Access Management and Site Plan Review

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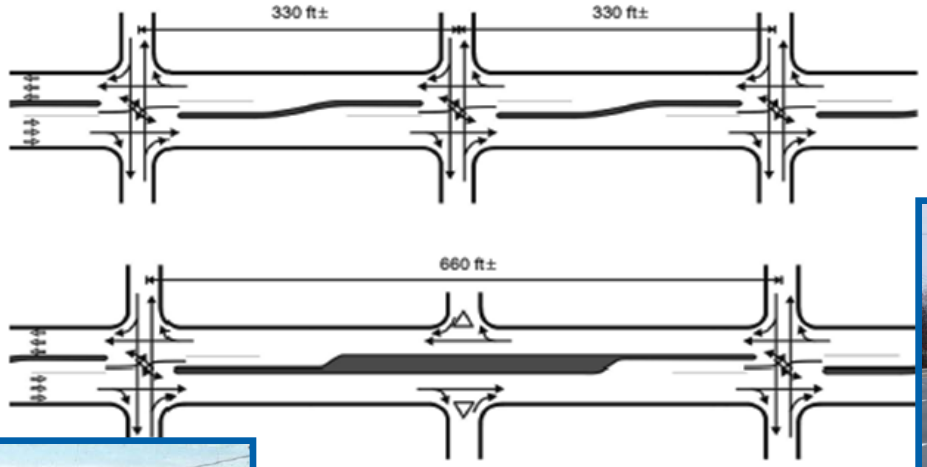
Access Management

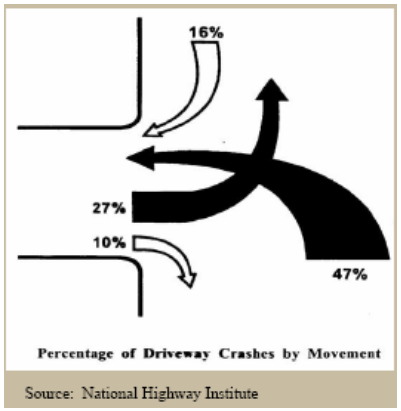


Access Management

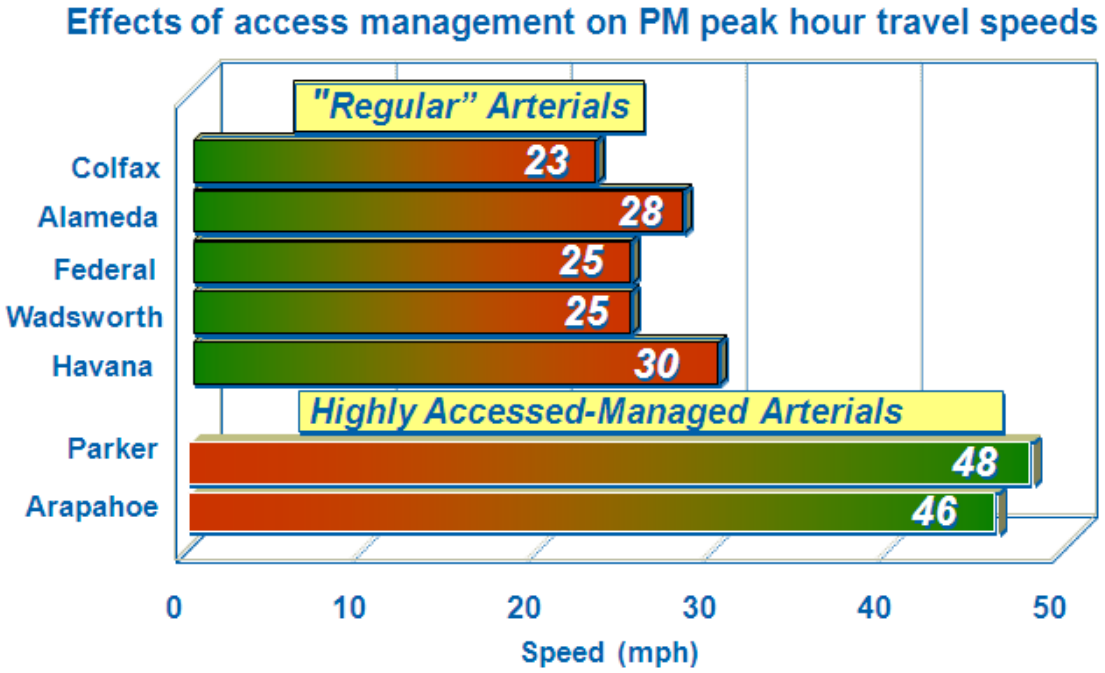
What is Access Management?

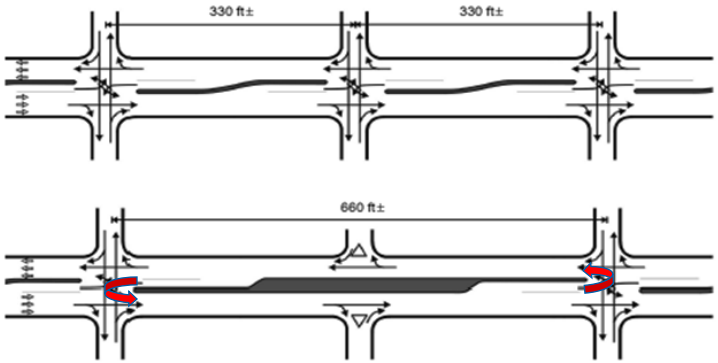
- Managing Location, Number, Spacing, and Design of
  - Entrances to highways
  - Intersections and median openings
  - Traffic signals
- Goal is to
  - Preserve safety
  - Preserve capacity
  - Provide appropriate access to property
- AM Regulations and Standards replaced *Minimum Standards of Entrances to State Highways*
  - For VDOT Principal Arterial Highways in 2008
  - For all other VDOT highways in 2009

Access Management: Research Findings



74% of crashes at driveway connections involve left turns





Making a U-Turn at an intersection is 25% safer than a left turn across highway lanes

Access Management Techniques: Geography

- Location
  - Determines sight distance
  - Can be used to reduce conflict points
- Number and Spacing
  - Separates decision points
  - Improves signal operation
  - Simplifies driving task

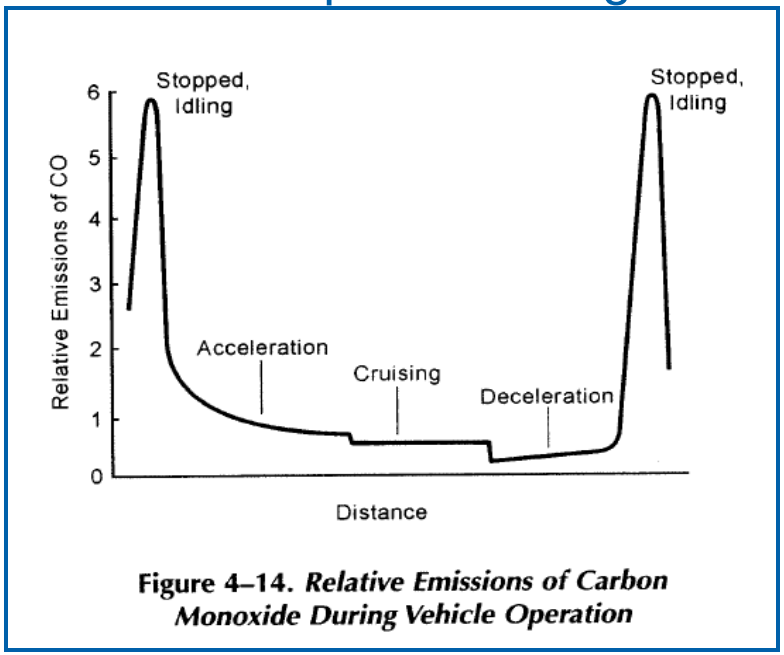
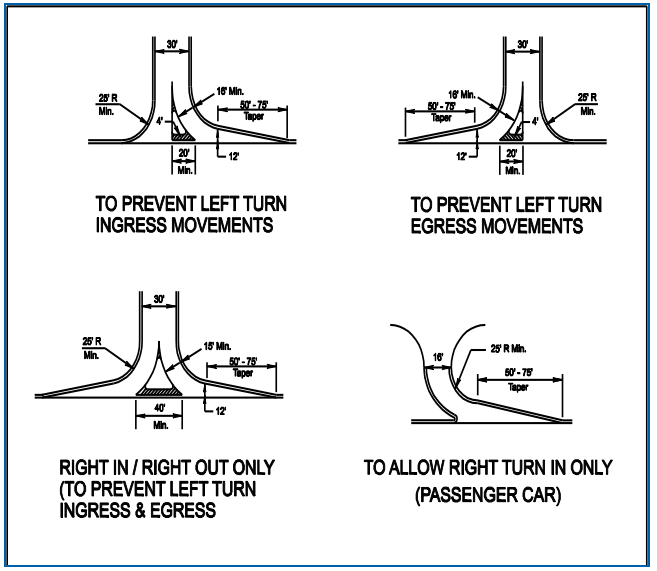


Figure 4–14. ***Relative Emissions of Carbon Monoxide During Vehicle Operation***

Access Management Techniques: Design

- Turn Lane
  - Removes slowing vehicles from main line (limits speed differential)
- Entrance width
  - Simplifies driving task
- Throat length
  - Keeps queues from impacting main line
- Median
  - Reduces conflict points



Access Management Regulations: Entrance Types

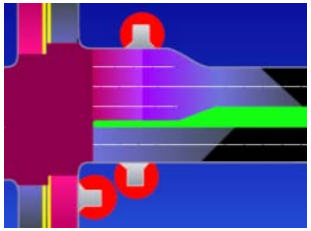
Different Entrance Types Have Different Requirements

- Private Entrance
  - Up to 2 residences, access to fields, or utility site generating up to 10 trips per day
  - No set sight distance required (“best possible”)
  - Normally 12’-16’ gravel entrance (paved in C&G sections)
- Low Volume Commercial Entrance
  - Not a private entrance but serves up to 50 trips per day (or five single family homes)
  - Stopping sight distance required *
  - Normally 12’-16’ gravel entrance (paved in C&G sections)
- Commercial Entrance
  - Expected to handle more than 50 trips per day
  - Intersection sight distance required
  - Normally 30’ paved entrance

Access Management Regulations
Commercial Entrances

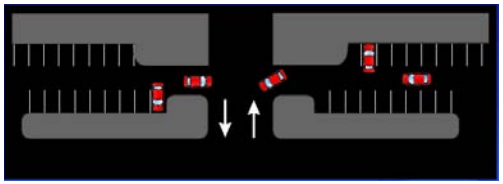
Entrances Not Permitted within Functional Area of Intersection

(24VAC30-73-120 C 1)



Exception

- Traffic engineering study shows no safety or operational impacts



Shared Entrances

24VAC30-73-120 C 2

Exceptions

- If adjoining property owner will not agree – provide written evidence
- Physical constraints such as topography, environmental issues, hazardous land uses

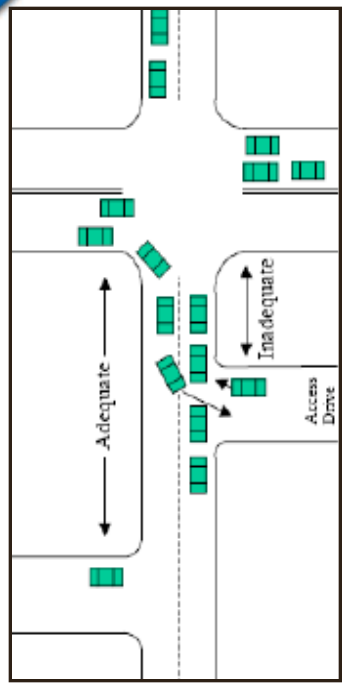
Cross-parcel Connections to Adjoining Undeveloped Properties

(24VAC30-73-120 C 1)

Exception

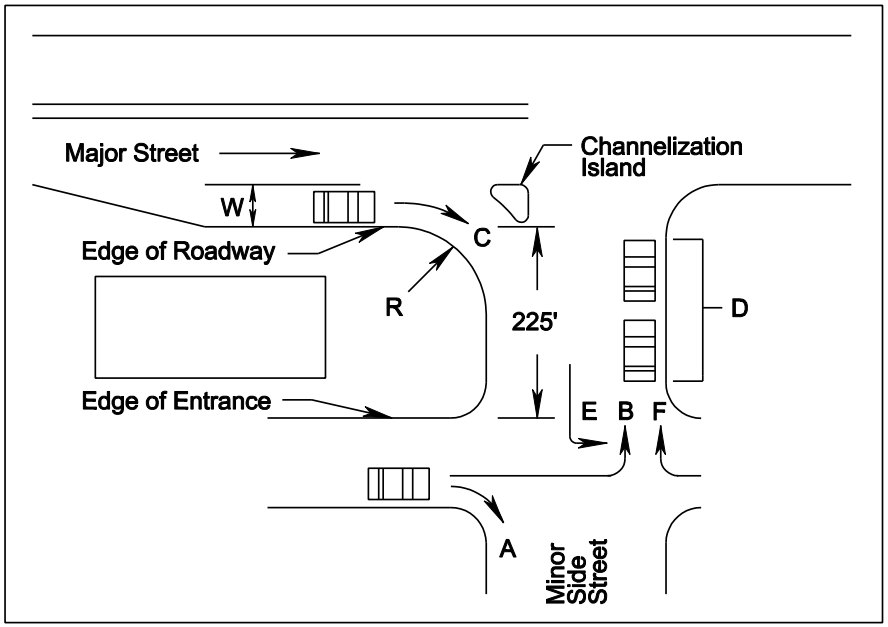
- Physical constraints such as topography, environmental issues, hazardous land uses

Appendix F, Road Design Manual



Corner Clearance on Minor Side Street

Keep Entrances Away from Intersection to Reduce Congestion & Enhance Safety



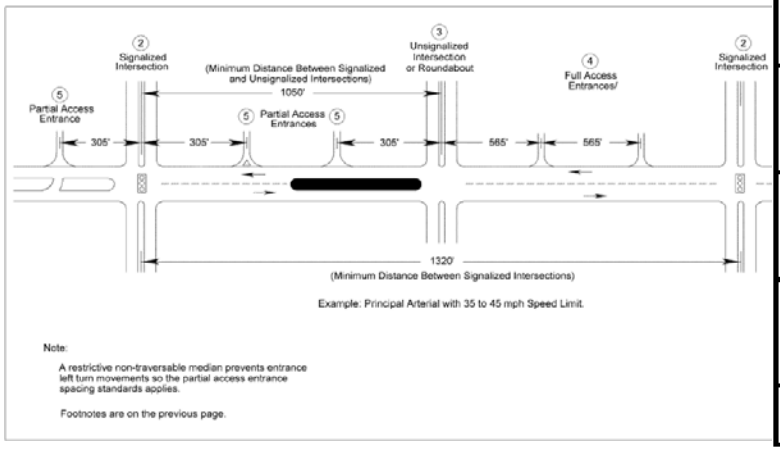
Downstream (Top to Bottom):

Separate (C) from entrance turning movements (A) by 225 ft (20 mph intersection sight distance)

Upstream (Bottom to Top):

225 ft plus width (W) of major street right turn lane or length of queue (D) to protect E, B, F turning movements

Access Management Standards
Entrance Spacing (Appendix F Table 2-2)



Highway Functional Classification	Legal Speed Limit (mph)①	Minimum Centerline to Centerline Spacing (Distance) in Feet			
		Spacing from Signalized Intersections to Other Signalized Intersections ②	Spacing from Unsignalized Intersections & Full/Directional Median Crossovers to Signalized or Unsignalized Intersections& Full/Directional Median Crossovers ③	Spacing from Full Access Entrances to Other Full Access Entrances and Any Intersection or Median Crossover ④	Spacing from Partial Access One or Two Way Entrances to Any Type of Entrance, Intersection or Median Crossover ⑤
Principal Arterial	≤ 30 mph 35 to 45 mph ≥ 50 mph	1,050 1,320 2,640	880 1,050 1,320	440 565 750	250 305 495
Minor Arterial	≤ 30 mph 35 to 45 mph ≥ 50 mph	880 1,050 1,320	660 660 1,050	355 470 555	200 250 425
Collector	≤ 30 mph 35 to 45 mph ≥ 50 mph	660 660 1,050	440 440 660	225 335 445	200 250 360
Local Street⑥	Commercial entrance spacing: See Figure 4-11.				

Exceptions:

- Plan or proffer setting location of entrance approved prior to AM regulations
- Under approved access management corridor plan
- Within established business corridor
- Within urban development area (or VDOT/locally adopted Multimodal Activity Center)
- Needed to meet SSAR connectivity requirements
- Insufficient frontage available

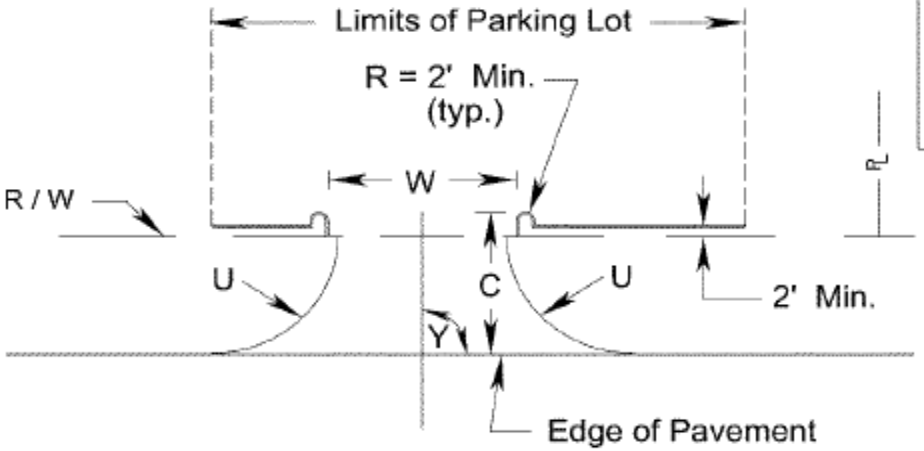
Access Management Standards
Moderate Volume Commercial Entrance (Appendix F)

MODERATE VOLUME COMMERCIAL ENTRANCE DESIGN ALONG HIGHWAYS WITH SHOULDERS

Site Requirements For This Design

Maximum Highway VPD : 5,000
Maximum Entrance VPD : 200
Maximum Entrance VPD Truck Trips : 10%

SINGLE TWO - WAY ENTRANCE



LETTER SYMBOL	DIMENSIONS
C	25' Minimum
U *	25' Minimum. Curb and Gutter or Curbing is not required. 30' Min. radius required when channelization island is used.
W *	18' Minimum 30' Maximum
Y *	90° Prefered 60° Minimum

* For Subdivision Streets and Alleys, radii, width and angle should be in accordance with Subdivision Street Design Guide in the Road Design Manual, Appendix B.

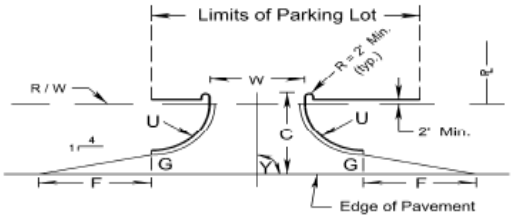
Notes:

Entrance details shown on this sheet may be modified to meet specific site requirements as directed or approved by the Engineer at the Residency or District, when based on sound engineering principles.

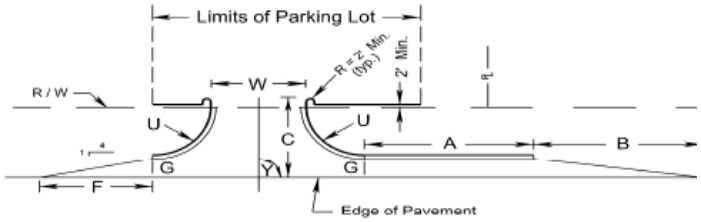
Access Management Standards
Entrance Design Details (Appendix F)

COMMERCIAL ENTRANCE DESIGNS ALONG HIGHWAYS WITH SHOULDERS

SINGLE TWO - WAY ENTRANCE



SINGLE TWO - WAY ENTRANCE
WITH RIGHT TURN LANE AND TAPER



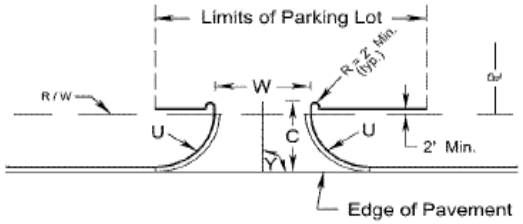
Curb & Gutter Section

LETTER SYMBOL	DIMENSIONS
A	As determined by the Engineer
B	100' or greater
C	See Entrance Throat Table 4-2 and Corner Clearance Figure 4-5.
F	48' or greater
G	12'
U*	25' - 50' radii, Curb and Gutter or Curbing. The selected shall accommodate the anticipated type of vehicle usage. Larger radii should be considered by the designer or may be required by the Engineer if larger vehicles are anticipated; however, in no case shall radius be less than 25'. 30' Min. radius required when channelization island is used.
W*	30' - 40'
Y*	90° Prefered 60° Minimum

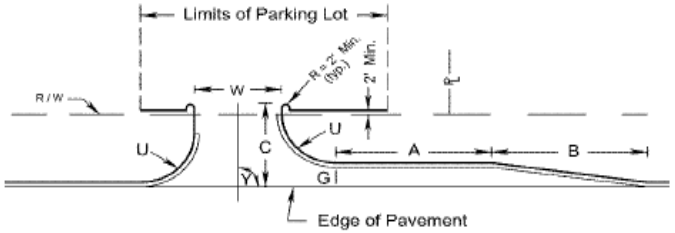
Shoulder Section

COMMERCIAL ENTRANCE DESIGNS ALONG HIGHWAYS WITH CURB AND GUTTER

SINGLE TWO - WAY ENTRANCE



SINGLE TWO - WAY ENTRANCE
WITH RIGHT TURN LANE AND TAPER



LETTER SYMBOL	DIMENSIONS
A	As determined by the Engineer
B	100' or greater
C	See Entrance Throat Table 4-2 and Corner Clearence Figure 4-5.
G	12'
U*	25' - 50' The radii selected shall accommodate the anticipated type of vehicle usage. Larger radii should be considered by the designer or may be required by the Engineer if larger vehicles are anticipated; however, in no case shall radius be less than 25'. 30' Min. radius required when channelization island is used.
W*	30' - 40'
Y*	90° Prefered 60° Minimum

* For Subdivision Streets and Alleys, radii, width and angle should be in accordance with Subdivision Street Design Guide in the Road Design Manual, Appendix B.

Notes:

Entrance details shown on this sheet may be modified to meet specific site requirements as directed or approved by the Engineer at the Residency or District, when based on sound engineering principles.

If an Accessible route as defined in Section 15.2-2021 in the Code of Va. is present, curb ramps in accordance with St'd. CG-12 will be provided.

Site Plans

VDOT Involvement in Land Development

Authorized by Titles 15.2 and 33.1 of the Code of Virginia

- Comprehensive plans and amendments
  - Provide assistance with transportation plan (at request of locality - § 15.2-2223)
  - Review proposal (at request of locality or if TIA regulations triggered - § 15.2-2222.1 or if Transportation Plan involved - § 15.2-2223)
  - Review “official map” (required - § 15.2-2237 for counties that have “official map”)
- Zoning
  - Review proposals (at request of locality or if Ch. 527 triggered - § 15.2-2222.1)
- Site plans
  - Review proposals (at request of locality - § 15.2-2258 and § 15.2-2286)
- Subdivisions
  - Review of preliminary plats (at request of locality - § 15.2-2260)
  - Review and approval (required for streets intended for state maintenance - § 33.1-70.3 or others at request of locality - § 15.2-2259)
- Entrances
  - Review and approval (required - § § 33.1-197 through 33.1-198.1)

VDOT Involvement in Land Development

VDOT's Land Development Regulations

http://www.virginiadot.org/projects/landuse.asp

- Traffic Impact Analysis (Chapter 527)
  - Provide traffic information on land use proposals
- Secondary Street Acceptance Requirements
  - Requirements for streets to be accepted by VDOT
- Access Management
  - Regulate entrances/connections to state highways
- Land Use Permits
  - Regulate activities allowed to occur on highway R/W

VDOT Involvement in Land Development

Local Authority and VDOT Authority Overlap

- Design standards for streets
  - Minimum standards in Appendix A & B(1) of *Road Design Manual*
  - Locality may adopt more strict standards for subdivisions
  - Locality may adopt alternate standards based upon Appendix B(2)
- Erosion control
  - Work within R/W—VDOT control (land use permits)
  - Work outside R/W—local control (streets prior to acceptance)
- Community signing
  - Within R/W—local approval and VDOT land use permit
  - Outside R/W—VDOT OA control and local approval

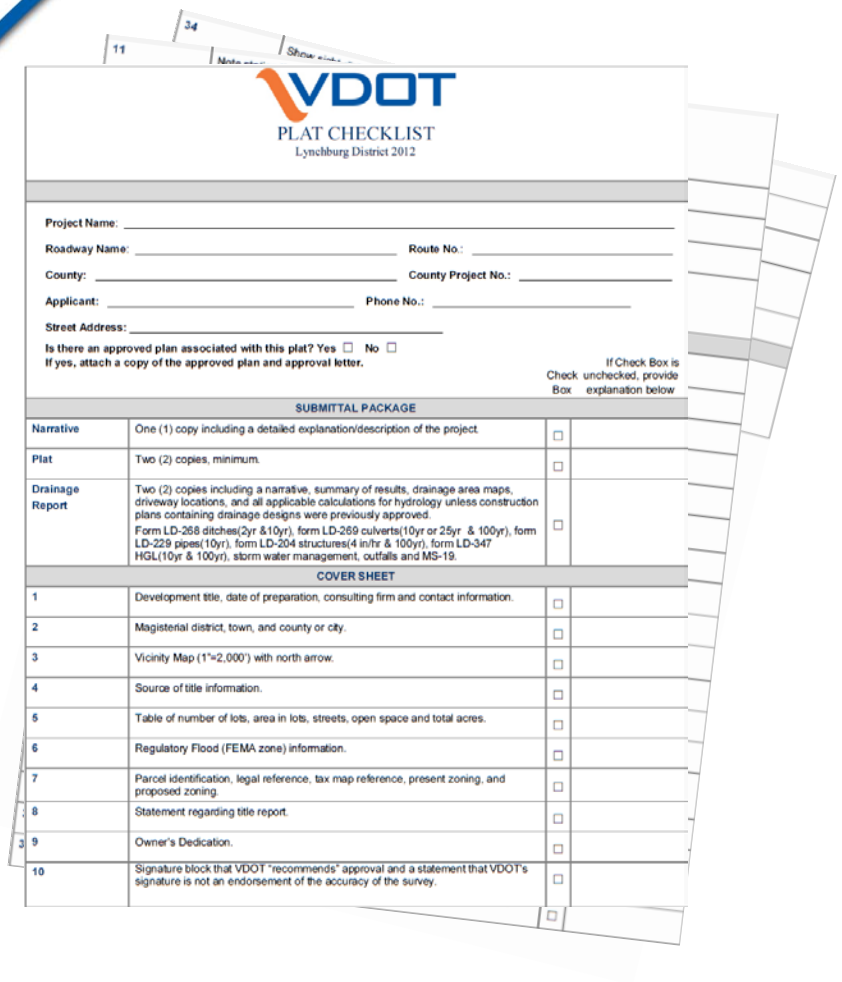
Who at VDOT Reviews Site Plans

- Land Use Section Leaders (Lynchburg District Office)
  - Gerry Harter
    - Acting Transportation and Land Use Director
  - Jeff Kessler
    - Area Land Use Engineer
  - Ken Carlton
    - Area Land Use Engineer
  - Joe Craddock
    - Area Land Use Engineer
  - Harley Joseph
    - Area Land Use Engineer
  - Rick Youngblood
    - District Planner
- Other Sections As Needed
  - District Location & Design
  - Regional Traffic Engineering
  - District Structure & Bridge

Site Plans: What is VDOT Looking For?

- Specifics Depend Upon Purpose
  - Site plan with entrances to VDOT highway
  - Site plan/plat creating streets to be part of state system
  - Other
- In General
  - Safety
    - Sight distance
    - Speed
    - Conflict points
    - Clear zone
  - Operations
    - Traffic volume
    - Queuing
    - Intersection spacing
    - Signs and markings
  - Construction and Maintenance
    - Coordination with other projects
    - Maintainability
    - Drainage
    - Slopes/grades
    - Work zone traffic control
  - Regulations
    - Cross-parcel connections
    - Pedestrian accommodation
    - Parking

Lynchburg District Checklists



VDOT

PLAT CHECKLIST

Lynchburg District 2012

Project Name: _____

Roadway Name: _____ Route No.: _____

County: _____ County Project No.: _____

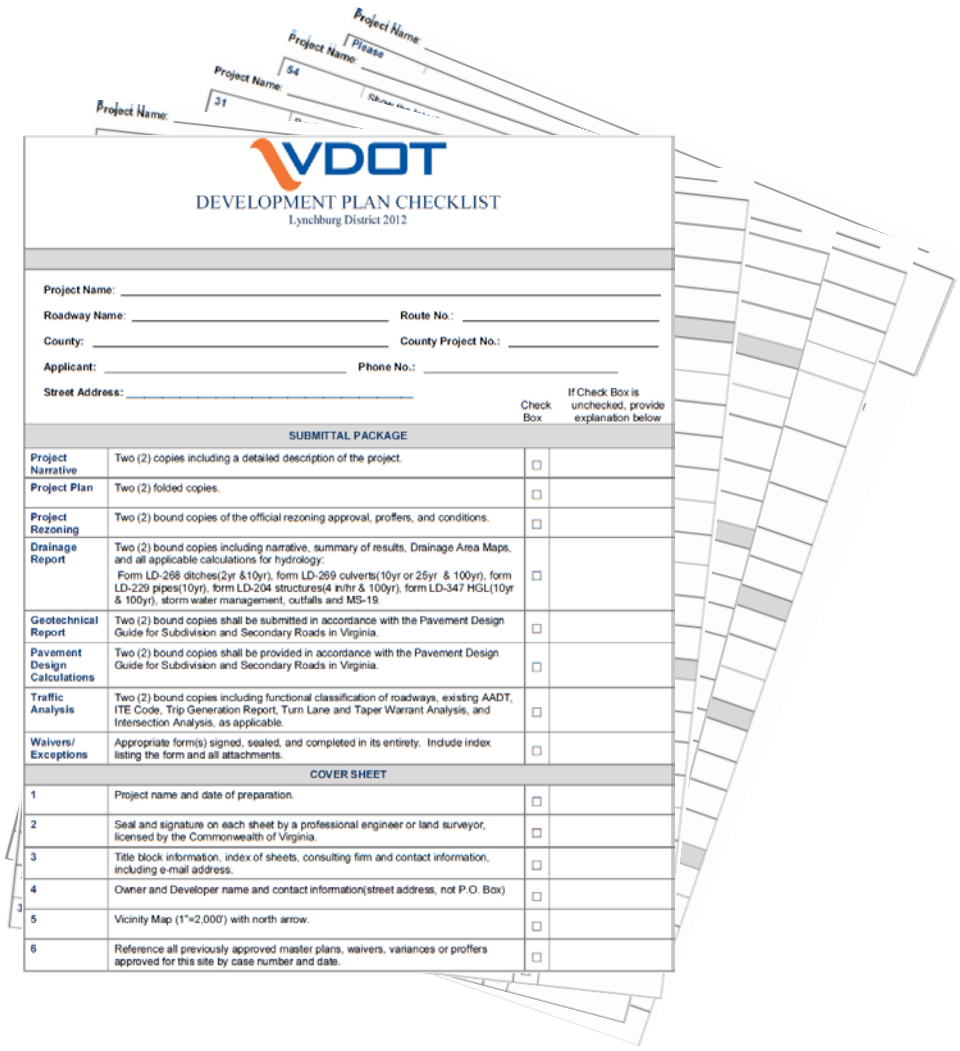
Applicant: _____ Phone No.: _____

Street Address: _____

Is there an approved plan associated with this plat? Yes ☐ No ☐

If yes, attach a copy of the approved plan and approval letter.

		Check Box	If Check Box is unchecked, provide explanation below
SUBMITTAL PACKAGE			
Narrative	One (1) copy including a detailed explanation/description of the project.	☐	
Plat	Two (2) copies, minimum.	☐	
Drainage Report	Two (2) copies including a narrative, summary of results, drainage area maps, driveway locations, and all applicable calculations for hydrology unless construction plans containing drainage designs were previously approved. Form LD-268 ditches(2yr &10yr), form LD-269 culverts(10yr or 25yr & 100yr), form LD-229 pipes(10yr), form LD-204 structures(4 in/hr & 100yr), form LD-347 HGL(10yr & 100yr), storm water management, outfalls and MS-19.	☐	
COVER SHEET			
1	Development title, date of preparation, consulting firm and contact information.	☐	
2	Magisterial district, town, and county or city.	☐	
3	Vicinity Map (1"=2,000') with north arrow.	☐	
4	Source of title information.	☐	
5	Table of number of lots, area in lots, streets, open space and total acres.	☐	
6	Regulatory Flood (FEMA zone) information.	☐	
7	Parcel identification, legal reference, tax map reference, present zoning, and proposed zoning.	☐	
8	Statement regarding title report.	☐	
9	Owner's Dedication.	☐	
10	Signature block that VDOT "recommends" approval and a statement that VDOT's signature is not an endorsement of the accuracy of the survey.	☐	



VDOT

DEVELOPMENT PLAN CHECKLIST

Lynchburg District 2012

Project Name: _____

Roadway Name: _____ Route No.: _____

County: _____ County Project No.: _____

Applicant: _____ Phone No.: _____

Street Address: _____

		Check Box	If Check Box is unchecked, provide explanation below
SUBMITTAL PACKAGE			
Project Narrative	Two (2) copies including a detailed description of the project.	☐	
Project Plan	Two (2) folded copies.	☐	
Project Rezoning	Two (2) bound copies of the official rezoning approval, proffers, and conditions.	☐	
Drainage Report	Two (2) bound copies including narrative, summary of results, Drainage Area Maps, and all applicable calculations for hydrology: Form LD-268 ditches(2yr &10yr), form LD-269 culverts(10yr or 25yr & 100yr), form LD-229 pipes(10yr), form LD-204 structures(4 in/hr & 100yr), form LD-347 HGL(10yr & 100yr), storm water management, outfalls and MS-19.	☐	
Geotechnical Report	Two (2) bound copies shall be submitted in accordance with the Pavement Design Guide for Subdivision and Secondary Roads in Virginia.	☐	
Pavement Design Calculations	Two (2) bound copies shall be provided in accordance with the Pavement Design Guide for Subdivision and Secondary Roads in Virginia.	☐	
Traffic Analysis	Two (2) bound copies including functional classification of roadways, existing AADT, ITE Code, Trip Generation Report, Turn Lane and Taper Warrant Analysis, and Intersection Analysis, as applicable.	☐	
Waivers/ Exceptions	Appropriate form(s) signed, sealed, and completed in its entirety. Include index listing the form and all attachments.	☐	
COVER SHEET			
1	Project name and date of preparation.	☐	
2	Seal and signature on each sheet by a professional engineer or land surveyor, licensed by the Commonwealth of Virginia.	☐	
3	Title block information, index of sheets, consulting firm and contact information, including e-mail address.	☐	
4	Owner and Developer name and contact information(street address, not P.O. Box)	☐	
5	Vicinity Map (1"=2,000') with north arrow.	☐	
6	Reference all previously approved master plans, waivers, variances or proffers approved for this site by case number and date.	☐	

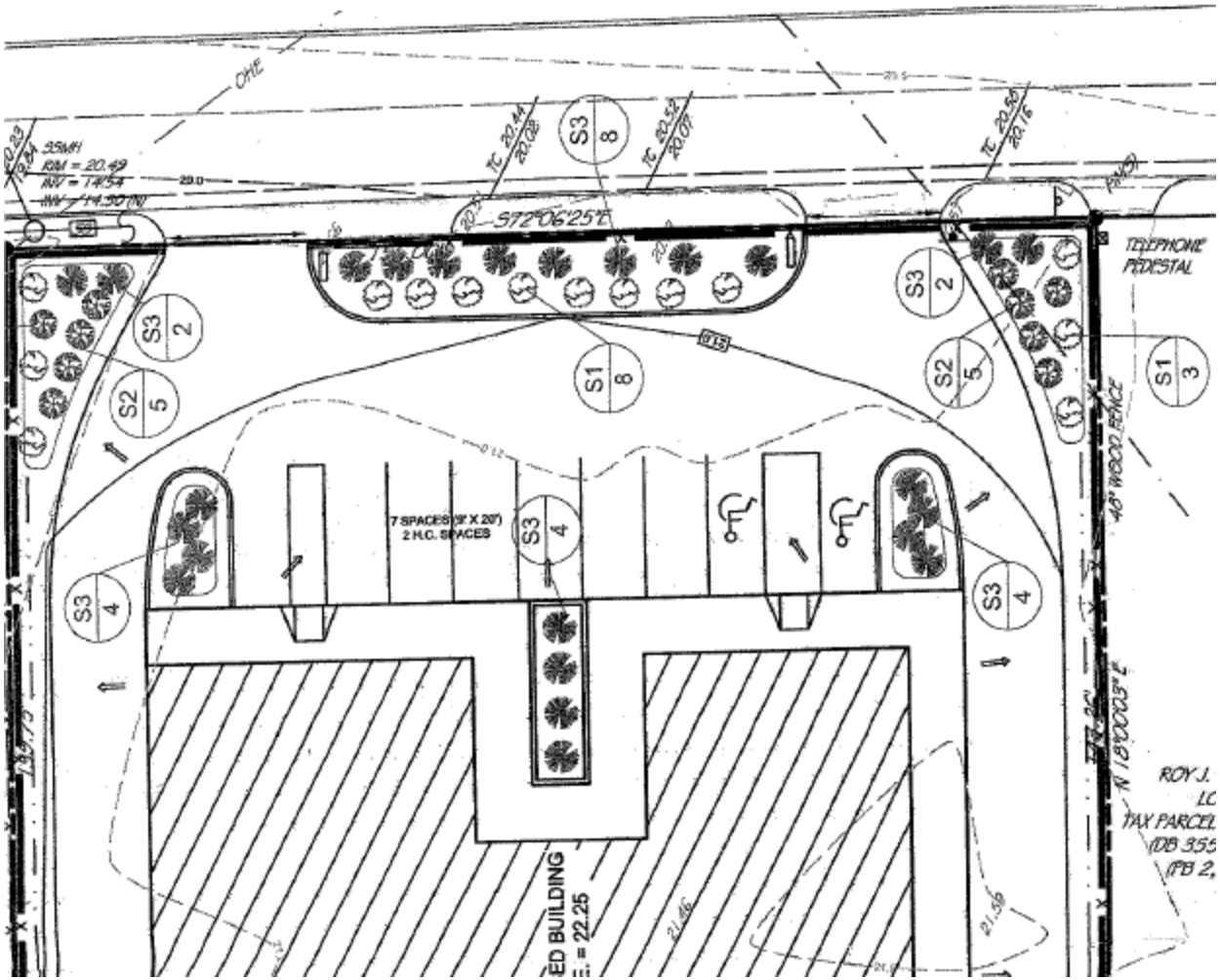
Site Plans: Frontage

- Frontage Conditions
  - Highway traffic speed and volume
    - Impacts:
      - Entrance location (to achieve site distance)
      - Entrance design (turn lanes, tapers, curb radii, entrance profile)
      - Entrance traffic control (stop vs. signalization)
      - Clear zone requirements
  - Adjacent development
    - Impacts:
      - Entrance location (spacing requirements, functional area of intersection, & corner clearance)
      - Shared access/cross parcel connectivity
      - Design of turn lanes and tapers
  - Highway design
    - Impacts:
      - Entrance configuration (right in/right out vs. all-way access)
      - Entrance stabilization type and design

Site Plans: Land Use

- Land Use
  - Building area
    - Impacts:
      - Trip generation
      - Site configuration
      - Stormwater runoff
  - Trip generation (volume, time, type)
    - Impacts:
      - Required sight distance (intersection vs. stopping)
      - Entrance design (turn lanes, tapers, curb radii, width, throat length, entrance profile)
      - Entrance traffic control (stop vs. signalization)
      - Site configuration (queue control features, parking requirements)
  - Site configuration
    - Impacts:
      - Stormwater runoff
      - Slopes/grades
      - Cross parcel connectivity

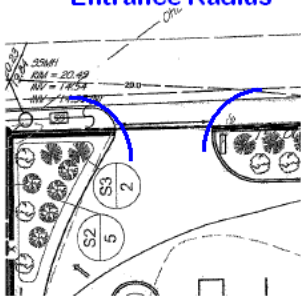
Site Plan Example 1



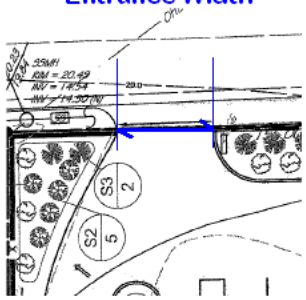
Site Plan Example 1 (cont'd)

Entrance Design

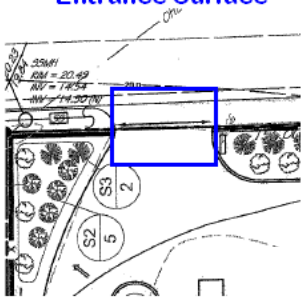
Entrance Radius



Entrance Width

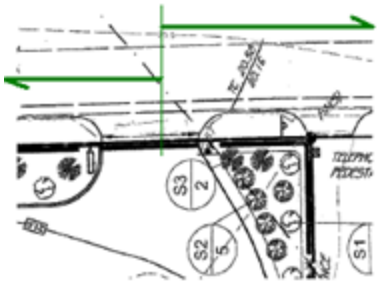


Entrance Surface

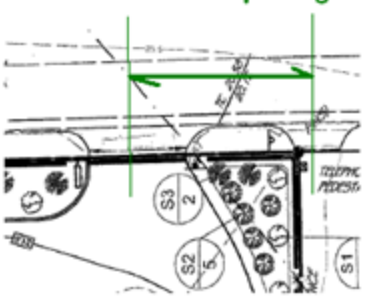


Entrance Location

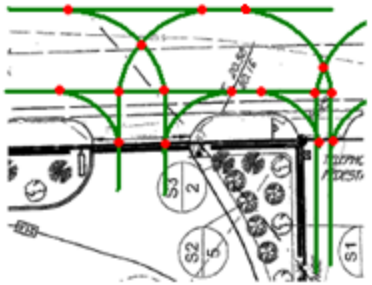
Sight Distance



Entrance Spacing

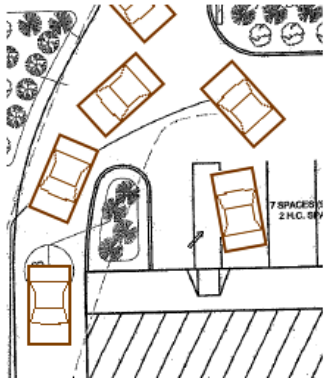


Conflict Points

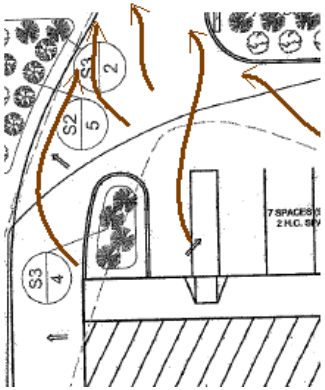


Site Layout

Traffic Circulation



Stormwater



Site Plan Example 2

Site Plan Example 2 (cont'd)

Layout

Pedestrian Accommodation

Connectivity

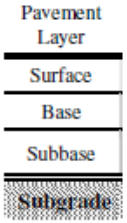
Functional Classification

Design

Entrance Design

Street Design

Pavement Design



Drainage

Site Plan Review Questions