Project Development Process (PDP) – An Overview

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Project Development Process

• Definition
• Background
• Methodology
• Challenges
• Opportunities
• Interactive Discussion
Definition - PDP

• The Project Development Process is the use of multi-disciplinary concurrent efforts to develop transportation projects from inception to construction.
  – Work is accomplished in parallel rather than in series
  – Requires the active involvement of all project development players throughout each of the development phases
  – Concurrent efforts bring about the design in its final form
  – Maintains commitment of concurrent design activities established in 1998
  – This concept accelerates project development, but comes with serious and potentially costly risks, cost of re-work being the most significant
Background

• **2010 Performance Audit Action Item #26:**
  “Develop a project-specific risk assessment methodology that should be a required task in the project planning phase. The project risk assessment should provide the basis for concluding that a low-risk project would not be subject to certain control reviews such as the review of signed and sealed plans by Central Office Location and Design...”

  – I&IM 249.4 implements a two-tier project system addressing Item #26.
  - **Tier 1** = routine maintenance and operations projects (regardless of cost), SAAPs, all NFO preventative maintenance and construction Projects < $5M Construction Cost
  - **Tier 2** = all FO (now PoDI/PoCIs) construction, operations or maintenance projects, all NFO > $5M construction cost, and all projects designated as Design Build at the Scoping stage
The Process

• The Project Development Process
  – VDOT’s Approved Process
  – Focus on Teamwork and Risk Management
  – Based on 5 Phases
    • Scoping
    • Preliminary Design
    • Detailed Design
    • Final Design and ROW Acquisition
    • Advertisement
The New Process

VDOT Project Development Process

PROJECT INITIATION

P.E. AUTHORIZED

SYIP

Scoping Phase

Delivery Method (DBB, DB, DB/TPA)

Sponsor/Owner Initial Meeting

Net Line and Grade Bridge Typical Section, etc.

PRIME Ryha

Environmental Documents

Survey

CDE Stakeholder Identification and Outreach

Final Scope/TF Meeting

Preliminary Design Phase

Roadway Structure and Bridge TC/DT/TS Landscaping Materials

Draft Environmental Document

Prepare Preliminary ROW Data Sheet

ROW and Utility Impacts

Constructability and Work Zone Review

Value Engineering

Public Outreach

Public Hearing

Design Approval

Detailed Design Phase

Final Design & ROW Acquisition Phase

Roadway Structure and Bridge TC/DT/TS Landscaping Materials

Utility Design

Final Environmental Document

F&A Hydrology

Utility Field Inspection

Authorize ROW and Utility (Partial Takeout)

Row Inspection Meeting

75%

Prepare NW Plans

Advertise Plans

Course and ROW Certificates

Permits

Bid Package

Biaww Review

PROJECT DELIVERY

PROJECT CLOSEOUT

ACRONYMS

CBE = Common Sense Engineering
DB = Design-Build
DBB = Design-Bid-Build
ESP = Environmental Study Process
ITB = Invitation to Bid
MOT = Maintenance of Traffic
PAC = Pre-Award Conference
PE = Preliminary Engineering
PFA = Preliminary Field Inspection
PTPA = Phase Preliminary Field Plan
PREM = Preliminary Design Evaluation
ROW = Right-of-Way
TPM = Traffic Control Device
TRM = Traffic Management Plan
USD = Unified State Improvement Program

LEGEND

State Required

Federal Required

Federal/State Required

* Pre-Scoping funds are available for use on certain pre-design activities. See PMM-PRO.1.1

Project Management Policy

CODE REQUIREMENTS

For Applicable State and Federal Code regulations please click on box indicated with S, F or S/F

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The New Process
The Process

What the PDP isn’t:

Completely rigid or inflexible

**BUT BE CAREFUL!!!!**

Many of the steps are legal requirements....
Legal Hierarchy - Federal

Code of Federal Regulations (CFR)

CFR Sections that pertain to Highways

• Title 23 – Highways – FHWA
• Title 33 – Navigation and Navigable Waters – Corps of Engineers, Coast Guard
• Title 36 – Parks, Forests, and Public Property
• Title 40 – Protection of the Environment – Environmental Protection Agency, Council on Environmental Quality / NEPA
The Bottom Line

Place a penny of federal money on a project and instantly “federalize” it
Legal Hierarchy – Commonwealth of Virginia

State Constitution

Code of Virginia – Statutes

Virginia Administrative Code – Regulations

Local Code/Ordinance
http://www.municode.com/

Road Building is a “Concurrent Power” (Responsibility) between national, state and local governments
The Reality

A roadway project developed by the State, utilizing both Federal and State funding sources, must be developed in accordance with Federal and State Law.

VDOT’s Chief Engineer and Chief Financial Officer have directed that the construction, maintenance and operations programs be developed so as to meet Federal Obligation Authority targets.
The Legislative History - Federal

- Code of Federal Regulations
  - Total
    - April 1, 2000 – 138,049 pages
    - April 1, 2014 – 175,496 pages (+27%)
  - Title 23 – Highways
    - April 1, 1999 – 561 pages
    - April 1, 2013 – 629 pages (+12%)
  - Title 33 – Navigation
    - July 1, 1999 – 2,024 pages
    - Sept.1, 2015 – 2,698 pages (+33%)
  - Title 36 – Parks & Public Property
    - July 1, 1999 – 1,558 pages
    - July 1, 2015 – 1,888 pages (+22%)
  - Title 40 – Protection of the Environment
    - July 1, 1999 – 24 Volumes, 16,221 pages
    - July 1, 2013 – 34 Volumes, 25,954 pages (+60%)

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The Legislative History - Virginia

• Code of Virginia
  – Highway Laws of Virginia
    • June 30, 1998 – 646 pages
    • June 30, 2014 – 1112 pages (+72%)

• Virginia Administrative Code
  – Title 24 – Transportation and Motor Vehicles
    • Agency 30 – Department of Transportation
      – 42 Chapters
The Bottom Line

As our legal/governance systems become increasingly complex, we must constantly strive to educate ourselves in order to navigate them effectively.
The PDP – Scoping Phase

Scoping Phase

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The PDP – Scoping Phase

Interstate Access Points
23 U.S.C 111- Interstate Access (IJR/IMR)

Limited Access Highways
§ 33.2-400 to 404

Project Delivery Method
23 CFR 636 – Design Build Contracting
§ 2.2-4306 - Design Build Procurement
§ 33.2-1800 to 1824 – Public-Private Transportation Act of 1995
The PDP – Scoping Phase

Bicycle and Pedestrian Accommodations
23 CFR 652 Pedestrian and Bicycle Accommodations
§ 33.2-354 – Statewide Pedestrian Policy
§ 33.2-112 – Sidewalks and Walkways
March 18, 2004 - CTB Policy for Implementing Bicycle and Pedestrian Accommodations

Design Standards for Secondary Roads
§ 33.2-327

Paving of Unpaved Roads
§ 33.2-332
# Scoping Regulations

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<td>Typical Sections (including Bridge typical Bike &amp; Ped)</td>
<td>23 CFR 652; 23 USC 217(e)</td>
<td>§33.2-354 24VAC30-151-600 24VAC30-91-110</td>
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<td>Wetland/Stream Screening</td>
<td>33 USC 1344</td>
<td>§ 62.1-44.15</td>
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The PDP – Scoping Phase

- Embrace Context Sensitive Solutions (CSS) to engage stakeholders and manage expectations
- Embrace Common Sense Engineering to develop good, not perfect, projects and save money
- Determine public involvement strategy
- Determine project delivery method
- Determine tier level
- Discuss the scope and get buy-in from team members
- Include bicycle and pedestrian components from the start
- Include all necessary schedule activities
- IJRs and IMRs are to be completed in this phase
- Phase ends with Preliminary Field Inspection and Approved Scope
The PDP – Scoping Phase

What’s Missing at this Stage of the Game?

NEPA
National Environmental Policy Act
42 U.S.C. 4321-4347
23 CFR 771
49 CFR 662
4VAC25-130-740.4
Tier 1 Exercise - Scoping
Tier 1 Exercise - Scoping
Tier 1 Exercise - Scoping

• Secondary Road Bridge Replacement
• Functional Class: Rural Major Collector
• Traffic Count: 545 VPD
• Posted Speed: Not Posted
• Bridge Width: 24’
• What issues do you need to think about as you prepare to scope the project?
Tier 1 Exercise - Scoping

- Environmental Impacts
- Road Closure or Staged Construction?
- Utility Impacts
- Typical Section
- Coast Guard Permit?
- Others?
The PDP – Preliminary Design Phase

Preliminary Design Phase
The PDP – Design Phase

Preliminary MOT/TMP

23 CFR 630.1012 – Project-level Procedures - Refers to Traffic Management Plans and requires state to develop a Temporary Traffic Control (TTC) plan, a Traffic Operations (TO) and a Public Involvement (PI) plan

Value Engineering

23 CFR 627.1 – Value Engineering – All NHS projects above $25M in total cost
§ 33.2-261 – Value Engineering required in certain projects – Any project, any highway system more than $5M in construction cost

Access Management

§ 33.2-245 - Access Management Standards
24 VAC 30-73 - Access Management Regulations for Principal Arterials, Minor Arterials and Collectors
The PDP – Preliminary Design Phase

Initial Noise Abatement Design
23 CFR 772.11 - Noise Abatement
§ 33.2-276 – Noise Abatement Practices and Technologies

Public Involvement
23 U.S.C. 128 – Public Hearings
23 CFR 771.111 h(1) –
“Each State must have procedures approved by the FHWA to carry out a Public Involvement/Public Hearing program pursuant to 23 U.S.C. 28 and 40 CFR 15 parts 1500 through 1508.”
§ 33.2-208B – Location of Routes
24 VAC 30-380-10 – Public Participation Guidelines
“The publication of a notice of willingness to hold a public hearing, with no public request for a hearing by the expiration date will satisfy any public hearing requirements.”
The PDP – Preliminary Design Phase

Limited Access Control Changes

§ 33.2-400 – Power and Authority of the Board to establish, modify or extinguish limited access

Tier 1 or Tier 2 Projects: By Commonwealth Transportation Board

Location Approval

§ 33.2-1701.14 – General Powers of Board – Vacate or change the location of any portion of any public highway.

Tier 1 or Tier 2 Projects: By Commonwealth Transportation Board

Design Approval

Tier 1 Projects: By VDOT District Project Development Engineer
Tier 2 Projects: By VDOT Chief Engineer

23 CFR 771.111 h(2-vi) – “Submission to the FHWA of a transcript of each public hearing and a certification that a required hearing or hearing opportunity was offered.”
## Preliminary Design Regulations

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<td>33 USC 1344 Section 404</td>
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<td>Public Outreach/Public Hearing/Willingness Posting</td>
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<td>§ 33.2-261</td>
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The PDP – Preliminary Design Phase

• Maintenance of Traffic and Sequence of Construction plans do not make up a Traffic Management Plan (TMP). They are just one component of the TMP. Transportation Operations and Public Involvement are the other components.

• The State VE requirements are more rigid than the Federal.

• Noise abatement design (potential sound walls) work should begin as soon as scoping is approved.

• Changes to Limited Access Control are to be completed in this phase
The PDP – Preliminary Design Phase

- Opportunity for public involvement is a state and federal requirement on projects that require regulatory action. This does not necessarily mean that you must conduct a public hearing, you may just post a willingness for a hearing.
- Regulatory action includes, but is not limited to, acquisition of property, approval of a NEPA document, establishing or changing a limited access freeway.
- Some exceptions apply for Emergency, Maintenance and Operations projects.
- Phase ends with Design Approval
Tier 1 Exercise – Prelim. Design
Tier 1 Exercise-Prelim. Design
Tier 1 Exercise – Prelim. Design
Tier 1 Exercise – Prelim. Design
Tier 1 Exercise – Prelim. Design
Tier 1 Exercise – Prelim. Design
Tier 1 Exercise Prelim. Design
Tier 1 Exercise – Prelim. Design

• Held Public Hearing on this design.

• What could go wrong?
Tier 1 Exercise – Prelim. Design

- Landowners at each end objected to land taking.
- Landowners got politicians involved.
- Forced to redesign.
The PDP – Detailed Design Phase
The PDP – Detailed Design Phase

Final EA/FONSI (Finding of No Significant Impact)


Final EIS/ROD (Record of Decision)


Authorize Right-of-Way – Total Take Parcels

§ 25.1-417.9 – General Provisions of Conduct of Acquisition – “If the acquisition of only part of a property would leave its owner with an uneconomic remnant, the agency concerned shall offer to acquire the entire property.”

23 CFR 710.501/503 – Early Acquisition/Hardship Acquisition – allows for early acquisition if a hardship or a protective purchase. NEPA must be complete.
### Detailed Design Regulations

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<td>Authorize R/W Total Take Parcels</td>
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<td>49 CFR 24.102, 23 CFR 710, 23 CFR 710.501/503</td>
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<td>§ 10.1-561, §62.144.15.2, 9VAC25-840</td>
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The PDP – Detailed Design Phase

- Approval to acquire right-of-way is a fairly lengthy process, starting with public involvement, design approval, NEPA document approval, and state and federal acquisition authorization.
- Regulatory action includes, but is not limited to, acquisition of property, approval of NEPA document, establishing or changing a limited access freeway.
- Phase ends with Field Inspection.
Tier 1 Exercise – Detailed Design
Tier 1 Exercise – Detailed Design
Tier 1 Exercise – Detailed Design
Tier 1 Exercise – Detailed Design
Tier 1 Exercise – Detailed Design
Tier 1 Exercise-Detailed Design

- Plans Ready for Right of Way Acquisition?
- Any foreseeable problems?
The PDP – Final Design & ROW Acquisition Phase

Final Design and ROW/Utility Acquisition Phase

- Plan Design Changes
- Furnish Final UFI Plans (In Plan Utility Design)(435)
- Conduct Final UFI (433)
- Utility Experiments Provided On Plans
- Surveyor Prepares Final R/W Plans and Final R/W Data Sheet (Partial Takes)
- ROW & Utilities Partial Acquisition Plans and Project Manager Certification (5.001)
- Environmental Re-evaluation for ROW Authorization (EP-201)
- Final Notice to Proceed (65K, 65P)
- Final Erosion & Sediment Control (48)
- Hazardous Materials Assessment/Mitigation
- Final TC/DTS Design (81C.D)
- Final Hydraulics (51H)
- Environmental Permit Acquisition (70)
- Final Landscape Design (53F)
- Steam/Wetland Compensation (56, 56S)
- In Plan Utility Design (Final)
- Final Structure Design (69C.D)
- R/W Utilities Acquisition (69, 69R)
- Final Roadway Design (65P)
- R/W & Utilities Authorization (Partial Title Parcel) (52K, 52S)
- Demolition Contracts
- Final R/W Legal Agreements (65K)
- Utility Agreements (67C.D)
- End Quality Control Review (65K, 65P)
- Final Notice to Proceed (65K, 65P)
- Utility Agreements (67C.D)
- Pre-Ad Conference (715)
- Update Pre-Ad Plans
- Refine Plans
- Hazardous Materials Assessment
- Work Zone Safety & Mobility Review
- Constructability Review (71C)
- Final Executive Plans
- Final Specifications Special Provisions
- Final Environmental Impact Statement (EIS)
The PDP – Final Design & ROW Acquisition Phase

Right-of-Way Acquisition

23 CFR 710 – Right-of-Way and Real Estate

49 CFR 24 – Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs

§ 25.1 and 33.2-1001 - Eminent Domain

§ 33.2-1704 – Condemnation of Property

§ 25.1-417 and 33.2-1004 & 1005 – Acquisition of Property
Utility Agreements and Relocations

23 CFR 645 – Utilities – prescribes policies, procedures and reimbursement provisions for adjustment and relocation of utilities on federal aid projects

§§ 33.2-307, 308, 330 – Relocation or removal of utility facilities within projects on Interstate System; Relocation or removal of utility facilities within projects on Interstate System; additional provisions; Relocation or removal of utility facilities within projects on Secondary System;
The PDP – Final Design & ROW Acquisition Phase

Stormwater Management and Erosion and Sediment Control

§ 62.1-44.15:24 - State Water Control Board (SWCB) shall permit, regulate, and control stormwater runoff in the Commonwealth.

§ 62.1-44.15:52 - SWCB shall develop regulations for the effective control of soil erosion, sediment deposition, and nonagricultural runoff that shall be met to prevent the unreasonable degradation of properties, stream channels, waters, and other natural resources

9 VAC 25-870-10 - Virginia Stormwater Management Program (VSMP) regulations

9 VAC 25-850 - Erosion and Sediment Control and Stormwater Management Certification regulations
The PDP – Final Design & ROW Acquisition Phase

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The PDP – Final Design & ROW Acquisition Phase

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• Regulatory action includes, but is not limited to, acquisition of property, approval of NEPA document, establishing or changing a limited access freeway.
The PDP – Final Design & ROW Acquisition Phase

• There are significant rules and requirements when dealing with public and franchise utility relocations. VDOT’s *Right of Way and Utilities Manual, Vol. 2* is an excellent source for relocation requirements.

• Phase ends with the Pre-Advertisement Conference.
Tier 1 Exercise-Final Design

TYPICAL SECTIONS

PRIVATE AND COMMERCIAL ENTRANCES

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Tier 1 Exercise-Final Design
Tier 1 Exercise-Final Design
Tier 1 Exercise-Final Design
Tier 1 Exercise-Final Design
The PDP – Advertisement Phase

Advertise Plans

Refine Plans

Plan Coordination Review

Project Manager Certifies Plans

Construction Plans (71)
- In Plan Utility Design/Relocations
- Road/Brige
- Traffic Control
- Utility/Landscape

Biddability Review (72B)
- Contract Documents
- Proposal

Prepare for Advertisement (72)
- LD-304
- EM-388

Advertise Project (80)

Project Award

Post Construction Review

Engineering

LD-402

Plan Submission (72X)

Plans Signed

Hazardous Materials Assessment/Remediation

Environmental Certification/PS&E Reevaluation (58)

Coast Guard Permits (63)

Environmental Permit Contract Documents (76)

Funding Certification (79,80X)

Railroad Right Of Entry Agreement (63)

Hazardous Materials Remediation

Funding Certification (69X)

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The PDP – Advertisement Phase

Environmental PS&E Re-Evaluation

23 CFR 771.129(c) – After approval of the EIS, FONSI, or CE designation, the applicant shall consult with the Administration prior to requesting any major approvals or grants to establish whether or not the approved environmental document or CE designation remains valid for the requested Administration action. These consultations will be documented when determined necessary by the Administration.

Prepare for Advertisement

23 CFR 630 – Preconstruction Procedures – Subpart B – Plans, Specifications, and Estimates (PS&E) – Requires that the PS&E assembly be submitted to FHWA for their review on federal aid projects.

Advertisement for Bids

23 CFR 635 – Advertising for Bids and Proposals
§ 32.2-235 - Advertisement for Bids
## Advertisement Regulations

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<td>Reevaluation</td>
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<td>Coast Guard Permits</td>
<td>23 CFR 650 Subpart H</td>
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<td>33 CFR 115</td>
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<td>Railroad Right of Entry Agreement</td>
<td>23 CFR 646</td>
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<td>Advertise Project</td>
<td>23 CFR 635</td>
<td>§32.2-235</td>
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</table>
The PDP – Advertisement Phase

• NEPA does not stop after the public hearing. Assurance of compliance with all previously attained approvals is a must to reach construction approval.

• FHWA reviews all PS&E’s on federal oversight projects. They have been treating all ARRA funded projects as federal oversight as well.

• Virginia Stormwater Management Program (VSMP) permits must be acquired for all projects with 1 acre (2500 Sq. Ft. in Chesapeake Bay locales) of disturbed area

• Phase ends with Advertisement
The PDP - Challenges

• Global economic and fiscal uncertainty
• Legislative and programmatic changes
• Expanding federal and state regulations
• Increasing project complexity and/or difficult and challenging project contexts
• Dynamic environment with fluid priorities
• Projects competing for limited resources
• Public Interest / External Stakeholder involvement
• Federal Obligation strategies
The PDP - Opportunities

- Utilize project management methodology and techniques to increase predictability and control and improve project team effectiveness
- Streamlined and/or tailored project development processes
- Strengthen stakeholder partnership (involvement and communication)
- Increase stakeholder and customer satisfaction
- Agility, creativity, and innovation driven solutions that employ flexible designs (Common Sense Engineering)
The PDP – Risk Management

• Required by May 2014 CTB Resolution
• Identify, analyze and respond to project risks
• Applicable to all Tier II and other projects deemed high risk by the Commissioner
• Deeply interwoven into the PDP
• Controlled by policies, procedures and statutory requirements
The PDP – Risk Management

Examples of Risks

• Environmental Approvals
• Geotechnical Conditions
• Right of Way/Utility Issues
• Permit Acquisition
• Third Parties (Localities, Railroads, Elected Officials, Citizen Support/Opposition)
• Funding
The PDP – Risk Management

Process

At each stage of the PDP:

• Identify potential risks
• Assess impact on Scope, Schedule and Budget
• Assess probability of occurrence
• Develop risk matrix
The PDP – Risk Management

![Risk Management Matrix]

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The PDP – Risk Management

Risk Response Development (only 4 options)

– Accept the Risk
– Mitigate the Risk (apply controls that reduce the impact or probability)
– Transfer the Risk (to another entity)
– Avoid the risk (try another way)

• Complete Risk Analysis Matrix and gain approval from District Management and Chief Engineer

• High Risk items must be presented to the CTB
The PDP – Interactive Discussion

• Issues hindering full implementation of PDP
  – Cultural / Corporate
  – Financial
  – Professional
  – Personal / Individual
The PDP – Interactive Discussion

• **Potential Implementation Techniques**
  – Contact Points / Communication Points
  – Critical Information Exchanges (What is it? Why do I need to know it? How do I need to use it to further develop the project? Who do I need to share it with?)
  – Decision Points / Outcomes
  – PDP Phase Coordination
Project Development Process (PDP) – An Overview

Richard Worssam, P.E.
Assistant State Location & Design Engineer

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