CHAPTER 2A - PROJECT DEVELOPMENT

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SECTION 2A.1 PROJECT INITIATION

PRELIMINARY ENGINEERING AUTHORIZATION

This function is now the responsibility of Infrastructure Investment Division.

LOCATION CORRIDOR STUDY

Location Studies are now the responsibility of Environmental Division.

URBAN PROJECTS

Projects within towns and cities with populations of 3,500 or more as specified in the *Code of Virginia § 33.2-319* and outlined on the Local Assistance Division website* are initiated by municipal resolution to the District Urban Program Manager stating their desire for VDOT to consider the implementation of a project. Additional guidance regarding eligibility and resolution requirements can be found in the Urban Manual Chapter 3.2 – Programming and Inclusion in the Six Year Improvement Program.

Upon receipt of a request the District Urban Program Manager/Project Sponsor will work with the District Project Management Office to enter the appropriate information in the "Project Pool" to establish a "New" project, obtain a Temporary UPC number and a Partial state base number. The Project Manager or Project Coordinator will initiate a request for the project to be a "Candidate" in the "Project Pool", obtain a permanent UPC number and a complete state base number. Once the project is included in a Six Year Improvement Program (SYIP) coordination between the District, Infrastructure and Investment Division (IID), Federal Programs Management Division (FPMD) and Fiscal Division (FD) is required to authorize the phase ready to be opened to charges. On Federally Funded Projects the Federal Authorization must be in place to open the project to charges.

New projects may be added to the SYIP through one or more application based programs through coordination with the District Program Office, IID and Special Program Divisions as necessary.

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INTERSTATE AND PRIMARY PROJECTS

The program, referred to as the SYIP, is the method for allocating funds for rail, public transit, and highway projects.*

The CTB reviews the SYIP each year. Working with localities, it prioritizes funds for projects proposed for construction, development or funding over the next six fiscal years. See www.virginiadot.org/projects/syp-default.asp.

New projects may be added to the SYIP through one or more application based programs through coordination with the District Program Office, IID and Special Program Divisions as necessary.

Local governments work with citizens and Virginia's transportation agencies to develop a plan that anticipates land use changes and travel patters more than two decades into the future.

CERTIFICATION ACCEPTANCE

Certification Acceptance (CA) is documentation required by FHWA (on all Federal - Aid projects except Interstate) showing that all Federal Requirements have been met in accordance with the Certification Acceptance Plan that the department is operating under, See *Section 2D.15 PROJECT APPROVAL* and *Section 2G.7 PRE-ADVERTISEMENT CONFERENCE.* The “Project Pool”, “Integrated Project Manager” (iPM), PCES, RUMS, CEDAR and the project schedule should be used to monitor the various stages of project development as well as documenting completion of various stages.

In carrying out operations under certification acceptance (CA), it is imperative that all steps in the project implementation stage be strictly followed. This is particularly the case in transmitting a project at the P.S. & E. stage to the Federal Highway Administration, which cannot be submitted until the environmental document has been cleared. The approval is obtained by the Environmental Division. Environmental documents must receive approval by the FHWA before the work can be authorized. Projects in this category are to be held in Location & Design Division until notification from the Environmental Division has been received that the document has been approved by the FHWA.

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SECTION 2A.2 ADMINISTRATIVE APPROVAL

See *Project Management Online Guide**

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SECTION 2A.3 REVIEWING WORK LOAD AND ASSEMBLING DATA

SCHEDULING PROJECT WITH WORKLOAD

The Section Manager will assign the project to one of his/her groups. Care must be taken to review existing and possible future construction schedules to assure that the section being assigned the project has sufficient time and manpower.

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SECTION 2A.4 REQUESTING AND ASSEMBLING ADDITIONAL DATA

PRELIMINARY PLAN DEVELOPMENT

Preliminary Plan Development is intended to provide the basis for scoping, and the guiding document for the development of Field Inspection plans. It is essential that various alternatives be assessed in sufficient detail in order to preclude major modifications during the latter stages of project development.

Revisions to a project's scope could impact application based program requirements which may require coordination with the District Program Office, IID and Special Program Divisions as necessary.*

The following outline is a guide in the development process to assure that adequate control is applied in the early stage of projects:

1. As early as possible, at the inception of a project, photographic/lidar coverage is essential. The location of the project determines the coverage required. Rural projects with sparse development and without extremes in topography and development can generally be addressed at a mapping scale of 1" =50'. A mapping scale of 1" = 25' is preferable, but may limit the band width when relocations or various new alignments are being considered.

   Other projects in congested areas may require photography at a mapping scale of 1"=25'. It is the designer's responsibility to obtain photography at an appropriate mapping scale. All requests must be approved by the State Photogrammetrist or Geospatial Program Manager.

2. If traffic data has not been secured, a request should be submitted at this time on Form *LD-104*, including the date the information is needed.

3. From the photo coverage in step No. 1, a temporary plan base, either in the form of sheets or mosaics, is to be secured. The request should note that the material is to be used as temporary plan base, and photographic screening and/or dodging will be employed to produce a base on which line work will easily be visible.

   Studies have shown that these plan bases provide a clearer drawing when the final version is completed. Other annotations can be made more legible by removing the image to provide a "clean" space for descriptions, etc.

4. Depending upon the complexity of the project, the use of title sheets, typical section sheets and other drawings may be used for quantities and details of traffic, intersections, etc. The base photo coverage can be placed on a sheet outline and a set of plans produced.

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ASSEMBLLING ADDITIONAL DATA

Quite often there is available data within the Department and other state agencies which proves valuable in determining the location and design of the project. Land use maps, tax maps, soil studies, etc., are available in many instances and should be included in the route file for future use. Transportation studies are available for cities and towns over 3,500 population, as well as for several other urban areas under 3,500, and should be used as a guide.

REQUEST FOR TRAFFIC DATA

Design Year Traffic data is requested on Form *LD-104*, except for low volume Local Roads and Rural Collectors with a Current ADT (Current ADT being defined as latest available traffic counts) less than 400 VPD. Design Year Traffic Data is required on Local Roads and Rural Collectors requiring a detailed traffic analysis, such as roads experiencing a higher than normal growth rate of for other reasons that would require some type of traffic forecast.

The designer is to check the appropriate blocks to obtain traffic data required for a particular situation. The design year and speed is to be indicated on the form when submitted by the designer. The design year traffic data being requested is to be based on the criteria shown on Form *LD-104*. The design year (Ad date plus* 11 years or 22 years) is dependent upon the functional classification of the roadway and the extent of the roadway improvement.

New construction, major improvements or expansion of the facility includes, but is not limited to the following:

- Construction of additional through lanes
- Addition of free-flow ramps to an existing at-grade intersection
- Conversion of an at-grade intersection to a grade separation
- Construction on new location
- Modification of an existing facility that results in some or all of the facility on new location

Reconstruction in kind or minor improvements includes, but is not limited to the following:

- Addition of turn lanes to an existing facility
- Shoulder modifications
- Restoration/maintenance of a roadway that results in a new facility that duplicates the original roadway on the same location
- Minor widening of an existing lane to achieve a standard lane width

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Also see the AASHTO “Green Book”, Chapter 6 and AASHTO’s “A Guide for Achieving Flexibility in Highway Design”, Chapter 1.

Careful consideration must be given to environmentally sensitive locations which would require possible air or noise studies. Where schools, churches, historical structures, playgrounds, etc., are in close proximity to the proposed project, the District Environmentalist should be contacted to determine the extent of traffic analysis required.

REQUESTING PHOTOGRAPHIC COVERAGE / TOPOGRAPHIC MAPPING

See *Survey Manual*, Chapter 6* Photogrammetric Surveys for more information.

ASSEMBLING PHOTOGRAPHS AND MAPPING

See *Survey Manual*, Chapter 6* Photogrammetric Surveys for more information.

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SECTION 2A.5 FIELD REVIEW

See *Project Management Online Guide*[*].

[*] Rev.7/08

SECTION 2A.6 STUDY OF ALTERNATES

PROJECTING HORIZONTAL ALIGNMENT

In projecting horizontal alignment at this stage of development, all practical considerations should be tested, subject to information obtained from the initial field reconnaissance. The alignment should be governed by the Geometric Design Standards in *Appendix A1* *, based on the design speed for the Functional Classification of the highway system that is being considered. In corridor selection, any deviation from these standards is to be noted for consideration. Additional information may also be obtained from AASHTO's *A Policy on Geometric Design of Highways and Streets* and other related publications. As corridors are studied, it is suggested that one baseline be projected for each alternate.

The use of spiral transitions for compound and reverse curves on urban roadways should be avoided. However, the Engineer does have latitude in the use of spiral transitions if the geometrics are warranted. Should spiral transitions be utilized see Road and Bridge Standards, pages 802.01, 802.13 and 802.14 for details.

PROJECTING VERTICAL ALIGNMENT

When all horizontal alignments have been selected and shown on the prints, a tentative grade is necessary in order to properly evaluate these alternates. Care must be taken to conform to applicable standards in regard to gradient and to passing and stopping sight distances on both crest and sag vertical curves. Crest vertical curves shall meet or exceed AASHTO design criteria for Stopping Sight Distance, not the "k" Values. Sag vertical curves shall meet or exceed the AASHTO minimum "K" Values. The “K” values for sag vertical curves take into account the headlight sight distance. Therefore, when the “K” Value for a sag vertical curve does not meet the VDOT Road Design Manual minimum, same as the AASHTO minimum and lighting is not provided, it shall be submitted as a design waiver and shown as “Other” on the *LD-448* Waiver Form. Grades should present a smooth appearance and eliminate the "roller coaster" concept whenever possible.

EVALUATING ALTERNATIVES

In evaluating alternates at this stage of the project development, it should be kept in mind that this is the initial attempt to define a corridor location and the alignment and grades projected are subject to refinement as shown in *Section 2B.4-DETERMINATION OF ROADWAY DESIGN*. The basic objective at this time is to eliminate the corridors or alignments which are inferior to others considered within the project area. Ideally, one alignment and grade should appear superior to others considered within a given corridor. The aforementioned items used in considering horizontal and vertical alignment offer the best means of evaluating alternates in addition to any information which was obtained from other sources.

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PREPARATION OF REPORT

After alternates have been reviewed and evaluated, a written report to the District Location and Design Engineer is to be prepared stating the conclusions reached reasons for retaining or eliminating some corridors or alternates and a recommended procedure to follow as the study progresses. Copies are to be sent to the District *Engineer/Administrator or District Preliminary Engineering Manager and any division, which is affected by the project. In this manner all involved parties will be kept abreast of the progress of the project and the files will contain sufficient documentation.

PUBLIC INVOLVEMENT PROGRAM

Informing the public about studies in their area in the earliest stages can be very helpful in the later stages of project development. See Flow Charts in the *Public Involvement Manual* for guidance on the Departments Public Involvement Program for both Tier 1 and Tier 2 projects.

CONTACTING LOCAL GOVERNMENT AND / OR LOCAL AGENCIES

Cooperation and information are two key words in working with local officials. At this stage of development, contact with the local governing bodies, planning commissions and other elected and/or appointed officials is both proper and desirable. Being in contact daily with their local situation gives these local officials an insight to the area's problems and/or changing conditions. In addition to exchange of ideas and information, contact at this time will give them an opportunity to make a contribution to the overall project development. Contact and arrangements for meeting with local officials in urban areas are to be made by the Local Assistance Division. In other areas, these arrangements are to be made by the District Engineer/Administrator or his/her designated representative. Meetings of this type also afford the opportunity to bring District personnel up to date on progress of the project.

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SECTION 2A.7 PROJECT SCOPING

See *Project Management Online Guide.*

Revisions to a project's scope could impact application based program requirements which may require coordination with the District Program Office, IID and Special Program Divisions as necessary.*

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SECTION 2A.8 AIRPORT CLEARANCE REQUIREMENTS

GENERAL

During the Project Planning Stage, the Designer will determine if there is a potential for substandard airway - highway clearance, or other potential hazard, as determined by the project's location listed below:

1. Within 20,000 feet of public use or military airports with at least one runway greater than 3,200 feet in length.

2. Within 10,000 feet of public use or military airports with runways with a length of 3200 feet or less.

3. Within 5,000 feet of public use, military, or hospital heliports.

4. Any permanent or temporary construction or alteration including any equipment, materials or apparatus that would be more than 200 feet in height above ground level at its site.

5. Construction of wetlands or stormwater management ponds within 5 miles of a public use or military airport.

The Designer will request a review and coordinate notice requirements for any project determined to be within the applicable limits as listed above. A list of airports, as of the printing of these instructions, is provided at the end of this section for assistance in locating applicable airports. The request for review will be made to the Location & Design Airport Clearance Coordinator in the Photogrammetry and Survey Section by Form *LD-252*.

The Airport Clearance Coordinator will determine current Federal Aviation Administration (FAA) requirements pertaining to the subject project and notify the FAA as early as possible. Part 77 of the Federal Aviation Regulations and the U. S. Department of Transportation FAA Advisory Circular 70/7460-21 contain FAA requirements as of the printing of these instructions.

All evaluations will be determined by using U.S.G.S. or N.G.S. (U.S.C. & G.S.) datum or datum matching quadrangle sheets. In no case will assumed data or local city or town datum be used.

When a new corridor is being developed or an existing corridor is being redeveloped to add lanes, interchanges, etc., the entire corridor is to be reviewed for clearance requirements at a very early stage.

For Final Design, the corridor will probably be divided into multiple projects and be handled by different design sections and/or in a District Office. The establishment of the proposed grade elevations based on the airport clearance requirements at an early stage is important because grade adjustments on a Final Design Project by a section

may create major design adjustments on an adjoining project that is being prepared by another section or District Office.

When lighting is required on a project or a possible addition in the future, the pole heights are to be considered in the initial review for clearance requirements. Although a highway may present no problems with vertical clearances, the use of certain types of materials (such as fencing, lighting, etc.) may affect navigational equipment. Also, the use of large construction equipment (such as cranes) may cause encroachment of navigable airspace. Encroachment problems may also result from signs and/or lighting added several years after the roadway completion.

When proposed construction or maintenance activities initiated by other Divisions (i.e. Environmental, Structure and Bridge, Maintenance, Traffic Engineering) or a District Office are within the limits (specified earlier in this section) of airports or heliports, the Location and Design Highway Airport Clearance Coordinator is to be notified by Form *LD-252*.

When potential clearance conflicts are determined, the designer will contract the Highway Airport Clearance Coordinator via Form *LD-252* and request a review. The Designer will submit Form *LD-252*; one (1) print of the title, typical section(s), and applicable plan and profile sheets for the Highway Airport Clearance Coordinator's review.

The Highway Airport Clearance Coordinator will evaluate the appropriate desirable clearance dimensions between highway surfaces and airway approach zones and, if necessary, request that the designer furnish prints of applicable project plan sheets. This is for early communication between the FHWA, FAA, and the Department and for alerting the FAA of potential hazards to aviation.

When a potential problem exists, FAA Form 7460-1 (notice of proposed construction or alternation), or current form, along with appropriate project review data will be filled by the Highway Airport Clearance Coordinator. A Notice of Construction or Alteration to the Federal Aviation Administrator is required for any proposed construction or alteration. This applies to, but is not limited to, the following:

1. Any object of natural growth or terrain.

2. Permanent or temporary construction or alteration, including equipment or materials used therein, and/or apparatus of a permanent or temporary character.

3. Structures with a change in height (including appurtenances) or lateral dimensions, including equipment or materials used therein.

4. Proposed changes in the land use practices that would attract or sustain hazardous wildlife populations at or near airports.

Associated City	Public-use* Airport
Abingdon	Virginia Highlands Airport
Blacksburg	Virginia Tech-Montgomery Executive Airport
Blackstone	Allen C. Perkinson Municipal Airport
Bridgewater	Bridgewater Air Park
Brookneal	Brookneal-Campbell County Airport
Bumpass	Lake Anna Airport
Charlottesville	Charlottesville-Albemarle Airport
Chase City	Chase City Municipal Airport
Chesapeake	Chesapeake Regional Airport
Clarksville	Marks Municipal Airport
Crewe	Crewe Municipal Airport
Culpeper	Culpeper Regional Airport
Danville	Danville Regional Airport
Dublin	New River Valley Airport
Emporia	Emporia-Greensville Municipal Airport
Farmville	Farmville Regional Airport
Forest	New London Airport
Franklin	Franklin Municipal Airport
Fredericksburg	Shannon Airport
Fredericksburg	Stafford Regional Airport
Front Royal	Front Royal-Warren County Airport
Galax/Hillsville	Twin County Airport
Gordonsville	Gordonsville Municipal Airport
Grundy	Grundy Municipal Airport
Hot Springs	Ingall's Field
Jonesville	Lee County Airport
Kenbridge	Lunenburg County Airport
Lawrenceville	Lawrenceville-Brunswick Municipal Airport
Leesburg	Leesburg Executive Airport
Louisa	Louisa County Airport
Luray	Luray Caverns Airports
Lynchburg	Falwell Airport
Lynchburg	Lynchburg Regional Airport
Manassas	Manassas Regional Airport
Marion	Mountain Empire Airport

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(continued list of airports)

Associated City	Public-use Airport
Martinsville	Blue Ridge Airport
Melfa	Accomack County Airport
Moneta	Smith Mountain Lake Airport
New Market	New Market Airport
Newport News	Newport News-Williamsburg International Airport
Norfolk	Norfolk International Airport
Orange	Orange County Airport
Petersburg	Dinwiddie Airport
Portsmouth	Hampton Roads Executive Airport
Quinton	New Kent County Airport
Richland	Tazewell County Airport
Richmond	Richmond International Airport
Richmond	Chesterfield County Airport
Richmond	Hanover County Airport
Roanoke	Roanoke Regional Airport
Saluda	Hummel Field
South Boston	William M. Tuck Airport
South Hill	Mecklenburg-Brunswick Regional Airport
Staunton	Shenandoah Valley Regional Airport
Suffolk	Suffolk Executive Airport
Tangier	Tangier Island Airport
Tappahannock	Tappahannock-Essex County Airport
Wakefield	Wakefield Municipal Airport
Warrenton	Warrenton-Fauquier Airport
Washington, D.C.	Washington Dulles International Airport
Washington, D.C.	Washington National Airport
Waynesboro	Eagle's Nest
West Point	Middle Peninsula Regional Airport*
Williamsburg	Williamsburg - Jamestown Airport
Winchester	Winchester Regional Airport
Wise	Lonesome Pine Airport

Associated Area	Military Airfields
Fort Belvoir	Davidson AAF
Fort Eustis	Felker AAF
Norfolk	NAS Norfolk
Poquoson	Langley
Quantico	MCAF Quantico
Va. Beach	NAS Oceana
	NALF Fentress

* Rev. 1/08