite 600  
Washington, DC 20006  
 Tele 1-202-785-0060; Email ite\_staff@ite.org  
 website: <http://www.ite.org/emodules/scriptcontent/orders/ProductDetail.cfm?pc=IR-016F>

Exemptions Claimed Under (Specific Reference):

Administrative Process Act \_\_\_\_\_

Virginia Register Act \_\_\_\_\_

Virginia Code Commission Regulations § 3.3 (B) (1) - exceeds 500 pages in length; generally available to the public and 3.3 (B)(5)- material is copyrighted or otherwise the property of an organization other than state government \_\_\_\_\_

Request submitted by: David C. Dowling  
Name

Policy and Planning Director  
Title

9/7/2012  
Date

Approved: *Jane Chaffis*  
 Registrar of Regulations

9-7-12  
 Date

## SUMMARY OF DOCUMENT INCORPORATED BY REFERENCE

### *Trip Generation, 8th Edition, 2008*

The Institute of Transportation Engineers (ITE), the group that publishes *Trip Generation, 2008*, is an international educational and scientific association of transportation professionals who are responsible for meeting mobility and safety needs. ITE facilitates the application of technology and scientific principles to research, planning, functional design, implementation, operation, policy development and management for any mode of ground transportation. Through its products and services, ITE promotes professional development of its members, supports and encourages education, stimulates research, develops public awareness programs and serves as a conduit for the exchange of professional information.

*Trip Generation, 8th Edition*, new for 2008, includes updated introductory and instructional material (User's Guide), as well as two data volumes with revised land use descriptions, trip generation rates, equations and data plots. Data from more than 550 sites have been added to the eighth edition, bringing the number of data points contained in the database to more than 4,800.

In addition, 12 new land use classifications are included, for a total of 162 land uses. *Trip Generation* has undergone many other important updates, which are outlined in detail in Chapter 2 of the User's Guide. Several land uses were expanded significantly with the addition of new data. These include: High-Cube Warehouse (152); Free-Standing Discount Superstore (813); Home Improvement Superstore (862); Discount Home Furnishing Superstore (869); and Drive-in Bank (912).

This 1,919-page report is crucial for transportation professionals conducting site impact studies, determining on-site circulation patterns, performing access management studies, determining traffic signal timing and conducting environmental assessments.

Volume 1 includes the Table of Contents for all three volumes.

# **TRIP GENERATION**

**An ITE Informational Report**

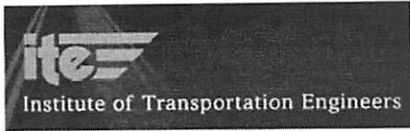
**8th Edition • Volume 1 of 3**

---

## **USER'S GUIDE**



**Institute of Transportation Engineers**



- BOOKSTORE
- EMPLOYMENT CENTER
- TECHNICAL INFORMATION
- PROFESSIONAL DEVELOPMENT
- ITE COMMUNITY
- ABOUT ITE
- JOIN ITE TODAY!
- COUNCILS
- DIRECTORIES
- MEETINGS
- MARKETING
- PAY DUES
- LOGIN | LOGOUT

Search

- > MY PROFILE
- > CHECK-OUT
- > COUNCIL MEMBERSHIP

[Search The ITE Bookstore](#)

### Trip Generation, 8th Edition: An ITE Informational Report



Trip Generation, 8th Edition: An ITE Informational Report includes updated introductory and instructional material (User's Guide), as well as two data volumes with revised land use descriptions, trip generation rates, equations and data plots. Data from more than 550 sites have been added to the eighth edition, bringing the number of data points contained in the database to more than 4,800.

In addition, 12 new land use classifications are included, for a total of 162 land uses. Trip Generation has undergone many other important updates, which are outlined in detail in Chapter 2 of the User's Guide. Several land uses were expanded significantly with the addition of new data. These include: High-Cube Warehouse (152); Free-Standing Discount Superstore (813); Home Improvement Superstore (862); Discount Home Furnishing Superstore (869); and Drive-in Bank (912).

This report is a must have for transportation professionals conducting site impact studies, determining on-site circulation patterns, performing access management studies, determining traffic signal timing and conducting environmental assessments.

- Table of Contents



ISBN: ISBN-13:978-1-933452-43-2, ISBN-10: 1-933452-43-9

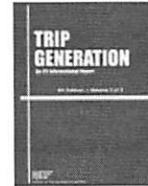
**Publisher:** ITE

**Format:** Hardcover

**Edition:** 8th

**Pages:** 1919 pp.

**Publishing Date:** 12/08



**Member Price:** \$ 325.00  
**Non-Member Price:** \$ 406.25  
**Item #IR-016F**

[back to product list](#)

[add to my products](#)

### Institute of Transportation Engineers

1627 Eye Street, NW, Suite 600 | Washington, DC 20006 USA

Telephone: +1 202-785-0060 | Fax: +1 202-785-0609

ite\_staff@ite.org

ITE Canon of Ethics

© 2012 Institute of Transportation Engineers



# Table of Contents

## Volume 1, User's Guide

<b>Preface</b> .....	<b>ix</b>
<b>Acknowledgments</b> .....	<b>xi</b>
<b>Chapter 1. Introduction</b> .....	<b>1</b>
Purpose .....	1
Use of the Report .....	1
Related Document.....	1
About the Data.....	1
<b>Chapter 2. Changes Since the Seventh Edition</b> .....	<b>3</b>
Land Use Codes and Titles .....	3
Land Use Descriptions .....	3
Specialized Land Use Data .....	5
Definition of Terms.....	5
Independent Variables and Time Periods.....	5
Statistical Data.....	6
Other.....	6
<b>Chapter 3. Definition of Terms</b> .....	<b>7</b>
<b>Chapter 4. Description of the Database</b> .....	<b>11</b>
Data Collection .....	11
Data Analysis and Storage .....	11
Data Age.....	11
Variations in the Statistics.....	12
Limitations of the Data Plots.....	12
<b>Chapter 5. Description of Data Plots and Reported Statistics</b> .....	<b>13</b>
Data Plots .....	13
Reported Statistics .....	13
<b>Chapter 6. Instructions</b> .....	<b>17</b>
Understanding the Methodologies.....	17
Sample Problem.....	18
Choice of Day and Time Period.....	18
<b>Chapter 7. Update Procedure</b> .....	<b>19</b>
<b>Appendix A. Sources</b> .....	<b>21</b>
<b>Appendix B. Data Collection Form and User Comment Form</b> .....	<b>35</b>

# Volume 2, Trip Generation Rates, Plots and Equations

## Port and Terminal (Land Uses 000-099)

CODE	LAND USE	PAGE
010	Waterport/Marine Terminal.....	1
021	Commercial Airport.....	4
022	General Aviation Airport .....	32
030	Truck Terminal.....	55
090	Park-and-Ride Lot with Bus Service .....	75
093	Light Rail Transit Station with Parking.....	85

## Industrial/Agricultural (Land Uses 100-199)

CODE	LAND USE	PAGE
110	General Light Industrial.....	89
120	General Heavy Industrial.....	117
130	Industrial Park .....	132
140	Manufacturing .....	160
150	Warehousing .....	188
151	Mini-Warehouse .....	217
152	High-Cube Warehouse.....	272
170	Utilities.....	282

## Residential (Land Uses 200-299)

CODE	LAND USE	PAGE
210	Single-Family Detached Housing.....	289
220	Apartment.....	326
221	Low-Rise Apartment.....	354
222	High-Rise Apartment.....	367
223	Mid-Rise Apartment.....	380
224	Rental Townhouse.....	385
230	Residential Condominium/Townhouse .....	387
231	Low-Rise Residential Condominium/Townhouse .....	415
232	High-Rise Residential Condominium/Townhouse .....	420
233	Luxury Condominium/Townhouse .....	430
240	Mobile Home Park.....	435
251	Senior Adult Housing—Detached.....	472
252	Senior Adult Housing—Attached.....	482
253	Congregate Care Facility .....	488
254	Assisted Living .....	499
255	Continuing Care Retirement Community .....	523
260	Recreational Homes.....	529
265	Timeshare .....	548
270	Residential Planned Unit Development.....	555

### **Lodging (Land Uses 300-399)**

<b>CODE</b>	<b>LAND USE</b>	<b>PAGE</b>
310	Hotel.....	570
311	All Suites Hotel.....	598
312	Business Hotel.....	610
320	Motel.....	620
330	Resort Hotel.....	644

### **Recreational (Land Uses 400-499)**

<b>CODE</b>	<b>LAND USE</b>	<b>PAGE</b>
411	City Park.....	658
412	County Park.....	662
413	State Park.....	672
414	Water Slide Park.....	687
415	Beach Park.....	690
416	Campground/Recreational Vehicle Park.....	699
417	Regional Park.....	705
418	National Monument.....	726
420	Marina.....	731
430	Golf Course.....	744
431	Miniature Golf Course.....	772
432	Golf Driving Range.....	774
433	Batting Cages.....	780
435	Multipurpose Recreational Facility.....	782
437	Bowling Alley.....	785
440	Adult Cabaret.....	787
441	Live Theater.....	789
443	Movie Theater without Matinee.....	791
444	Movie Theater with Matinee.....	795
445	Multiplex Movie Theater.....	810
452	Horse Racetrack.....	832
453	Automobile Racetrack.....	837
454	Dog Racetrack.....	839
460	Arena.....	841
465	Ice Skating Rink.....	843
473	Casino/Video Lottery Establishment.....	845
480	Amusement Park.....	847
481	Zoo.....	857
488	Soccer Complex.....	859
490	Tennis Courts.....	867
491	Racquet/Tennis Club.....	872
492	Health/Fitness Club.....	896
493	Athletic Club.....	903
495	Recreational Community Center.....	912

# Volume 3, Trip Generation Rates, Plots and Equations

## **Institutional (Land Uses 500-599)**

CODE	LAND USE	PAGE
501	Military Base.....	922
520	Elementary School.....	933
522	Middle School/Junior High School .....	946
530	High School.....	959
534	Private School (K-8).....	984
536	Private School (K-12).....	991
540	Junior/Community College .....	1002
550	University/College .....	1030
560	Church.....	1043
561	Synagogue .....	1058
565	Day Care Center .....	1067
566	Cemetery.....	1095
571	Prison .....	1103
590	Library .....	1112
591	Lodge/Fraternal Organization .....	1131

## **Medical (Land Uses 600-699)**

CODE	LAND USE	PAGE
610	Hospital .....	1133
620	Nursing Home .....	1161
630	Clinic .....	1183
640	Animal Hospital/Veterinary Clinic.....	1191

## **Office (Land Uses 700-799)**

CODE	LAND USE	PAGE
710	General Office Building .....	1194
714	Corporate Headquarters Building.....	1210
715	Single Tenant Office Building .....	1221
720	Medical-Dental Office Building.....	1228
730	Government Office Building .....	1247
731	State Motor Vehicles Department .....	1250
732	United States Post Office .....	1269
733	Government Office Complex.....	1288
750	Office Park .....	1296
760	Research and Development Center.....	1318
770	Business Park .....	1340

## **Retail (Land Uses 800-899)**

CODE	LAND USE	PAGE
812	Building Materials and Lumber Store.....	1356



813	Free-Standing Discount Superstore.....	1375
814	Specialty Retail Center.....	1386
815	Free-Standing Discount Store.....	1396
816	Hardware/Paint Store.....	1415
817	Nursery (Garden Center) .....	1443
818	Nursery (Wholesale) .....	1471
820	Shopping Center .....	1497
823	Factory Outlet Center.....	1509
841	New Car Sales .....	1519
843	Automobile Parts Sales.....	1533
848	Tire Store .....	1540
849	Tire Superstore .....	1557
850	Supermarket.....	1572
851	Convenience Market (Open 24 Hours) .....	1583
852	Convenience Market (Open 15-16 Hours) .....	1593
853	Convenience Market with Gasoline Pumps .....	1598
854	Discount Supermarket.....	1617
857	Discount Club.....	1627
860	Wholesale Market .....	1646
861	Sporting Goods Superstore.....	1651
862	Home Improvement Superstore .....	1654
863	Electronics Superstore .....	1664
864	Toy/Children's Superstore .....	1670
865	Baby Superstore .....	1673
866	Pet Supply Superstore .....	1675
867	Office Supply Superstore .....	1679
868	Book Superstore .....	1681
869	Discount Home Furnishing Superstore .....	1684
872	Bed and Linen Superstore .....	1690
875	Department Store.....	1692
876	Apparel Store .....	1700
879	Arts and Crafts Store.....	1704
880	Pharmacy/Drugstore without Drive-Through Window .....	1707
881	Pharmacy/Drugstore with Drive-Through Window .....	1714
890	Furniture Store .....	1721
896	Video Rental Store .....	1740

**Services (Land Uses 900-999)**

CODE	LAND USE	PAGE
911	Walk-in Bank .....	1744
912	Drive-in Bank.....	1746
918	Hair Salon .....	1768
920	Copy, Print and Express Ship Store.....	1770
925	Drinking Place .....	1772
931	Quality Restaurant .....	1775

932	High-Turnover (Sit-Down) Restaurant.....	1794
933	Fast-Food Restaurant without Drive-Through Window .....	1813
934	Fast-Food Restaurant with Drive-Through Window .....	1820
935	Fast-Food Restaurant with Drive-Through Window and No Indoor Seating .....	1841
936	Coffee/Donut Shop without Drive-Through Window .....	1843
937	Coffee/Donut Shop with Drive-Through Window .....	1850
938	Coffee/Donut Shop with Drive-Through Window and No Indoor Seating .....	1864
939	Bread/Donut/Bagel Shop without Drive-Through Window .....	1870
940	Bread/Donut/Bagel Shop with Drive-Through Window .....	1873
941	Quick Lubrication Vehicle Shop .....	1876
942	Automobile Care Center.....	1880
943	Automobile Parts and Service Center .....	1886
944	Gasoline/Service Station.....	1888
945	Gasoline/Service Station with Convenience Market .....	1896
946	Gasoline/Service Station with Convenience Market and Car Wash .....	1908
947	Self-Service Car Wash.....	1915
948	Automated Car Wash.....	1919

# Preface

*Trip Generation* is an informational report of the Institute of Transportation Engineers (ITE). The information in this document has been obtained from the research and experiences of transportation engineering and planning professionals. ITE informational reports are prepared for informational purposes only. They do not include ITE recommendations on the best course of action or the preferred application of the data.

*Trip Generation* is an educational tool for planners, transportation professionals, zoning boards and others who are interested in estimating the number of vehicle trips generated by a proposed development. This document is based on more than 4,800 trip generation studies submitted to ITE by public agencies; consulting firms; universities and colleges; developers; associations; and local sections, districts and student chapters of ITE.

In June 2004, ITE produced a supplemental publication to offer recommendations on the preferred application of the data in this report. This publication, the *Trip Generation Handbook, Second Edition* (Publication Number RP-028B), has two primary purposes: to provide

instruction and guidance in the proper use of data presented in *Trip Generation* and to provide information on supplemental issues of importance in estimating trip generation for development sites. Some additional topics covered in the *Trip Generation Handbook, Second Edition* include primary/pass-by/diverted link trips, multi-use developments, truck trip generation and transportation demand management programs.

Users are encouraged to review and become familiar with this *User's Guide* and the *Trip Generation Handbook, Second Edition* prior to using the data contained in Volumes 2 and 3.

User comments on *Trip Generation* are invited. Through user feedback, ITE has enhanced each subsequent edition of *Trip Generation*. ITE continually seeks additional ways to increase the value of this document and requests that users provide recently collected data for the land uses presented in *Trip Generation* or any other land uses for inclusion in future editions and updates. Data collection and user comment forms are included in Appendix B of this volume.