Albemarle County Engineering

Road Plan checklist for plan reviewers

28 Jan 2015

A road plan is a document detailing the design and construction of a road, street or alley. It is typically bonded in order to record subdivision plats.

Reference key;
[Square Brackets] are County Code references, {Curved Brackets} are policy references, and (regular parenthesis) are explanatory. Links to reference documents are provided where possible.

Application information:

____ Completed application and fees. Road plans require a Subdivision application. No review is provided without applications and fees. Plans containing both public and private roads should pay the higher fee for private roads.

____ Copies of federal and state permits for any wetland or stream disturbance. (Army Corps, VDEQ, etc) [18-32.1.2, 14-311]

Title information:

____ Project title. Titles should be appropriate. It should be a road or street plan, not a site plan, subdivision plan, or erosion control plan, etc.

____ Professional seal, with original signature and date. [18-32.6.1]

____ Content: The road plan must contain, for each road/street/alley, at a minimum

___ 1. a plan view, customarily at 1"=50' or better.

___ 2. a profile view

___ 3. a typical cross-section

The plan should NOT contain

___ vast areas of work outside the road section. Construction of a road should not be an excuse to mass grade, or install other utilities or improvements.

General information:

____ The owner should be prepared to bond the plan in its entirety. Legal bond agreements require that the plan be referenced to the bond agreement using the exact title of the plan document. The county is trying to avoid multiple bond agreements referring to a single plan. Therefore, phases to be bonded separately should be separated into stand-alone plan packages to accompany each bond.

____ VDOT approval is obtained for any plan affecting public right-of-way. For public road plans, VDOT review will supercede most detailed design items below.

____ Fire/Rescue Department approval is obtained separately from Community Development engineering review.

Plan View: [18-32.6.2, 14-304, Subdivision Ordinance Article IV Division 2, VDOT SSAR]

____ accurate current *existing* topography at the time of submittal, including all existing site features, and any recent disturbances, all at a legible scale

____ date and source of the topographic information: All topography should be at least visually field verified by the designer within the last year {Aerial topography is often noticeably

inaccurate. Disturbances sometimes take place subsequent to the flown date. This can be a particularly recurring problem where early or mass grading plans have occurred previously. In these cases, the topography needs to be updated.}

____ WPO buffer limits; 100' from stream or wetland bank, 200' from reservoirs, or floodplain limit if greater [17-600]

____ floodplain limits, including 100yr flood limits for any channel with a drainage area of 50+ acres [18-32.6.2d, 18-30.3]

____ all existing easements (access, drainage, sight, sanitary easements, etc.) with deed book references, locations and dimensions.

____ all *existing* streets included with labeled pavement and right-of-way widths, route numbers and street names

____ all *proposed* streets included, with right-of-way and street names

____ stationing at 50' minimum on all proposed streets, on plan and profile

____ street horizontal curve start point, end points and radii labeled, meeting standards

____ cul-de-sacs provided on all dead-end streets or alleys (see the Design Manual reference details)

____ street edge of pavement or curb radii labeled at all intersections and turnarounds (see the Design Manual reference details)

____ roundabouts designed per VDOT and ASHTO guidelines

____ guardrail over any slope steeper than 3:1, wall, or drop-off greater than 4', with start and end sections labeled, and VDOT designations (GR-2, GR-2a, etc.) (see the VDOT Road Design Manual. Guardrail placement is complicated and subject to a lot of judgement and variation. This is a quick rule-of-thumb summary.)

____ pavement markings dimensioned and labeled

____ signs for traffic control shown and labeled: speed limit on all streets, stop signs at all intersections

____ street name signs at every intersection, typically placed opposite stop signs [should reference County Road Naming and Property Numbering Ordinance and Manual]

____ street tree locations, species and height or caliper (typically to be reviewed by Planning)

Grading:

____ *proposed* topography at minimum 2' contour intervals – tied into existing contours, as well as all proposed site features. (Sites with less than 6' of grade change should consider using smaller contour intervals.)

____ proposed slopes are all 2:1 (horizontal:vertical) or flatter {Design Manual, section 8}

____ proposed slopes steeper than 3:1 have low maintenance (not grass) ground cover specified on the plan {Design Manual, Section 8}

____ Show existing critical slopes on plans (County GIS overlay). Ensure existing critical slopes are not disturbed, unless a waiver or exemption has been granted.

____ Retaining walls should be accurately shown on plans, reflecting material thickness and batter where such measurements may affect layout.

____ **Retaining Wall Plans checklist**. Any walls supporting roads or necessary infrastructure require engineered plans (not generic manufacturer's details) and computations. {Design Manual, section 8} This will also be required where walls are close to property lines and there is the danger of affecting neighboring property, either during construction, with later failures, or with pedestrian or vehicle safety. These concerns can be alleviate with layout spacing also. In any case, retaining walls will require building permits at construction.

Required Easements: [Zoning Ordinance 18-32.7.4, Subdivision Ordinance, Article IV, Div. 4]

____ all proposed permanent easements, dimensioned and labeled
Examples of easements are:
- ____ sidewalk easements for sidewalks to be maintained with streets outside right-of-way. It is preferable that sidewalk be inside street right-of-way.
- ____ drainage easements for any drainage passing through the site from off-site, or for drainage crossing proposed property lines.
- ____ stormwater management easements over all facilities and associated structures and access
- ____ interparcel access easements
- ____ intersection or entrance sight easements

____ all drainage easements are a minimum 20' wide. Required width: 10'+(pipe dia. or channel width) + 2'+ 2(depth-5'). The pipe, channel or structure must be within the center third of the easement. {Design Manual, section 6}

____ no structures or trees within drainage easements {Design Manual, section 6}

____ generally, drainage easements outside right-of-way are to be private and maintained by the homeowners association or lot owner. Public easements are those which the county or VDOT agrees to maintain.

Entrances and right-of-way improvements: [per VDOT Secondary Street Acceptance Requirements (SSAR), and VDOT Road and Bridge Standards]

____ only approved entrances are shown. Placing entrances on road plans should not be a way of circumventing site plan review of entrance placement or number, or adequate review of traffic, spacing, turn lanes, etc.

____ all entrances have a VDOT designation [PE-1, CG-9a, etc). In the case of dense residential development, concrete entrance aprons are important to continue drainage on the street side, and to control fine grading of asphalt and sidewalks.

____ commercial entrances do not exceed 4% grade for a distance of 40' from the intersected street, measured anywhere in the entrance [18-4.12.17]

____ unobstructed sight distance lines at entrances, measured from a point off the edge of pavement of the intersected street per VDOT Road Design Manual App B1 sec. 3.E.

____ 25' minimum radii on entrances (or per VDOT requirements, typically 25'-35') [per VDOT Access Management Regulations and Standards]

____ turn and taper lanes where applicable with lengths and widths labeled (taper at 12:1 with 12' lane widths)

Profile View: (applicable only to road or street plans)

____ stationing at 50' minimum on all proposed streets, to match the plan view sheets

____ proposed centerline

____ existing ground centerline (Historically, the existing centerline was field surveyed, but this is happening much less with current aerial topography. This may be requested if inaccuracies are noted.)

____ labeled existing and proposed grade at each 50ft station point

____ vertical curves provided at all grade transitions

____ vertical curve start, vertex and end points labeled

____ vertical curve length and K (or stopping sight distance) labeled at each vertex, meeting required design values
____ percent grades labeled for all road segments, meeting design values (VDOT Road Design Manual, App. B)
____ rural street intersections continue the -2% intersected cross grade for a minimum of 20' from the edge of pavement of the intersected street. A low point is provided off the intersected street for drainage. {policy, following VDOT practice}
____ street grade is less than 4% for a minimum of 40' from the edge of pavement of the intersected street. (This grade can be within the first road curve which transitions from the 2% intersected cross grade) {policy, follows ord. for travelways 18-4.12}
____ pipe and utility crossings shown and labeled (ACSA has minimum clearances)
____ cross drain locations shown and labeled with VDOT designations (CD-1,2) at every major cut and fill transition or sag curve
____ the station of intersections are shown and labeled with the street names
____ grades are a maximum of 6% in turnarounds
____ grades are a maximum of 4% through roundabouts

Details and Sections: (reference VDOT Road Design Manual, or Sub. Ord.)
____ typical sections for each street, street segment, or alley
____ Albemarle County general construction notes for streets (reference)
____ traffic generation and distribution summary (ADT's) with road networks
____ pavement designs per VDOT guides [2009 VDOT Pavement Design Guide for Subdivision and Secondary Roads in Virginia]
____ pavement widths meeting design standards
____ pavement crown at ¼":1' slope
____ pavement surface, base, and sub-base thicknesses and materials
____ curb and gutter where applicable with VDOT designation (CG-6), and stone base of 6" 21-A or better (CG-2 also acceptable if a gutter is not needed for drainage)
____ shoulder at 1":1' slope or flatter and 4' or greater width for rural sections
____ maximum slopes of 2:1 or flatter with guardrail shown where applicable.
____ proposed slopes steeper than 3:1 have low maintenance (not grass) ground cover specified on the plan
____ guardrail over all fill slopes and culverts, with 3' additional shoulder, using VDOT designations (GR-2, GR-2A, etc.)
____ right-of-way/easement width, centered on street, meeting design standards
____ typical sections for sidewalks and trails
____ sidewalk location and widths, minimum 5' width, 4" concrete surface with wire/rebar reinforcement, 4" 21-A stone base, with underdrains (UD-4, etc) per VDOT standards where applicable. Sidewalks used with roll-top curbing shall be 7 inches thick (VDOT RDM B(1)-4.G.
____ planting strip if applicable, 6' minimum width [14-422]
____ ditches dimensioned at 3:1 slope from shoulder, 1' depth min., and 4' min. width from shoulder to ditch centerline, for rural sections
____ alleys have 12' pavement width, with 14' wide stone base [14-410]
____ transitioning detail (20' minimum) for roll-top curbing in front of any inlets
____ typical sections for proposed channels with locations referenced from the plan view sheets

____ sidewalk detail or specification to be a minimum 4" stone base and 4" concrete of 3000psi at 28 days, or stronger. [VDOT App. B, Subdivision Street Design Guide, and 14-422]

____ retaining wall details referenced from plan, if detailed plans and comps were not required. This is only really applicable to standard VDOT gravity walls. Walls not affecting the road should not appear on road plans.

____ Rural section ditches may not be deep enough for 15" diameter culverts within the ditchline if the ditches are only 1' deep. This usually involves moving the ditchline away from the road at driveway locations, which may not be possible in denser development. Ditch and driveway culvert plans will need to accommodate these situations.