

Preliminary Engineering (PE)

- Engineering Study
- Preliminary Design
- **Final Design/
PS&E**
- Bid Phase



Section #15

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1



Final Design

Prior to Beginning

- Preliminary Design approved By NHDOT ✓
- NEPA Completed ✓
- Cost estimate updated with NHDOT ✓
- Schedule updated with NHDOT ✓
- "Received **Authorization to Start**" the Final Design phase ✓

or "RATS" work is ineligible!!

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2



7 Final Design Steps

- 1) Acquire needed Right-of-Way
- 2) Attend NHDOT's Office of Access, Opportunity and Compliance (OAOC) Training for Federally Funded Projects
- 3) Obtain Construction Engineering (CE) Services
- 4) Submit Public Interest Findings



3



7 Steps Continued

- 5) Develop Final Design (plans, quantities, specifications, and cost estimates)
- 6) Submit Final Design for NHDOT review and approval
- 7) Submit PS&E with Certifications




4

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#1**


Step #1 - Acquire Right-of-Way

ROW Steps (Before Final Design)

- Existing ROW has already been determined: Engineering Study ✓
- Temporary and permanent impacts outside of existing ROW have already been identified: Engineering Study and/or Preliminary Design ✓
- Public hearing for eminent domain was already conducted if necessary: Preliminary Design ✓



Section #19



5

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Acquire Right-of-Way

ROW Steps once in Final Design

- 1) Continue to follow the law
- 2) Develop ROW plans
- 3) Determine "Just Compensation" for project impacts (appraisals)
- 4) Acquire needed property rights
- 5) Certify that rights have been acquired

Step #4 - Acquisition of property rights cannot be started until after NEPA approval and after permission from NHDOT to begin Final Design Phase and ROW Phase activities

Section #19




6

**FD
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Acquire Right-of-Way

The Law

- **Federal law**
Uniform Act of 1970
49 CFR Part 24 (as amended)
- **State law**
RSA 498A, Eminent Domain



Section #19




7

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#1**


Acquire Right-of-Way

Uniform Act: when does it apply?

The Uniform Act applies to all projects receiving Federal funds or any Federal action where real property is acquired, or persons are displaced as a result of acquisition, demolition or rehabilitation.



Section #19




8


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Acquire Right-of-Way

What does Uniform Act do?

- Provides important protections and assistance for people affected by federally funded projects
- Ensures that people whose real property is acquired, or who move as a result of projects receiving Federal funds, will be treated fairly and equitably and will receive assistance in moving from the property they occupy





Section #19

9


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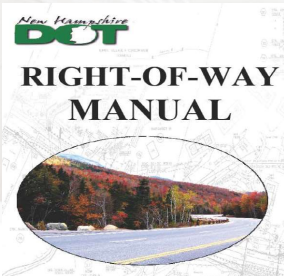
Acquire Right-of-Way


Uniform Act

Where to find more information?

- www.fhwa.dot.gov/real_estate/uniform_act
- <https://www.dot.nh.gov/about-nh-dot/divisions-bureaus-districts/right-way>







Section #19

10


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Acquire Right-of-Way

Types of impacts per parcel can include the following:

- Property acquisition (full or partial)
- Permanent easements (slope, drainage, sightline, others)
- Temporary easements (construction access, driveway match, others)
- Rights of Access

Section #19

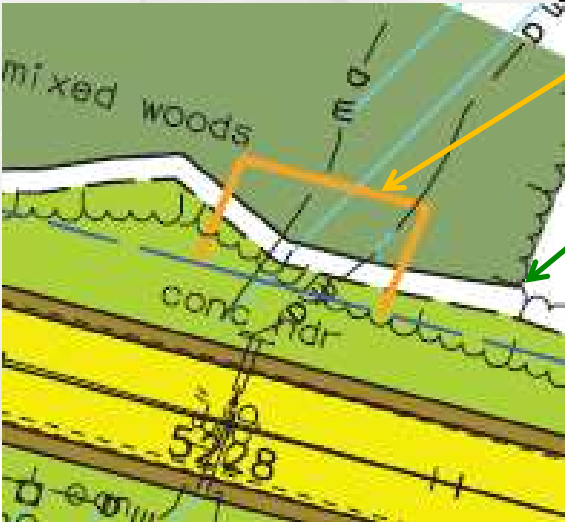


11

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Acquire Right-of-Way

Remember the public plan?




Drainage Easement

Clearing Easement

Slope Easement

Existing ROW

Section #19



12



Acquire Right-of-Way

Develop Right-of-Way plans

- Show proposed work in relation to the existing Right-of-Way
- Show sizes of **Permanent** and **Temporary Easements** needed to perform work
- Quantify/List amount and types of impacts per parcel

Section #19



13



Acquire Right-of-Way

ROW plans includes:

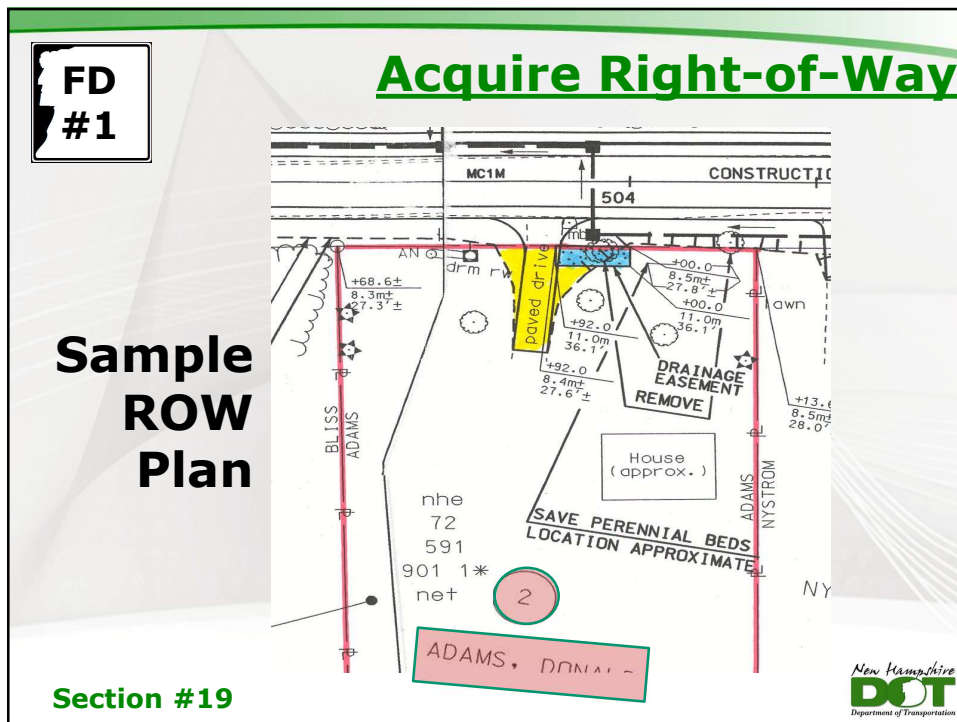
- Parcel numbers with ownership info
- Calculated square footage of each type of impact on each parcel
- Visual illustration of impact areas

Separate ROW plans may not be necessary, but information still needs to be shown.

Section #19



14



15

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Acquire Right-of-Way

Just Compensation

Now that the ROW plans are complete, its time to calculate Just Compensation and notify owners of their rights

- The Fifth Amendment of the United States Constitution provides that private property may not be acquired for a public use without payment of **"Just Compensation"**
- It is essential that **property owners hear from the Sponsor** that **they have rights** relative to the law **in writing upon first contact**

Section #19

16



Acquire Right-of-Way

Notify owners in writing of their rights

1. Receive Just Compensation
2. Have property valued by an appraisal
3. Have a written statement of the established Just Compensation
4. Be present during the appraisal inspection
5. Challenge the Just Compensation offer
6. Receive payment before surrendering property
7. Receive reimbursement for incidentals



Section #19



17



Acquire Right-of-Way

Appraisals

- **Appraisals** are used to determine **Just Compensation**
- The **Uniform Act** mandates an **appraisal process**, governed by the following standards:
 - **USPAP** – Uniform Standards of Professional Appraisal Practice
 - **UASFLA** – Uniform Appraisal Standards for Federal Land Acquisitions


Section #19



18

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Acquire Right-of-Way




Appraisals (2 per parcel)

1. An appraisal for each parcel must be developed by State of NH Certified Appraiser.
2. An independent review of each appraisal by a separate State of NH Certified Appraiser must be conducted.

- List of NH Certified Appraisers
<https://mm.nh.gov/files/uploads/dot/remot-e-docs/approved-appraiser-list.pdf>
- Four basic types of appraisal.....

Section #19



19

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Acquire Right-of-Way

Determine appropriate type of appraisal for EACH parcel

1. Complete Acquisition
2. Before & After Appraisal
3. **Land Value Appraisal (LVA)**
4. **Waiver Valuation Process**

Most common appraisal type for LPA project

Section #19



20



Acquire Right-of-Way

Complete Acquisition Appraisal

- See your NHDOT Project Manager

Before & After Appraisal

- Full narrative before the acquisition and a second narrative of the property considering the project acquisition
- The difference between the two is the estimated "**Just Compensation**"

Section #19



21



Acquire Right-of-Way

Land Value Appraisal

- Used when there is no value difference (after a careful analysis) of the property before and after the project
- Value of land only (per square foot or per acre)




Section #19



22

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Acquire Right-of-Way



Waiver Valuation Process

- Limited to acquisitions < \$10,000
- Must be completed by qualified people
- Cannot be used for eminent domain
- Based on 49CFR 24.103(c)(2)
- Used for **“uncomplicated”** acquisitions to save time and money vs. a full appraisal process

Section #19



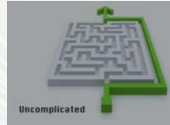
23

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Acquire Right-of-Way


What is “uncomplicated”

- Certain questions must be answered to determine if an acquisition is “uncomplicated” and the waiver valuation process can be used.
- A checklist has been developed from NHDOT’s ROW Manual with the list of questions.



Checklist in LPA handouts

Section #19



24

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Acquire Right-of-Way

Uncomplicated Checklist:

WAIVER VALUATION PROCESS FOR LPA PROJECTS
 Checklist for Determination if Acquisition is "Uncomplicated"

Project Name: _____ Sponsor: _____
 State Number: _____ Sponsor Representative: _____
 Federal Number: _____ Date Completed: _____
 Map/Lot Number: _____ Property Address: _____


In Order to determine whether or not an acquisition is "uncomplicated" the following questions must be answered

If one of these questions is answered "yes" the acquisition could still be considered "uncomplicated". Multiple "yes" answers would indicate that the acquisition couldn't be considered to be uncomplicated. A single "yes" answer would need to be further analyzed to decide whether the indicated situation causes the acquisition to become complicated and thus require the acquisition to be appraised. The project sponsor will need to submit the additional analysis required with the completed checklist.

This list of questions is not intended to be all-inclusive. The key to use this method of determining compensation is that impacts of the acquisition are minimal or can be easily measured by their cost to cure.

Is the acquisition over \$10,000?
 Is the acquisition anything more than a strip acquisition?
 Are buildings, wells, signs, etc. affected?
 Is the acquisition severing any buildings from remainder?
 Are trees, shrubs, or other landscaping involved?
 Is the proposed right of way line closer to any building after the acquisition to require analysis of possible proximity damages?

Section #19




25

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Acquire Right-of-Way

Waiver Valuation Team

- **Min 3 Person Team** – Person in Responsible Charge, person with market experience, and Engineer of Record to determine **Estimate of Compensation**
- Compensation is based on **market values** in area and applied consistently to all parcels (**not assessed value**)



Section #19




26

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Acquire Right-of-Way


Appraisal and Waiver Valuation

- Submit draft estimate of compensation package to NHDOT for review and approval prior to meeting with owner.



NHDOT is the certified review appraiser for waiver valuations.

Section #19



27


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#1

Acquire Right-of-Way


Non-Compensable Damages

The following would **not** be included in determining “just compensation”

- Changes in traffic patterns that increase or decrease traffic
- Temporary blockage of a street or highway
- Loss of business
- Interference with owner’s future plans




Section #19



28

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Acquire Right-of-Way



Donations

- A donation process has been approved by FHWA.
- Owner can waive Appraisal and Just Compensation.
- See your Project Manager if you have property owners interested in making donations.

[Donation Form in LPA handouts](#)



Section #19

29

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#1

Acquire Right-of-Way

Presentation of Just Compensation

- Meet with owner to present offer **in writing**
- Explain appraisal process and owner's rights (again)
- Describe project and show impact plan
- Offer Just Compensation determined by project team (can't offer less than Just Compensation)

[Section #19](#)



Section #19

30



Acquire Right-of-Way

Negotiation Diary

- Keep a written diary of all conversations and meetings with all people involved in the acquisition process
- During discussions, a property owner can request an independent appraisal to be funded by the project.

Section #19



31



Acquire Right-of-Way

Meeting with the Owner

- Make personal contact with each impacted property owner
- Call first to make an appointment
- If property owner does not want to meet, call first and then certify mail information



Section #19



32



Acquire Right-of-Way

Meeting with the Owner

- Fully explain the project and impacts, listen to concerns, answer questions or get answers if you do not know
- **Listen** to the owners and **be flexible**
- Design flexibility will often yield **positive results**



Section #19

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33



Acquire Right-of-Way

Meeting with the Owner

- Give the property owner time to consider the offer
- Typically call back after 1 to 2 weeks
- 45 days are required before you could start eminent domain proceedings



Section #19

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34



Acquire Right-of-Way

Never Coerce an Owner

- If owners say no, evaluate your options
- Why are owners against the project? (find compromise)
- Can you redesign to eliminate impact?
- Eminent Domain? (if you have followed all appropriate RSAs)



Section #19

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35



Acquire Right-of-Way

Administrative Settlements

- This is a settlement amount above the just compensation amount, requires **written justification** and **approval by NHDOT**
- Sometimes they make sense!

Section #19

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36



Acquire Right-of-Way

When Owner Agrees:

- Owner signs the Offer/Agreement form
- LPA Schedules closing
- At Closing, exchange check for:
 - Signed Permanent Easements, and/or
 - Signed Temporary Easements, and/or
 - Signed Rights of Entry

Section #19



37



Acquire Right-of-Way

Personal Property Relocation

- Signs, fences, lamp posts, small buildings, septic systems, wells, etc. can be relocated if warranted by the project.
- Reimbursement program, pay the lower of at least 2 reasonable estimates.



Section #19




38

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#2**


Step #2 – Office of Access, Opportunity and Compliance Training

Who Needs to Take Training?

- Sponsor’s Person in Responsible Charge
- PE Engineer of Record
- CE Engineer of Record
- Resident Engineer and
- Resident Engineer’s Designees



Section #22



39

**FD
#2**


Office of Access, Opportunity and Compliance Training

What and When?

- 1/2 day virtual training provided by NHDOT’s OAOC Office
- Must be completed prior to Final Plan approval
- Keep your certificate – needed later

Training information in LPA handouts

Section #22



40



Office of Access, Opportunity and Compliance Training

What does the Training Cover?

How to comply with Federal Low Bid contracting requirements:

- FHWA Form 1273
- Davis Bacon Wage Requirements
- CFR 23 and CFR 49, and
- As well as certain NH State Laws



Section #22

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41



Office of Access, Opportunity and Compliance Training

When does OAOC get Involved?

- When reviewing your bid documents
- While attending your preconstruction meeting
- While visiting your construction site
- When releasing contractor's final payment

Section #22

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42



Office of Access, Opportunity and Compliance Training

What does OAOC do?

With your help they:

- Verify proper bid documents
- Provide subcontractor approvals
- Set and monitor contractor wage rates
- Log contractor employees on site
- Verify timely payments to contractor employees
- And a variety of other items

The image shows a 'WEEKLY TIME SHEET' form. It includes fields for 'EMPLOYEE NAME', 'DEPARTMENT', and 'EMPLOYEE #'. Below these is a table with columns for 'DAY OF WEEK' (SUNDAY through SATURDAY) and 'TOTAL'. The table is currently empty. At the bottom, there are fields for 'Signature of Employee', 'Signature of Supervisor', and 'Date'. The logo 'BAMSTERDAM' is visible in the bottom right corner of the form.

"Responsibilities Guide" in LPA handouts

Section #22



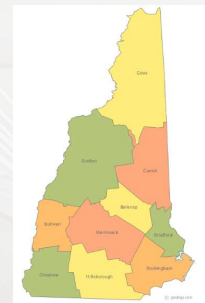
43



Office of Access, Opportunity and Compliance Training

Contact Information

- Email: oaoc@dot.nh.gov
- Phone: (603) 271-6612
- Website:
www.dot.nh.gov/doing-business-nhdot/office-access-opportunity-and-compliance



Section #22



44



Step #3 – Obtain Construction Engineering (CE) Services

CE Services Typically Include:

- Oversight and inspection of the contractor
- Documenting quantities and pay estimates
- Material testing/Quality Assurance Plan
- Assisting OAOC
- Monitoring traffic control
- Monitoring environmental commitments
- Monitoring for a safe work environment
- **Responsible of all project construction records**
- LPA can't use same consultant for PE and CE services.



Section #13, #14, & #27



45



Obtain CE Services

Two Options:

- 1) Typical Request for Qualifications advertised by LPA with broad outreach (news papers, etc....)
- 2) NHDOT Prequalified List
(Similar to option #1 but saves some time by directly contacting firms from our list)

The CE QBS process is the same process as yesterday when you learned how to obtain PE services.

Start Early - We often find LPA's are rushing to complete this effort as they are bidding the project

Section #13, #14, & #27



46



Obtain Construction Engineering Services

Role of PE "Engineer of Record" during Construction

After PE Phase ends, the PE Engineer of Record is still needed under a separate contract during the Construction Phase to:

- Attend pre-construction meeting
- Address design questions from contractor
- Shop drawing review/approval (bridge/structural)
- Potential Form 4 analysis (bridge)
- Potential redesign efforts
- Final inspection

No QBS for Engineer of Record – already done ✓
But will need scope and fee review and approval

Section #13, #14, & #27



47



Step #4 – Public Interest Findings

Public Interest Findings

- The use of non-competitive bid items or materials/labor provide by municipality are *sometimes* included in a project.
- Can only be utilized if it is found to be in the **public's best interest.**
- Approval Required Via:
 - Public Interest Findings (**PIF**) or
 - Proprietary Patented Product Use Form (**PPUF**)

Section #24



48



Public Interest Findings

PPUF Examples

- **Experimental Items** – A new/innovative product from a sole source.
- **Proprietary Items** – A specific product from a sole source (traffic signal controller to match existing traffic controller system).



Section #24



49



Public Interest Findings

PIF Examples

- **Local Agency Forces** – Using municipal staff to provide labor, equipment and/or material (installation of pavement markings).
- **Local Agency Material** – Using municipal material (drainage pipe for low bidder).



Section #24



50



Public Interest Findings

PIF/PPUF approval process:

- Sponsor documents:
 - Why non-competitive procurement is desired
 - Cost savings realized
 - Certifies resulting product or service will meet all normal requirements
- Submits PIF/PPUF Request to NHDOT Project Manager
- NHDOT reviews and approves most; some requests require FHWA approval

Forms and examples in LPA handouts

Section #24



51



Step #5 – Develop Final Design

Final Design includes:

- Detailed Plans
- Updated Item Quantities
- Updated Cost Estimate
- Bid Proposal with Specifications

Consultant shall undertake a QC/QA process prior to submitting to NHDOT

Section #15





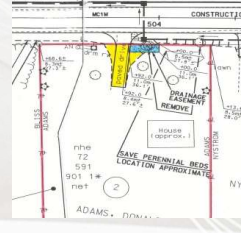
52


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#5**

Develop Final Design


Incorporate comments from:

- Preliminary Design Review
- Public Input Process
- ROW / Abutter Agreements
- NEPA Process



Section #15



53

**FD
#5**

Develop Final Design


Post NEPA approval:

- Apply for permits
- Acquire ROW
- Minimize Unavoidable Impacts
- Design and Build Mitigation
- Follow thru on commitments

}

Final Design
&
Construction

Section #17



54


**FD
#5**

Develop Final Design

Final Design Plans should:

- include existing information (survey, ROW, resources, etc.)
- include the proposed design
- include plan views, profiles, cross-sections, details, etc.
- be utilized to obtain the quantities in cost estimate

Section #15

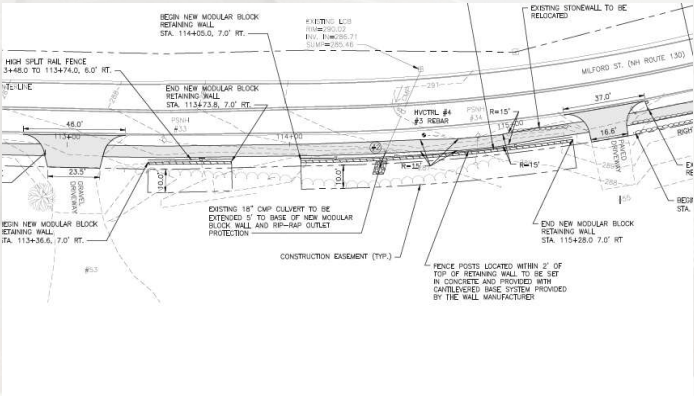


55

**FD
#5**

Develop Final Design


Sample Final Design Plan



DRAINAGE PIPE TABLE				
PIPE NO.	PIPE START	PIPE END	LENGTH	Slope (FT/FT)
#2	STA. 1144+1, RT. 5' INV.=286.55	STA. 114+43 RT. 5' INV.=286.61	4.51' OF 18" CMP	0.0133

DRAINAGE OUTLET STRUCTURE TA	
STRUCTURE	INVE
RETAINING WALL OUTLET STA. 1144+1, 8' RT.	PIPE #2 (18"

Section #15



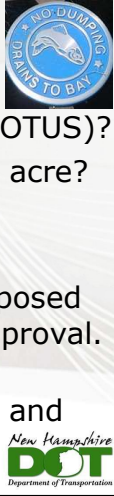
56

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#5**

Develop Final Design

Prepare MS-4 Technical memo

- Back in Preliminary Design you determined if project:
 - Is in MS4 regulated area of state?
 - 1) Is located within the State Right-of-Way?
 - 2) Has a point source discharge?
 - 3) Point source discharges to "Waters of the US" (WOTUS)?
 - 4) Impervious area of point source is greater than 1 acre?
- If true, now in Final Design:
 - Prepare Drainage "Technical Memo" including proposed water quality treatment for NHDOT review and approval.
 - Discuss and agree on new drainage maintenance responsibilities with your NHDOT Project Manager and NHDOT Highway Maintenance Office.



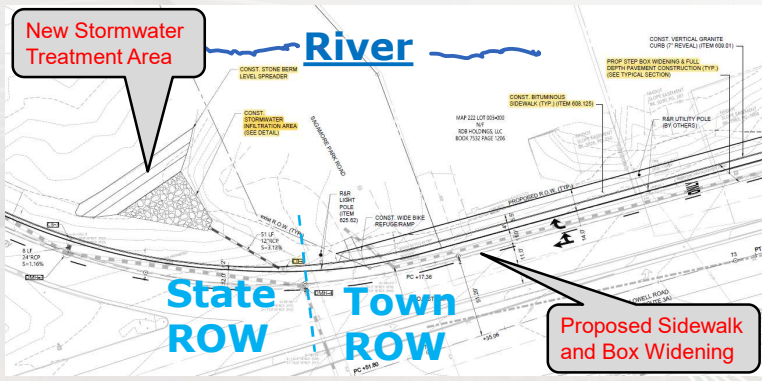
57

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#5**


Develop Final Design

MS-4 Example

- In regulated area of State - **yes**
- 1) In State ROW - **yes**
- 2) Point Source Discharge - **yes**
- 3) Discharge to WOTUS - **yes**
- 4) Impervious area of point source > 1 acre - **yes**



NHDOT needs to be aware of additional drainage elements as it affects our permit with NHDES (Environmental Services)



58

FD
#5

Develop Final Design

Prepare LRS Contract Documents


Previously in Preliminary Design you determined:

- If project was located in State ROW ✓
- The general quantities and stockpile locations ✓

Now in Final Design:

- Finalize quantities and stockpile locations
- Develop and submit Soil Management Plan (SMP)
- Submit Special Attention Project Operation Plan (SA-POP) – a specification for the contractor to follow

SMP and SA-POP templates in LPA handouts

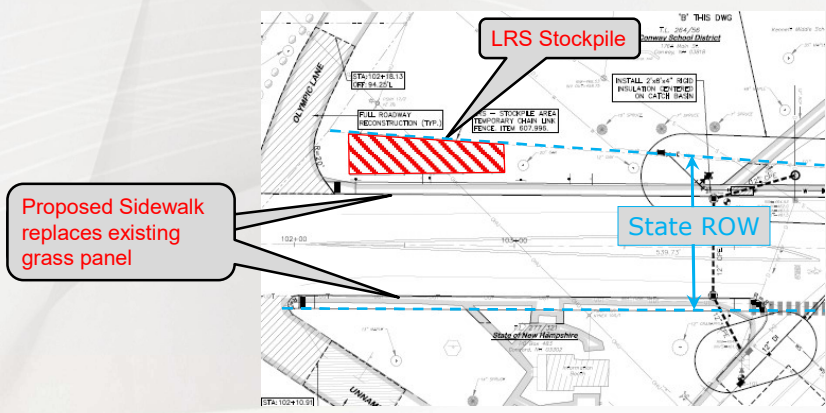


59


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Develop Final Design

LRS Example



LRS stockpiles to be kept inside existing ROW



60



Develop Final Design

Cost Estimate

- Use **NHDOT 2016** standard item nomenclature (as amended)
- Include flagging/police items
- Avoid miscellaneous items
- Use costs from similar projects (NHDOT has recent information)
- **Include Non-Participating costs**
- **Do not include contingencies**



Section #15



61



Develop Final Design

Proposal includes:

- Prosecution of work (project description)
- Intermediate and final completion dates
- **OAOC documents relative to Federal-Aid (required!)**
 - Davis Bacon wage rates, etc...
 - See OAOC website for "Contract Document Package"



Section #15



62


**FD
#5**

Develop Final Design

Proposal includes:

- Environmental commitments
- Copies of permits
- Special Right-of-Way items
- Areas to avoid (historic, protected)
- Traffic Control information

Section #15



63


**FD
#5**

Develop Final Design

Proposal includes:

- Concurrent construction information
- Utility company contact information and relocation schedule
- Holidays & special Town event info
- **Liquidated damages clause**
- **No retainage clauses**

Section #15



64



Develop Final Design

Bid Alternatives

- Additional items to be bid
- Consider utilizing Bid Alternatives early in the design process
- Used for variety of reasons
- Must be "Add" alternatives (not subtract)
- Listed in order of priority/preference
- No partial alternatives awarded

Section #15 & #26



65



Step #6 -Submit Final Design for Review

Submission requirements:

- Sponsor Letterhead
- Plans, Profiles, Cross Sections
- Bid Documents and Specifications
- Itemized Cost Estimate
- Check with NHDOT Project Manager on format for electronic submission

Section #15



66



Submit Final Design for Review

Final Design Submission

- The Final Design package submitted should be 95% to 100% complete.
- If complete, the Final Design package becomes the **PS&E** set with "Design Approval" from the NHDOT.

Section #15



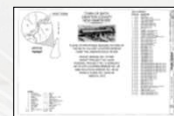
67



Step #7 - Submit PS&E with Certifications

What does PS&E really mean?

P = **Plans** stamped by NH Licensed Engineer



S = **Specifications** (Proposal) including Labor Compliance documents



E = Final Engineer's Cost **Estimate** including Construction Engineering

Item	Quantity	Unit	Rate	Total
Excavation	100	cu yd	15.00	1500.00
Backfill	200	cu yd	10.00	2000.00
Asphalt	500	sq yd	4.00	2000.00
Concrete	100	cu yd	120.00	12000.00
Steel	100	lb	0.50	50.00
Paint	100	gal	1.00	100.00
Signage	100	sq ft	1.00	100.00
Construction	100	hr	20.00	2000.00
Permit	1	fee	1000.00	1000.00
Design	1	fee	5000.00	5000.00
Subtotal				22000.00
Contingency				2200.00
Total				24200.00

Section #25



68



Submit PS&E with Certifications

ROW Certificate

- Found in **Appendix 11** of the **LPA Manual**
- Signed by LPA Sponsor
- Certifies that all ROW has been acquired in accordance with State regulations and the Uniform Act
- **Include copies of any acquisitions, easements, rights of entry**



Sample ROW Certificate in LPA handouts

Section #25



69



Submit PS&E with Certifications

Utility & RR Certificate

- Found in **Appendix #14** of the **LPA Manual**
- Signed by LPA Sponsor
- Certifies that all **utility and railroad** work has been or will be completed as required for proper coordination with the project



Sample Utility & RR Certificate in LPA handouts

Section #20



70



Submit PS&E with Certifications

OAOC Training Certificates for:

- Sponsor's Person in Responsible Charge
- PE Engineer of Record
- CE Engineer of Record
- Resident Engineer and
- Resident Engineer's Designees



We also need NEPA Complete Memo and Traffic Control Committee Approval Memo

Section #20



71



Submit PS&E with Certifications

PS&E request from NHDOT to FHWA

- NHDOT uploads the submitted PS&E information with certificates into our financial system.
- We then request authorization of Federal Construction funds from FHWA.
- This process takes approximately 2 to 3 weeks.



Section #25



72



Submit PS&E with Certifications

If all goes well...

- **FHWA** authorizes construction funding and **notifies NHDOT.**
- **NHDOT notifies LPA in writing** that construction funding is authorized, and that **project may solicit bids.**
- Then on to Bid Phase services...

Section #25



73




7 Final Design Steps

Re-Cap:

- 1) Acquire needed Right-of-Way
- 2) Attend NHDOT's Office of Access, Opportunity and Compliance (OAOC) Training for Federally Funded Projects
- 3) Obtain Construction Engineering (CE) Services
- 4) Submit Public Interest Findings




74




7 Final Design Steps

Re-Cap:

- 5) Develop Final Design (plans, quantities, specifications, and cost estimates)
- 6) Submit Final Design for NHDOT review and approval
- 7) Submit PS&E with Certifications




75



End of Final Design

Let's go over Project Status

- Project Agreement ✓
- Consultant Selection (QBS) ✓
- Scope and Fee ✓
- Engineering Study ✓
- NEPA Complete Memo ✓
- Preliminary Design ✓
- Final Design ✓
- PS&E Submission & Certifications ✓
- Construction Engineer ✓
- Engineer of Record "services during construction" ✓
- Received letter from NHDOT to solicit bids ✓



76



Final Design

Questions ?



**Next Up:
Bid Phase**

