



## ***Effective Utility Accommodation***

### **Final Report**

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Prepared by: GAI Consultants, Inc.

Commonwealth of Pennsylvania

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<b>16. Abstract</b> The report presents research regarding methods to improve project delivery times and minimize construction delays due to utility coordination by conducting a study of the current best practices used by six (6) similar state transportation departments, selected PennDOT District staff, consulting engineers, and utility agencies/owners. Through this research, logical, practical, and implementable solutions to the utility relocation and coordination process problems are recommended.					
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## 1.0 Executive Summary

### Introduction

The purpose of this study is to improve design project delivery times and minimize construction delays due to utility coordination. Delays in design and construction projects resulting from the existing utility relocation and coordination process often causes construction cost increases. Pennsylvania Department of Transportation (PennDOT) seeks to identify changes to policy, procedure, and legislation that will improve this process. PennDOT also seeks to determine if the lack of a career path, improper entry-level skill sets, and/or the pay level of the District Utility Technicians contribute to loss of institutional knowledge, which thus reduces the effectiveness of the utility relocation and coordination process.

### Project Goal

The project goal is to improve design project delivery times and minimize construction delays due to utility coordination by conducting a study of the current best practices used by six (6) similar state transportation departments, selected PennDOT District staff, consulting engineers, and utility agencies/owners. Through this research, logical, practical, and implementable solutions to the utility relocation and coordination process problems will be recommended.

### Project Scope of Work

The three (3) key work tasks of this study are as follows:

#### Literature Search

- + Develop and send survey/research questionnaires regarding effective utility accommodations to state DOT staff in Illinois, Indiana, Maryland, Ohio, Virginia, and West Virginia (including Best Practice opportunities).
- + Conduct interviews with selected PennDOT District staff in design, construction, and utility units, (Districts 1-0, 9-0, 10-0, and 11-0).
- + Research recent studies on utility relocation, PennDOT Design Manual Part 5, and AASHTO, Transportation Research Board (TRB) , and other reports and studies.
- + Research staffing requirements, knowledge skills, and retention policies concerning district utility units.

## Recommendations for Implementation

- + Work with PennDOT Project Team members to identify best management practices to utilize as a benchmark.
- + Formulate possible recommendations for evaluation and solution for PennDOT to implement.
- + Meet with project team members to evaluate possible recommendations.
- + Prepare summary report that provides a list of solutions with recommendations for implementation by the Department.

## Training Materials

Utilizing the latest PennDOT Design Manual 5 Utility Relocation Training Power Point presentation booklet as a base, the training material will be updated to include training items recommended by this study.

## Utility Cost Summary from Research

The annual cost of relocating utilities on PennDOT projects is extremely high. The project team documented statewide utility relocation costs from July 1, 2008 through April 8, 2009. These costs were then expanded, based on average monthly costs, to provide a total utility relocated cost for a one-year period:

**PennDOT Reimbursable Cost - \$26.3 million**

**Total Utility Cost - \$45.4 million**

## Project Findings

Through the project research, 57 utility accommodation issues were documented, of which six (6) were eliminated; fifteen (15) were of low priority, and will be addressed through the training material presentation; and thirty-six (36) were addressed through separate initiatives.

Six (6) pending initiatives were identified for further PennDOT consideration, as follows:

- + Initiative 1 – Design
- + Initiative 2 – Utility Payments
- + Initiative 3 – PennDOT Utility Unit Staffing – Training, Certification, and Career Path
- + Initiative 4 – Promote More Prior Work by Utility Agency/Owner (UAO)

- + Initiative 5 – Expand UAO Coordination Meetings
- + Initiative 6 – Utility Issues Before and During Construction

In addition to these initiatives, three (3) Best Practices were identified for further consideration by PennDOT as follows:

- + Back charge UAOs for Contractor Delay Claims
- + Improve Utility Coordination During Construction
- + Utility Relocation Support Open-End Agreement

The following is a list of the key recommendations of the study:

- + Subsurface Utility Engineering (SUE) should be required on all projects during the design phase, except those deemed as exceptions by the District Utility Administrator (DUA).
- + Authorize the DUA to make direct payments for \$25,000 or less, and include streamlining the total reimbursement process, including agreements.
- + An optimum PennDOT District Utility Unit staff size should be three (3) employees, consisting of a DUA, and two (2) technicians for rural districts, and one (1) additional technician for urban districts.
- + Improve Utility Staff Training
- + The Department should consider requiring “date certain” instead of “number of days” for UAOs to complete their relocation work in conjunction with the project’s CPM schedule.
- + To encourage more “Prior Work” by UAOs, the Department should consider a payment to each impacted UAO for 25% up-front for all utility costs, even work within legal R/W.
- + The committee recommends that two (2) separate meetings be held each year in each engineering district with area UAOs to promote the exchange of information, available support, and staff interaction between Department staff, UAOs, engineering consultants and contractors.
- + Once a construction project is let, should the contractor desire to incorporate any revision, which impacts the UAO, the contractor must reimburse the expense, or secure approval from the UAO.

- + The state legislature should adopt legislation that would require UAOs to reimburse the Department for delay claims filed by contractors that were a result of UAOs failure to relocate their facilities as specified in the original contract or the agreed to relocation schedule.
- + Utility coordination assistance during construction should be provided by the Department by either utilizing their staff, a consultant or requiring the contractor to provide utility coordination as part of the bid package.
- + The Department should utilize Utility Relocation Support Open-End Agreements for use by engineering districts during the design phase. This could include SUE investigations, field survey, clearing and grubbing and construction inspection.

A detailed list of all study recommendations are presented in Section 3.0.

As part of this study, GAI developed a PowerPoint presentation outlining project findings along with a matrix of information including the identification of a task or process owner, recommendations, action items, timeline for implementation, measures of success and cost benefits.

The Power Point presentation and matrix are presented in Appendix A.

GAI has also modified PennDOT's latest Design Manual 5 Utility Relocation Training Power Point presentation to include training items recommended by this study. This modified Power Point Presentation is presented in Appendix B.

## Section 2.0 Summary of Project Activities

### Task 1 – Literature Search

#### Scope of Work:

- + Developed and sent survey/research questionnaires regarding effective utility accommodations to state DOT staff in Illinois, Indiana, Maryland, Ohio, Virginia, and West Virginia (including Best Practice opportunities).
- + Conducted interviews with selected PennDOT District staff in design, construction, and utility units, (Districts 1-0, 9-0, 10-0, and 11-0). Conducted interviews with selected consulting engineer design staff and UAO staff regarding their current utility practices and problems.
- + Researched recent studies on utility relocation, PennDOT Design Manual Part 5, and AASHTO, Transportation Research Board (TRB), and other reports and studies, including the following PennDOT studies:
  - + Utility Clearance Process Macro Level Map – June 29, 2000
  - + Audit Plan/Report – D5 Utility Clearance – March 17, 2006
  - + Utility Relocation Benchmarking Project – December 19, 2007
- + Researched staffing requirements, knowledge skills, and retention policies concerning district utility units.

#### Results:

#### Responses to multi-state DOT survey questionnaire.

#### Matrix 1: Utility Identification on Transportation Improvement Projects:

##### Questions:

1. Twenty-five percent (25%) of those responded do not know that their state has a one-call center. All responses for Pennsylvania indicate that they are aware of PA's one call center.
2. Twenty-five percent (25%) of those responded indicate that no central office or district office contact location is available to UAO's. Two responses for PA indicates more effort may be necessary to ensure all utility unit employees are correctly informed of this specific information.

3. Twenty-five percent (25%) of those responded believe there is a statewide utility organization. All PA responses concur.
4. Forty-three percent (43%) believe there are no local utility groups, which meets regularly to discuss future projects, while the remaining 67% say there are. PA responses are equally split.
5. Only 6% indicated there is no designated State/District Utility Engineer. The vast majority is aware that their state has designated state/district utility engineer. All PA responses indicate full knowledge of this position.
6. Fifty-one percent (51%) responded no, that utility coordination is not a function of the state's R/W office. PA is split, three (3) yes, two (2) no, which indicates a problem.
7. Eleven percent (11%) indicated there is no DOT straight-line diagram for specific roadway information. No problems were indicated in PA.
8. Forty-six percent (46%) indicated there is a state utility permitting repository. Some confusion exists in PA, and efforts will be provided to ensure correct information is made available to the Department utility staffs.
9. Twenty-three percent (23%) of those surveyed believe utility ownership is not determined during the initial survey. Everyone surveyed in PA believes they are.
10. Thirty-one percent (31%) surveyed believe their state does not have standard levels of verification. No issues were identified in PA.
11. Sixty-six percent (66%) surveyed believes their state does not require SUE.
12. For this question, survey responses were grouped into seven (7) responses. Majority of those, which responded, indicated initial utility identification is done by the District Utility Coordinator/Engineer or project designer. PA responses are divided equally also.
13. The majority of those surveyed, identified that UAO's are identified during the project planning state, beginning of preliminary design or the scoping field view. Responses for PA vary greatly.

14. The vast majority of all responses indicated that the UAO's are responsible for confirmation of type, size, and location of utilities. One response for PA indicates the District Utility Coordinators/Engineer.
15. Major issues exist with SUE's. A large response indicates their involvement should occur during preliminary engineer, while an equal amount indicates SUE involvement never occurs. PA responses indicates that SUE involvement does occur, but when varies.
16. Majority of those surveyed indicates that either the UAO or District Utility Coordinator/Engineer is responsible for identification of utility pole owners and joint use. The responses for PA vary greatly.
17. Eighty-eight percent (88%) of those surveyed indicates that any National Defense facilities present on a project make no difference in the way they are processed. All PA responses supported these results.

#### **Matrix 2 – Occupation of Public Roadway R/W (Non-Limited Access)**

18. Only 2% of those surveyed said their state does not require a permit for utility installation. One of only two responses comes from PA.
19. Forty-three percent (43%) of those surveyed said a fee is required for utility installation in public R/W. PA responses are divided equally.
20. Twenty-three percent (23%) of those surveyed said that separate permits are not required for joint use facilities. Surveyed results indicate no problems with this issue in PA.
21. Thirty-four percent (34%) of those surveyed stated that service life is a factor in determining reimbursement cost. However, 100% of those surveyed for PA supports these findings. No further action is necessary.
22. Forty percent (40%) of those surveyed stated that private individuals or corporations cannot construct facilities within public R/W. One response for PA supports this position.
23. Seventeen percent (17%) of those surveyed indicates that scaled drawings for utility installation are not required. One PA response so indicated.

24. Only one response stated that they do not follow FHWA guidelines for UAO installations on limited access highways and that response was in PA. GAI will investigate to find out why this misunderstanding exists.

### **Matrix 3 – Utility Conflict Identification**

25. Twenty percent (20%) of those surveyed indicates that mitigation efforts during design are not required. PA's response indicated that they are, however, based on responses from the UAO's indicate an issue may exist.
26. Thirty-five percent (35%) of those surveyed stated that their state does not have prerequisite requirements for advancement. PA responses are split on this subject.
27. Thirty-four percent (34%) indicate that their state requires a conflict matrix be developed for each project. All but one of PA's responses concurred.
28. Fifty-four percent (54%) of those surveyed indicated that their state requires a utility work schedule for each project. One-hundred percent (100%) of PA responses concurred.
29. Eighty-three percent (83%) of those surveyed indicated that the contractor is responsible for locating existing utilities prior to starting construction. One survey for PA differs.
30. Everyone except for two surveys concur that their state supports and works for the advance relocation of utilities. The one opposing vote came from PA.
31. Thirty-eight percent (38%) of those surveyed indicated that their state does not require the contractor to hold construction meetings with UAO's to review potential conflicts. One-hundred percent (100%) of PA responses concurred.
32. The majority of those surveyed stated that either the project designer or District Utility Coordinator/Engineer identifies potential utility conflicts. The responses for PA vary greatly.
33. The vast majority believe the Departments' Utility Coordinator/Engineer is responsible for negotiating conflict resolution. However, a large number indicates the responsibility of the project designer. PA responses are divided.

34. Seventy-two (72%) of those surveyed stated that utility conflicts should be addressed at 30% plans for initial contact. The remaining 28% stated it should occur at 60% plans for conflict resolution. A minor difference was identified in PA.
35. A major issue has been identified with how utility conflicts are administered during construction. Not only does it vary greatly in PA, but it also varies throughout all of our surveys.

#### **Matrix 4 – Existing Agreements between the State Agency and the Utility Agency/Owners**

36. Twenty-six percent (26%) of those surveyed indicated that their state does not hold any form of meetings with UAO's to discuss concerns relating to construction projects. A minor difference was determined in PA.
37. Forty-six percent (46%) of those surveyed indicated that their state has a liaison between state and county departments to discuss future construction projects. PA is split on this subject.
38. There is only one response that indicated their state does not have a five-year plan indicating future construction projects. PA responses all concurred with these findings.
39. Fourteen percent (14%) of those surveyed indicated it would be of no value to have a Department employee to function as a UAO representative. Everyone from PA concurs with its value.
40. Twenty-three percent (23%) indicated that there is no agreement between their state and UAO's regarding responsibilities for relocations. PA is split on this issue.
41. Thirty-four percent (34%) indicated that if a R/W replacement for utility easement were necessary, the UAO would not be compensated. PA is split on this issue.
42. Twenty-six percent (26%) indicated that if a UAO is compensated during the R/W phase, they are not eligible for relocation costs. All PA response concurred.
43. When a utility parcel is required for new R/W, 31% indicated that the cost to cure is administered by their R/W office. PA is split on this subject.

44. Thirty-four percent (34%) of those surveyed indicated that their state secures all required R/W six months prior to a construction bid letting. A major difference in responses occurred for PA.
45. Thirty-seven percent (37%) of those surveyed indicated it is the responsibility of the UAO for all clearing and grubbing for advance utility relocations. A major difference in responses occurred for PA.
46. For advanced utility relocations, 49% indicated it is the UAO's responsibility for maintenance of the R/W prior to the start of construction. There is one descending vote for PA.
47. Forty-six percent (46%) of those surveyed indicated there are some type of local utility groups, which meets regularly to discuss future construction projects. Some differences have been noted in PA.
48. Twenty percent (20%) indicated that their state provides "turn-key" utility relocations for a fee to the UAO.
49. Thirty-one percent (31%) indicated that their state provides joint trenching for multiple UAO's if they provide the conduit and installation by the contractor. PA's response is split on this subject.
50. Nine percent (9%) indicated that their state does not permit UAO oversight/acceptance of installation by the contractor for utility relocations. Everyone from PA concurs with these results.
51. Ninety-nine percent (99%) of those surveyed indicates that their state provides stake of R/W for all advance utility relocations. Everyone from PA concurs with these results.

### Utility Company Questionnaires

- + Of those companies interviewed, they describe their working relationship with PennDOT as generally good. They also noted that this good working relationship carries over from the design phase through construction; however, there are more negative issues in construction. During construction, the contractor often wants to change things to make conditions easier for themselves.

- + In general terms, the utility companies think PennDOT staff is concerned about their issues. Most often they are satisfied with the current processes.
- + They support the fact that PennDOT functions under a structured utility coordination process. Many noted that things work well during design, and problems begin when construction starts.
- + Most UAO's contacted noted that payments for allowable charges upfront would be beneficial to them.
- + Every UAO contacted supports PennDOT conducting an annual training session, during available timing for the UAO's with PennDOT and contractors. Learn to see things from everyone's point of view.
- + Most existing UAO's are dealing with retirements and layoffs, nothing more was noted. Work is still being done.
- + A wide variety of methods are used to verify utility locations by the UAO's
  - One-call system
  - System maps
  - Paper files
  - Field verification
  - Electronic GIS
- + PennDOT notifies UAO's in advance of future projects by:
  - Future project listing
  - Proposed letting schedules
  - Design meeting schedules
  - Project specific utility meeting
- + What could PennDOT do to help your company?
  - More timely/upfront reimbursement.
  - Advance the entire process as much as possible.
- + UAO's controlling factors for ability to provide timely utility adjustment
  - Available/programmed funding

- UAO's process to secure private contractors
- UAO's contractor's priority
- + Most existing UAO's would like to see PennDOT, include avoidance of utilities during design, and track efforts so fairness can be demonstrated.

### Consultant Interview Observations

#### Issues:

- Major pending issues which need addressed
  - Getting timely responses from utility companies showing their facilities on base map. Some companies send their own utility maps instead.
  - Getting utility company representatives to attend scheduled utility meetings.
  - Having utility companies relocate their facilities in a timeframe agreed to during final design.
  - Not knowing correct owner of specific utility identified in the field (utility companies never claims ownership).
  - Not all utility companies respond to the PA One Call and mark their lines in the field. Questionable accuracy also.
  - Having companies complete Form 4181 in a timely manner.
  - Utilities do not present R/W records until too late in final design.
  - Private utility companies often do not register with PA One Call.
  - Underground utility lines are often not as deep as utility company say they are.

#### Recommendations:

- + Make follow-up phone calls to utility company contact after sending plans to be marked up to make sure they went to the correct person.
- + If no reasonable response, have the District Utility Coordinator/Engineer call utility companies that do not cooperate.
- + Get dates for utility relocations in writing from utility company supervisors prior to construction starting.
- + Updated PA One Call system on a regular basis to ensure accurate data of utility contacts.

- + The state should consider incentives to encourage utility companies to complete relocation work on time. Example: Attempts to minimize or avoid utility impacts during design on a fair share concept and upfront reimbursement.
- + Make personal phone calls with utility company contacts each time a plan is submitted, and/or for each scheduled meeting.
- + All utility easements and R/W agreements need to be recorded in appropriate county courthouse.

### **General GAI Observations:**

1. Many of the issues, which have surfaced thus far are minor and simple to address. Consideration should be given to the development of a Desk Manual or Operations Manual, which functions as a reference source for both new and experienced employees.
2. PennDOT's design manuals require all project designers/engineers to practice utility avoidance methods when feasible. The Department needs to strengthen this process, and possibly consider a simplified training course.
3. Reimbursement appears to be a concern. To revise this, the Department or legislative changes will be necessary.
4. Revise the Department's current checklist or develop a new checklist used from the beginning of the design phase through construction phase. This checklist will have all specific items of work or processes needed for each project, and require that the individual, which completed that assignment, initial and date that form. The form would remain in the project file to and through construction.
5. Several barriers have been identified during our research. For example: several individuals had encountered a number of barriers to adopting a more team-oriented approach, including resistance from middle managers who feel they are losing authority and control, a general resistance to change from employees, and challenges working within the state civil services systems.
6. Some District Utility Coordinators willingly admit they are not always in total compliance with Design Manual, Part 5.
7. One interesting finding in the "PennDOT Utilities Relocation Benchmark Project Report" is that in PennDOT there are eleven (11) different ways of doing utility relocations.

8. At the present time only two districts have measures for utility relocation, both are customer service measures (District 5-0 and 9-0).
9. Sequence of construction is critical to utility relocations. PennDOT writes the sequence of construction into the bid package. PennDOT does not hold the contractor to that sequence.
10. Right-of-way acquisition delays are a detriment to advanced utility relocations.
11. District 6 gets funding approval for the utility phase prior to environmental clearance. This could be a start for securing advance payment to UAO's.

## **PennDOT – Design Unit Questionnaires**

### **Matrix 5 – Design Unit**

Questions:

1. How much do you use SUE? Do you have any open-end contract with a SUE contractor, as noted in DM-5, Chapter 5, Page 5-1, item A?

**Three of the four Districts interviewed did not know if they had an active open-end SUE contract or not. Each District has developed their own process to obtain information. This is a communication issue, which will be addressed through the utility process training efforts.**

2. On a roadway project, where do you have utility poles relocated-edge of right-of-way?

**The UAO's decide where to relocate and normally it is at the edge of legal right-of-way.**

3. Department project managers are charged to ensure all subsurface utility engineering is accomplished early in design. Do they know this? Is it being done?

**Each District noted that they try to ensure this achieved. This occurs more often on consultant designs, less on in-house designs. Normally this information is obtained late in design. This will be addressed through Item #14 on Matrix 1.**

4. Department designers are required to use subsurface utility engineering information obtained to eliminate or minimize utility involvement. Do they know this, is it being done?

**All four Districts responded yes. This item will be expanded through Item #25 on Matrix 3.**

5. Do you provide replacement R/W for utilities, when you overtake? At what state is that determination made?

**Three of the four Districts have done and will continue to do this. As part of this research project, GAI will develop a recommended enhanced design process and this item will be addressed.**

6. Is the first plan that the utility sees the R/W plan, or some late stage plan?

**A wide variation between District responses. This appears to be a significant issue. This item will be addressed through the enhanced design process to be developed.**

7. Does your District conduct highway-utility coordination meetings?

**Each interviewed District conducts multiple levels of utility coordination meetings. This will be expanded through Item #36 and Matrix 4.**

8. Page 5.6.B (second bullet) notes that some utility conflicts could be eliminated by minor highway design changes, like drainage. Is their service being provided during the design phase.

**All four Districts noted yes. GAI is recommending that the results of these efforts be tracked and tabulated, and used during future UAO coordination meeting as documentation of the Department's efforts.**

9. What is a typical design process schedule in your District?

**Each District noted that they utilize the Department's current design process.**

10. Does a representative from the utility unit participate in the engineering and environmental scoping field view? Do they get involved, are they knowledgeable, and can they offer solutions?

**Yes, they are actively involved and provide recommendations.**

11. Page 5-3 DM-5 requires the designer to send two sets of plans to each area utility company directly after highway design approval for verification. These plans must be returned to the designer within 30 days, are they?

**There is no consistency between the four surveyed Districts. A more structured process is needed. This issue will be addressed through Item #34 on Matrix 3 and through the enhanced design process to be developed.**

12. Page 5.5, DM-5 states that the designer may be required to develop certain design items, like drainage with cross-sections at an earlier stage to provide to a utility company for design of relocations. Have you ever been asked to do this?

**All surveyed Districts indicated that they have and do provide this service.**

13. Normal project design process requires the staking of the project prior to the internal utility design meeting. There should be adequate staking to permit the utilities to complete their engineering for relocations. Is this being provided? Do any utility companies request this staking? Page 5.6.A. does not provide a specific response time from the utility is this a problem?

**Districts noted that they do provide these services, but each District accomplishes this in different ways. Other issues may exist to prevent this service in a timely manner, the staking may be beyond legal R/W. This item will be addressed through the enhanced design process to be developed.**

#### **Matrix 6 – Utility Administrators Questionnaires**

1. How long have you been in your current position?
2. How long do you plan to stay in this position/unit?
3. What do you feel are the pre-requisite skills needed for your position?
4. Is this your first position in the industry?
5. How many years have you been at DOT?
6. What type of training would benefit you most?
7. Is there other training that would benefit the utility unit?

8. In your opinion, what is the proper personnel compliment for your unit and how many do you have?
9. Would opportunity for a career path in utilities, be helpful in retaining good people for a more efficient utility unit?

**The lack of a current career path is of major concern to each surveyed PennDOT District. These issues will be addressed during Task 2 as an individual initiative.**

10. How many utility claims have you been involved with?

**Our research has revealed that throughout PennDOT, very few employees know how this process works or even who controls it. Thus far, GAI has been unable to obtain any information, which documents the level of this problem. Through our survey, we have identified only a few specific cases. It appears that an actual utility delay claim problem may not exist. Individual cases are being worked out other ways. GAI plans to address this issue during Task 2 through prior work issues.**

11. Do you take an active role in encouraging design project manager to avoid existing utilities?

**All Districts surveyed indicated that they do.**

12. Are you made aware of plan changes during the design process?

**Each District interviewed indicated a problem with this issue. This issue will be addressed during Task 2 as part of the enhanced design process to be developed.**

13. Are plans provided to you in a timely manner?

**The District responses indicate an ongoing issue with timely plans. This issue will be addressed during Task 2 as part of the enhanced design process to be developed.**

14. Does the project manager consult you regarding the WELCOM schedule?

**There appears to be a consistent process and varies greatly. This issue will be addressed during Task 2 as part of the enhanced design process to be developed.**

15. Are you consulted regarding utility activities to be integrated into the CPM schedule?

**There appears to be no consistent process. This issue will be addressed during Task 2 as part of the enhanced design process to be developed.**

16. What is your role, when a utility fails or refuses to communicate with the project manager or contractor?

**Each utility administrator assists to resolve the issue as quickly as possible. This includes phone calls, scheduling meetings, attending meetings, and escalate the issue up the chain.**

17. Utility Clearance Statement (11.3). Could it be written more specific indicating what the utility can actually accomplish so a contractor bidding knows actual conditions?

**Minor issues were identified, but overall the utility clearance statement works well.**

18. Does a representative from your District's Utility Unit participate in Project Engineering and Environment Scoping Field views?

**All surveyed Districts indicated they do participate.**

19. Does your District's utility staff have adequate knowledge and experience to offer recommendations and solutions to possible conflicts during these field views?

**The Utility Administrator for each District indicated their staff has adequate knowledge and experience.**

20. Does any utility companies ever request authorization for engineering to provide information on existing facilities (page 5-3). If so, how long to get?

**Each surveyed District indicated that this authorization has never been requested.**

21. Page 5-3 (Item 5.4) DM-5 the initial utility design stage meeting is conducted by the District utility unit in the District with the designer and utility companies. Is this being done and when? Has efforts to mitigate impacts been incorporated?

**This meeting is not required on projects with simple utility impacts. Should be held 2 or 3 months before R/W plan is completed. The timing for this process is broken and varies greatly, but for each District, it is occurring too late. This issue will be addressed during Task 2 as part of the enhanced design process to be developed.**

22. Page 11-12 prior work – any prior work not completed, 3 weeks before the bid letting must be converted to restrictive work. Is this an issue?

**No. This does not appear to be an issue for those Districts surveyed.**

23. Page 9-1, upon completion of the proposed relocation and/or adjustments, the utility must furnish a written certification that all work, in accordance with the agreements was completed before payment is made.

**The Districts feel this process works well as it is. GAI plans to analyze several options during Task 2, which would simplify things for the UAO's which could build more cooperation.**

### **PennDOT – Construction Questionnaires**

#### **Matrix 7 – Construction**

1. Are the construction project managers and the contractors made aware of the provisions, conditions, and restrictions in the D-419 Utility Clearance Reports?

**Yes.**

2. What is the role of the Utility Administrator (technician) in construction?

**When needed, the Utility Administrator functions as a liaison between all parties. The system works as well as can be expected.**

3. Who should have the primary contact with utilities during construction?

**Contractor.**

4. Does the PM make sure that the contractor schedules a utility meeting soon after the NTP, or what is the contractor's first involvement with the utilities?

**Some level of utility meeting is held on every project.**

5. Are the costs of second moves and utility scheduling problems given proper consideration during the construction phase?

**None of the Districts have experienced any problems with second moves. Scheduling utility moves is one of the largest problems encountered and will be addressed during task 2 as part of the enhance design process to find ways to complete more prior work.**

6. 11.1.A.3, requires a number of calendar days to complete each relocation and date of completion is required. What is happening today? How can we enforce the completion date?

**The Districts are satisfied with the current process. There is no available source to force the completion date. Legislative action would be necessary, however, this is not viewed as a positive solution, it may do more harm than good.**

7. Should some reward/penalty process for utility relocations be considered by PennDOT?

**The majority of the surveyed Districts supports this concept to build in some type of reward. This item will be addressed during Task 2 through the utility process.**

8. Are open-end contracts (clearing and grubbing, etc.) through Central Office in the Districts properly utilized?

**Most Districts don't know, this itself indicates a problem. This issue will be addressed during Task 2 as part of the enhanced design process to be developed.**

9. How many projects per year does your District pay out extra money related to utility relocations?

**This appears to be a small problem. One District has one project in 23 years another District hand 3 to 6 projects per year. Actual numbers are impossible to get, issues are resolved through free-lancing. This is an issue which will be addressed during Task 2 as part of the construction phase.**

10. What is the average dollar amount per year that your District pays out related to utility delays?

**No one knows. Today the construction ACE and contractor is only concerned about resolving the issues as quick as possible in order to move forward. Any efforts to document these impacts will be opposed. Anything short of full compliance will be of no value.**

11. Have you found anything that helps with keeping the utility contractors on schedule with their relocations?

**There is no consistent response from the Districts. A major problem exists here and based on the results of our survey, this appears to be the major issue for the research project. This item will be addressed during Task 2 as part of the construction phase.**

12. Are the phone numbers and contacts of the large utility companies to call when utilities are not moving?

**A contact name and phone number for all utilities is provided.**

13. Preparation of Form D-419. Compare what is being done now to what we could do to identify anticipated utility relocations more factually so contractors are aware of actual conditions?

**Each District agrees that the process is working, but the incorporation of SUE information early would help. This will be addressed during Task 2 and part of the enhanced design process to be developed.**

## Task 2 Recommendations for Implementation

### Scope of Work:

- + Worked with PennDOT Project Team members to identify best management practices to utilize as a benchmark.
- + Formulated possible recommendations for evaluation and solution for PennDOT to implement.
- + Met with project team members to evaluate possible recommendations.
- + Prepared a summary report that provides a list of solutions with recommendations for implementation by the Department.

### Results:

Under Task 2, 101 individual questions were investigated. From that list, 57 identified issues were documented of which six (6) were eliminated; fifteen (15) were of low priority, and were addressed through the modified training PowerPoint presentation (Task 4); and 36 were addressed through separate initiatives as presented below:

### Separate Initiative #1

#### Issues:

- + Matrix 1 – Question #11: Is SUE Engineering required?
- + Matrix 5 – Question #13: Is there staking of required right-of-way prior to utility design meeting?
- + Matrix 7 – Question #8: Are opened agreements for clearing and grubbing, etc. used?
  - + No consistent response among all Districts/Staff surveyed.
  - + When SUE information is obtained, it is late in the design process.
  - + The Department will stake out right-of-way and County Maintenance Unit will provide clearing and grubbing (in-house designs).
  - + For consultant designs, they are addressed through the engineering agreement.

**Committee Solutions:**

- + SUE engineering should be required on all projects.
  - + When DUA determines they're not required, document and circulate.
- + Each Engineering District should administer a utility relocation support open-end agreement, which will provide:
  - + SUE engineering
  - + Survey staking of required right-of-way
  - + Clearing and Grubbing; E&S Controls
  - + Minor excavation; Traffic Control, if needed
  - + Appropriate construction inspection
- + PennDOT to share existing technology, video logs, etc. with UAOs
- + Promote use of electronic information exchange with all UAOs

**Issues:**

- + Matrix 5 – Question #6: When are initial plans submitted to the UAOs?
- + Matrix 5 – Question #11: Are two sets of plans sent to UAOs for verification?
- + No consistent District response.
- + Compliance with DM-5 appears to be lacking.
- + Some PMs nearly complete the design phase before sending out plans to UAOs.
- + The delay causes major schedule Issues.
- + This process minimizes utility avoidance measures.

**Committee Solutions:**

- + Provide adequate training to reinforce compliance of DM-5.
- + Send out topo plans of project area to UAOs directly after survey is obtained.
- + Receive UAO verification, then begin the design process using avoidance techniques.

**Issues:**

Matrix 3 – Question #32 and #34: Who identifies potential UAO conflicts? When does UAO contact and conflict resolution begin?

Matrix 6 – Question #12 and #13: Is the DUA aware of plan changes? Are plans provided to the DUA in a timely manner?

Matrix 6 – Question #14 and #15: Does the PM consult the DUA regarding the WELCOM schedule? Is the DUA consulted regarding UAO activities in the CPM schedule?

- + No consistent District responses.
- + Appropriate time for initial contact and resolution is critical to maintain schedules.
- + Often UAO information is received too late in design process.
- + Late UAO information during right-of-way acquisition creates problems.
- + Late information increases opportunity for more second moves.
- + Presently, the entire utility verification/avoidance process is compromised.

**Committee Solutions:**

- + These issues will be addressed separately in the Task 4 Training Design Module.
- + The Project Manager or Project Designer identifies conflicts.
- + Contact the UAO directly after the base mapping is complete.
- + Schedule the Utility Coordination Meeting as early as possible through the DUA.
- + Develop a formal design revision notification process.
- + Train all DUAs to develop a utility CPM schedule for each project. **Issues:**

Matrix 3 – Question #41: Is subordinated utility easements compensated?

Matrix 3 – Question #44: Is all required right-of-way secured six months prior to project advertising?

Matrix 5 – Question #5 – Is all replacement right-of-way for utilities provided when over taken?

- + No consistent District response.
- + No reimbursement provided, UAO will be made whole.
- + All right-of-way is cleared before the project letting.

- + Some UAOs desire to relocate and retain private status within R/W
- + Often, PennDOT does not know the UAO status until R/W phase.

**Committee Solutions:**

- + These issues will be addressed in Task 4, Training Design Module.
- + The DM-5 is clear on these issues and UAO compensation.
- + UAOs are made whole by either providing private status within legal right-of-way or providing substitute right-of-way.
- + Incorporate appropriate changes to support more “Prior Work”.
- + When requesting UAO verification/Information, actual R/W status could be submitted separately if delays are anticipated.
- + Schedule the utility design field view meeting as early as possible.
- + Communication/coordination is critical during these processes.

**Separate Initiative #2**

**Issues:**

Matrix 1 – Question #12: Who is responsible for initial UAO identification?

- + No consistent District response.
- + Indications are that a communication project exists.

**Committee Solution:**

- + The project PM makes the appropriate PA One Call, and provides that information to the DUA.
- + The DUA identifies UAO ownership.
- + This issue will be addressed in Task 4 - Training Design Module

**Issues:**

Matrix 6 – Question #23: UAOs must furnish written certification of work completion before payment is made.

Matrix 7 – Question #7: Should PennDOT consider some type of UAO reward/penalty process to encourage move “Prior Work?”

- + This is an involved process requiring a major effort by the UAOs.

- + Process needs streamlined.
- + UAOs are normally involved in multiple projects.
- + Schedule adjustments cause major problems with UAO engineering and construction.
- + UAOs always have competing demands for resources and funding.

**Committee Solutions:**

- + Two scenarios are provided for the Department's consideration:
- + Authorize the DUA to make direct payments for \$25,000 or less, and include streamlining the total process, including agreements.
- + Develop a totally new payment system by maintaining two lists.
  - + List A - Preferred UAOs – Usually performs “prior work” – Receive up front funding.
  - List B – Usually uncooperative – Receive conventional reimbursement.

**Separate Initiative #3**

**Issues:**

- + Matrix 2 – Question #26: Does District Utility Units have prerequisite experience requirements of advancement?
- + Matrix 6 – Question #1 through 9: General staff requirements?
  - No consistent District response.
  - Lack of support and feeling of unimportance for utility staff appears to exist.
  - Higher level of effort on multiple assignments is placing heavy demands on existing staff.
  - New employees are required to re-invent the wheel.
  - This learning curve requires extensive time and effort.
  - Lack of a career path leads to staff departures.
  - Other states surveyed all agree a career path is very important
  - Utility relocation inspectors are not being promoted.

### **Committee Solutions:**

- + The following is a list of recommendations
- + Optimum staff size should be three (3) employees:
  - + DUA and two (2) technicians for the rural engineering districts
  - + One additional staff member for urban districts
  - + Technicians can be temporarily assigned to other District units
- + A career path for technicians is critical to retain experienced staff.
- + Training is needed to enable utility relocation inspectors to advance
- + Listed below are identified training needs:
  - + DM-5 Knowledge
  - + Basic Computer Skills
  - + Blue Print Reading
  - + Design Process's/Experience
  - + PA One Call
  - + ECMS (for Administrators)
  - + Bridge Construction Issues
  - + Design Procedures
  - + Constructability
  - + CPM Knowledge
  - + UREDMS
  - + SUE Training
  - + R/W Training
  - + Project Development Process
- + Employee Certification:
  - + PennDOT's HR Group needs to develop a training program for technician level employees.
  - + Schedule classes by smaller multiple district areas.

- + Technicians achieving goals would qualify to apply for future promotions.
- + Well-trained staff will lead to retaining staff, and more consistent relationships with UAOs.

#### **Separate Initiative #4**

##### **Issue:**

- + Matrix 3 – Question #35: How are conflicts addressed during construction?
- + Matrix 3 – Question #45: Is the UAO responsible for total clearing and grubbing for “Prior Work?”
- + Matrix 3 – Question #46: Is the UAO responsible for maintenance of relocation areas?
- + Matrix 6 – Question #10: Previous utility delay claims?
  - + Resolving utility conflicts during construction is a major issue in all surveyed states.
  - + Very few actual utility delay claims have been identified by PennDOT staff.
  - + Freelancing or horse trading occur at the Contractor/Inspector level to mitigate delays.
  - + The Department has no hammer to force compliance or cooperation.
  - + Currently Districts use available methods to provide selected clearing and grubbing.
  - + A communication problem exists with maintenance responsibility of relocation areas.
  - + Utility issues during construction involve the timing of the utility moves in relationship to schedule delays.

##### **Committee Solution:**

- + The Department must develop an atmosphere of trust with UAOs.
- + Notification to UAOs adjustments must occur early.
- + Maintain ongoing communications with UAOs.
- + The Department’s goal is to promote more “Prior Work”.
  - + Consider a payment to each impact UAO for 30% to 50% up-front for all utility costs.
- + Use either a District open-end agreement to administer a utility relocation support services.

## **Separate Initiative #4 – Delay Claims**

### **Issues:**

- + Unable to document substantial delay claims.
- + A major coordination problem exists.
- + No single solution can resolve this issue since; UAOs are responsible for many of the delays.

### **Committee Solutions**

- + Adoption of the following comprehensive process to work toward resolving delay claim issues.
  - + Modify PennDOT's current process to track utility delay claims
  - + At a minimum, authorize each DUA to track their own
  - + Submit plans to UAOs for verification early
  - + Document designer efforts/success of utility impact avoidance
  - + Execute open-end agreements for utility relocation support services
  - + Schedule the utility coordination meetings early
  - + Develop a formal design revision notification process
  - + Authorize DUA to make direct payments up to \$25,000
- + Develop a new utility reimbursement program where:
  - + Reimburse for 30% to 50% cost for all utility adjustments
  - + Provide up-front payment from estimates for preferred UAOs
  - + Use current reimbursement process for other UAOs
- + Develop a series of several Districts/UAO/Contractor/Consultant annual meetings:
  - + Discuss current Department/UAO changes and revisions
  - + Discuss major or ongoing issues
  - + Services provided by PennDOT
  - + Discuss upcoming project schedules
- + Track these results for several years, then re-evaluate impacts

## **Separate Initiative #5**

### **Issues:**

Matrix 3 – Question #36: Are there annual meetings with UAOs to discuss mutual concerns?

- + No consistent response
- + Often UAOs are unable to adjust to change in one year
- + All UAOs have lost experienced staff

### **Committee Solutions:**

- + Two meetings with UAOs should be held each year, in each district.
- + First meeting – discuss future transportation projects that impact both design and construction. (UAOs only)
- + Second meeting: Open to PennDOT, UAOs/consultants and contractors; and held directly at the end of that year's construction season.

Discussions could include:

- + Technical issues and concerns
- + Training needs/assistance with Department requirements
- + Other issues impacting a professional working relationship
- + Assign experienced staff one day a month to assist UAOs.
- + PennDOT District should maintain a uniform let schedule on their website.
- + Track District results from design avoidance/mitigation.
- + DUA to track cycle time from UAO notice-to-proceed to start of utility work.

## **Separate Initiative #6**

### **Issues:**

- + Matrix 3 – Question #49: Joint Trenching Operations?
- + Matrix 7 – Question #11: Keep contractor on schedule?
- + No consistent response
- + Communication problem exists with the Joint Trenching Operation.
- + Once UAO contractor is pulled from transportation-caused utility adjustment, difficult to meet them back.

- + Competing priorities
- + Lack of available materials, funding, resources

**Committee Solutions:**

- + Forcing UAO compliance is counterproductive; need to develop incentive opportunities to encourage the UAOs to cooperate
- + Several scenarios to be considered:
  - + Authorize the DUA to make direct payments for \$25,000 or less to UAOs.
  - + Develop a utility reimbursement program where:
    - + Reimburse for 30% to 50% cost for all utility adjustments
    - + Provide up-front payment from estimates for preferred UAOs
    - + Use current reimbursement process for other UAOs
- + On all future underground utility relocations, require installation of indicators for non-metallic or dielectric facilities (plastic gas lines, fiber optic cable, etc.)
- + Once a construction project is let the contractor desires to incorporate any revisions which impact the UAO; the contractor must reimburse the expense, or secure approval from the UAO

**Best Practice Considerations:**

**Initiative – Utility Coordination During Construction**

**Issue:**

- + PennDOT’s District Utility Administrator coordinates UAO activities during the preconstruction phase.
- + The increased number of transportation projects and difficulty relocating utilities prior to construction, combined with insufficient experienced PennDOT and UAO employees, is forcing evaluation of alternative options
- + The bulk of information provided was obtained from a previous research project **“Utility Coordination during Highway Construction” prepared by C. Paul Scott, P.E. in 2008.**
  1. On Conventional Design-Bid-Build Projects, does your DOT provide a Utility Coordinator?

2. On Design-Build projects, does your DOT provide a Utility Coordinator?

- + Most utility coordination occurs during the preconstruction phase; it is effective, but too often it doesn't get done.

- + Research Survey Results:

<b>States</b>	<b>Utility Coordination</b>
19	Require/Permit Contractor to Provide
11	Require/Permit Consultant to Provide
13	Require/Provide DOT Personnel
9	Complete UAO Relocations Prior to Construction
9	Improving Current Process

- + Available Options for Consideration:

- + PennDOT provides coordination during construction
- + PennDOT requires the contractor to provide utility coordination
- + PennDOT provides utility coordination with consultant forces through an open-end agreement, when needed

- + Benefits to Contractor/Consultant Coordination

- + One field person to track, coordinate, and monitor UAO activities
- + Closely coordinate UAO's/contractor's operations and schedules
- + Can actively work with all parties on a daily basis
- + Can provide real time information to the Contractor/PennDOT
- + When issues arise, can immediately respond to aid in resolving issues
- + Provides PennDOT with a single contact person.
- + Immediate response to plan changes that adversely impact UAOs
- + Able to meet with UAOs and/or contractor on short notice
- + UAOs build working report with Utility Coordinator
- + Provides better open line of communications

- + 8 of 9 states that require the contractor to provide the utility coordinator anticipates it will be retained

- + Challenges:
  - + Virginia DOT had a specification requiring contractors to provide a Utility Coordinator; specification has been removed due to an issue with utilization of the Utility Coordinator's time
  - + Estimating Utility Coordinator costs and man-hours
  - + Utility Coordinator is not a full-time job
- + Conclusion:
  - + Evaluated this Best Practice Option; consider requiring a Utility Coordinator on a selected number of projects and evaluate the results for future consideration.

### **Initiative – Back Charge UAOs for Delay Claims**

#### **Issue:**

- + It has been determined that contractor delay claims caused by failure of UAOs to relocate facilities in a timely manner is a major concern and an expense to the Department.
- + UAOs engineering and most construction is performed with consultants and contractors, requiring advance scheduling
- + Design and construction sequence changes impact the UAOs ability to meet schedules
- + Available Options for Consideration:
  - + Designate a person to track contractor delay claims
  - + Adopt legislation to hold the UAO liable for direct contract damages caused by delay claims
  - + Central Office Utility Administrator and Department Council would administer the process to obtain the cost of contractor claim from the UAO
- + Challenges:
  - May be difficult to get Pennsylvania legislature to enact legislation regarding delay claim reimbursements
- + Conclusion:
  - + Back charging UAOs for contractor delay claims would be one form of “hammer” to force UAO's compliance

## **Initiative – Clearing and Grubbing for Utility Relocations**

### **Issue:**

- + The State of Ohio has a 1-year contract entitled “Tree and Brush Power Shearing, Trimming, Mulching, and Removal Services”.
  - + Contract can be used for tree removal for utility relocations and adjustments and is very popular.
  - + The original contract was changed and now is bid per hour based on equipment
- + The new format (effective 3/1/2009) has been used very little, and ODOT is unable to identify the effectiveness of the new contract revisions
- + Other contracts include a pre-approval lists of vendors, and when needed the Department request price quotes; Costs are based on services contracted
- + These contracts have been used in the past and they were very successful; on some projects contracts were used to clear all trees within the project.

### **Available Options for Consideration:**

- + Tremendous support for open-end contracts for independent engineering districts was identified
- + As scope of work increases, so do the regulations and requirements to support that work
- + Recommend that the PA Utility Relocation Support open-end agreements include all possible items of work which may be encountered:
  - + SUE engineering (projects not covered by engineering agreements)
  - + Survey staking of required R/W
  - + Clearing and Grubbing
  - + E&S Controls (design and construction when necessary)
  - + Minor Excavation
  - + Traffic Control (when needed)
  - + Appropriate construction inspection
- + Challenges:
  - + The Department would need to allocate sufficient funds for the agreements

- + Funds would be encumbered for each specific work order
- + The Department can control the amount of funds utilized through the execution of work orders.
- + Conclusion:
  - + Recommend that PennDOT consider administering a separate, expanded “PA Utility Relocation Support, Open-End Agreement” for each engineering district.

### **Task 3 – Draft Report**

#### **Scope of Work**

- + Developed an Executive Summary of Study Recommendations for Implementation.
- + Developed a Power Point presentation to the projects technical panel that can be used by Department staff to present project findings to the executive staff of PennDOT in Harrisburg.
- + Developed a matrix of information including the identification of a task or process owner, recommendations, action items, timeline for implementation, measures of success and cost benefits.

#### **Results:**

The developed Power Point presentation and matrix are presented in Appendix A.

### **Task 4 – Training Material**

#### **Scope of Work**

The original scope of work for this task involved providing a presentation with training materials on project delivery that includes the new implementation steps based on the comments received from the Department staff. During the course of this study, the scope of work for this task was revised as follows:

- + Utilizing the latest PennDOT Design Manual 5 Utility Relocation Training Power Point presentation booklet as a base, the training material will be updated to include training items recommended by this study.

#### **Results:**

The modified utility relocation training Power Point presentation that includes training items recommended by this study is presented in Appendix B.

## Section 3.0 Final Study Recommendations

### Initiative 1: Design

#### Recommendations:

- + Subsurface Utility Engineering (SUE) should be required on all projects, except those deemed as exceptions by the District Utility Administrator (DUA).
- + Each District should administer a utility relocation support open-end for SUE engineering, survey, clearing, grubbing, and construction inspection during design phase to promote “prior work”.

### Initiative 2: Utility Payments

#### Recommendations:

Several scenarios are provided for the Department’s consideration:

- + Authorize the DUA to make direct payments for \$25,000 or less, and include streamlining the total reimbursement process, including agreements.
- + Develop a totally new payment system. The Department would maintain two (2) lists. List A, preferred UAOs, those who cooperate and perform “Prior Work”. Pay these UAOs up front, based on estimates, to be audited after completion. Upfront funding will benefit the UAOs. If for any reason their cooperation fails, they would revert to the List B where they receive conventional reimbursement.

### Initiative 3: PennDOT Utility Unit Staffing – Training, Certification, and Career Path.

#### Recommendations:

- + Today the size of the utility units varies between 1 to 4 staff members. The results of this research project indicate an optimum staff size should be three (3) employees, consisting of a DUA, and two (2) technicians for the rural engineering districts, and one (1) additional staff member for urban districts.
- + A career path for technicians is critical to the retention of experienced staff. The Department needs to develop a process through future training that will enable Utility Relocation Inspectors to advance to the technician level.

+ Training opportunities: Training is the foundation that employee growth is built upon. Listed below are identified training needs:

- + Construction Processes/Techniques
- + DM-5 Knowledge
- + Basic Computer Skills
- + Blue Print Reading
- + Design Processes/Experience
- + PA One Call
- + ECMS (for Administrators)
- + Bridge Construction Issues
- + Design Procedures
- + Constructability
- + CPM Knowledge
- + UREDMS Training
- + SUE Training
- + R/W Training
- + Project Development Process

+ Employee Certification: PennDOT's HR Group needs to identify what minimal level of training is required for existing technician level employees. These classes could be scheduled statewide or by smaller multiple district areas. The HR Group would track attendance and successful completion of each class. Technicians achieving goals established by PennDOT would then be qualified to apply for further promotions.

This investment in employees has the potential for greater benefits. With all Department utility technicians receiving the same information and training, a more consistent relationship with each UAO is expected. This consistency will build the spirit of cooperation over time.

#### **Initiative 4: Promote More Prior Work by UAOs**

##### **Recommendations:**

- + The Department must develop an atmosphere of trust with each UAO so they can trust information and schedules.
- + The Department should consider requiring “date certain” rather than “number of days” for UAOs to complete their relocation work in conjunction with the projects’ CPM schedule.
- + Notification to UAOs of necessary adjustments must occur early.
- + Maintain ongoing communications with all UAOs.
- + The Department’s goal is to promote more “Prior Work”.
  - + To encourage more “Prior Work” the Department needs to consider a payment to each impacted UAO for 25% up-front for all utility cost, even for work within legal R/W.
- + The committee supports the use of a District open-end agreement to administer a utility relocation support open-end agreement.

#### **Initiative 5: Expand UAO Coordination Meetings**

##### **Recommendations:**

- + The committee recommends that two separate meetings be held each year in each engineering district to promote the exchange of information, available support, and staff interaction between Department staff, UAOs, consultants, and contractors.
- + First meeting – discuss future transportation projects, which impacts both design and construction for the current year. The second part of this meeting will address transportation projects for future years. (UAOs only).
- + Second meeting should be open to Department staff, UAOs/consultants and contractors and held directly at the end of that year’s construction season. Issues discussed could include:
  - + Technical issues
  - + Concerns
  - + Training needs/assistance with Department requirements
  - + Other issues impacting a professional working relationship

- + The Department has experienced staff that could be made available one day a month to assist UAOs with either training or assistance providing the above noted items. The carrot/horse concept is being promoted; a little effort on behalf of the Department may result in additional UAO cooperation and support.
- + PennDOT Districts should maintain a uniform let schedule, with specific key information and report capability on their website. This will allow each UAO to access that site when needed.

### **Initiative 6: Utility Issues Before and During Construction**

#### **Recommendations:**

The Department needs to develop incentive opportunities to encourage the UAOs to want to cooperate.

Several scenarios (some previously outlined in this report) could be considered here:

- + Authorize the DUA to make direct utility payments for \$25,000 or less. Streamline the total process, including the agreement process.
- + Develop a totally new payment system. The Department would maintain two lists. List A preferred UAOs. Those that cooperate and perform "Prior Work". Pay these UAOs up front based on estimates, to be audited after completion. Upfront funding will benefit the UAO. If for any reason their cooperation fails, they will revert to the List B where they receive conventional funding.
- + Also, to encourage cooperation the Department should consider paying 25% of the actual utility cost for all "prior work" conducted within legal R/W. The single point would encourage "Prior Work".
- + On all future underground utility relocations, require the installation of indicators for non-metallic or dielectric facilities, (i.e. plastic gas lines, fiber optic cable, etc.). This should be dictated in a revision to Design Manual 5.
- + Once a construction project is let, should the contractor desire to incorporate any revisions which impact the UAO, the contractor must reimburse the expense or secure approval from the UAO.

## Best Practice Considerations

### 1. Back Charge UAOs for Contractor Delay Claims.

#### Recommendations:

- + PennDOT Central Office should designate a person to track contractor delay claims for all Districts.
- + The state legislature should adopt legislation stating the following:  
“Should a UAO fail to comply with the notice to remove, relocate, or adjust all required facilities as specified in the original contract or agreed to revised schedule, the UAO is liable to the Department for direct contract damages, including costs, fees, penalties, or other contract changes, for which the Department is proven liable to a contractor caused by the utilities failure to timely remove, relocate or adjust their facilities, unless a written extension is granted by the Department”.

The Central Office Utility Administrator, in conjunction with Department Council would file the necessary paperwork to obtain the cost of the contractor claim from the UAO.

### 2. Improve Utility Coordination During Construction

#### Recommendations:

- + PennDOT to provide coordination during construction for all projects with active UAO activities after the bid letting.
- + PennDOT to require the contractor to provide utility coordination as part of the bid package, when needed.
- + PennDOT to provide utility coordination with consultant forces through an active open-end, when needed.

### 3. Utility Relocation Support Open-End Agreement.

#### Recommendations:

Tremendous support for open-end contracts for independent engineering districts was identified. As the scope of work increases, so do the regulations and requirements to support that work. The committee recommends that PA Utility Relocation Support Open-End Agreements be included for all possible items of work, which may be encountered. This includes:

- + SUE engineering (for projects not covered through engineering agreements)

- + Survey staking of required R/W
- + Clearing and Grubbing
- + E&S Controls (Design and Construction when necessary)
- + Minor Excavation
- + Traffic Control, when needed
- + Appropriate construction inspection

## **Appendix A**

Power Point Presentation

Recommendation for Implementation

Issue Matrix



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# Effective Utility Accommodation

PennDOT Sponsor Committee  
Presentation  
Recommendations for  
Implementation  
June 2009





## Project Goal

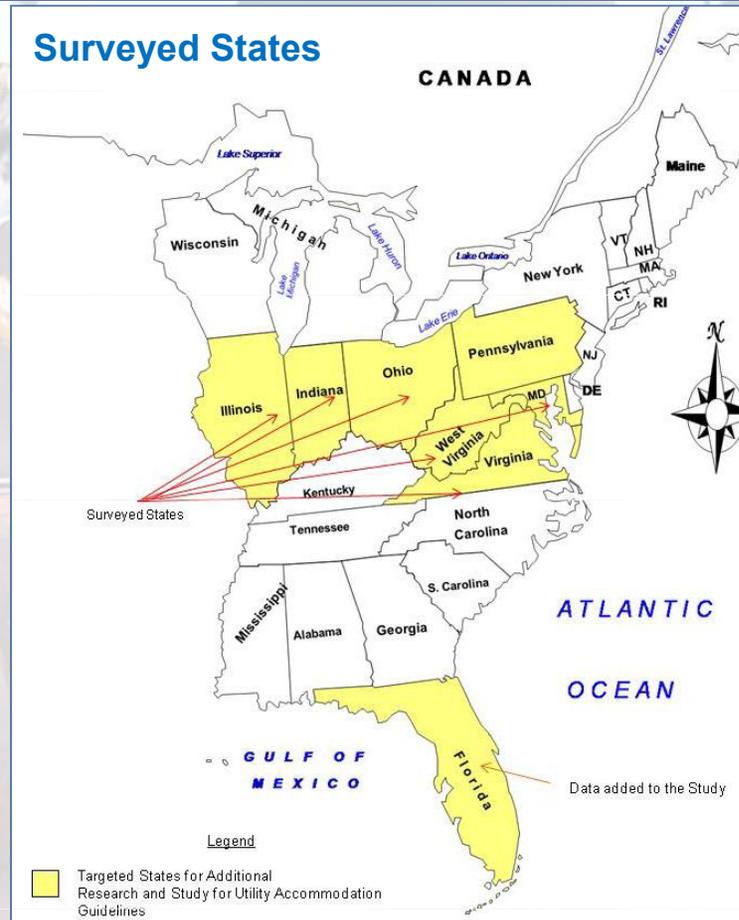
- + To improve design project delivery times and minimize construction delays due to utility coordination by conducting a study of the current best practices used by six similar state transportation departments, selected PennDOT District staff, consulting engineers, and utility agencies/owners. Through this research, logical, practical, and implementable solutions to the utility relocation and coordination process problems will be recommended.





# Project Scope

- + Literature Search
- + Recommendations for Implementation
- + Draft Report
- + Training Materials
- + Final Report





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## Utility Cost Summary from Research

- + PennDOT was able to document utility relocation costs from July 1, 2008 through April 8, 2009
- + These figures were then expanded, based on average monthly expenses, to provide a total cost for a one-year period

PennDOT Reimbursable Cost - \$26.3 million

Total Documented Utility Cost - \$45.4 million





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# Project Findings



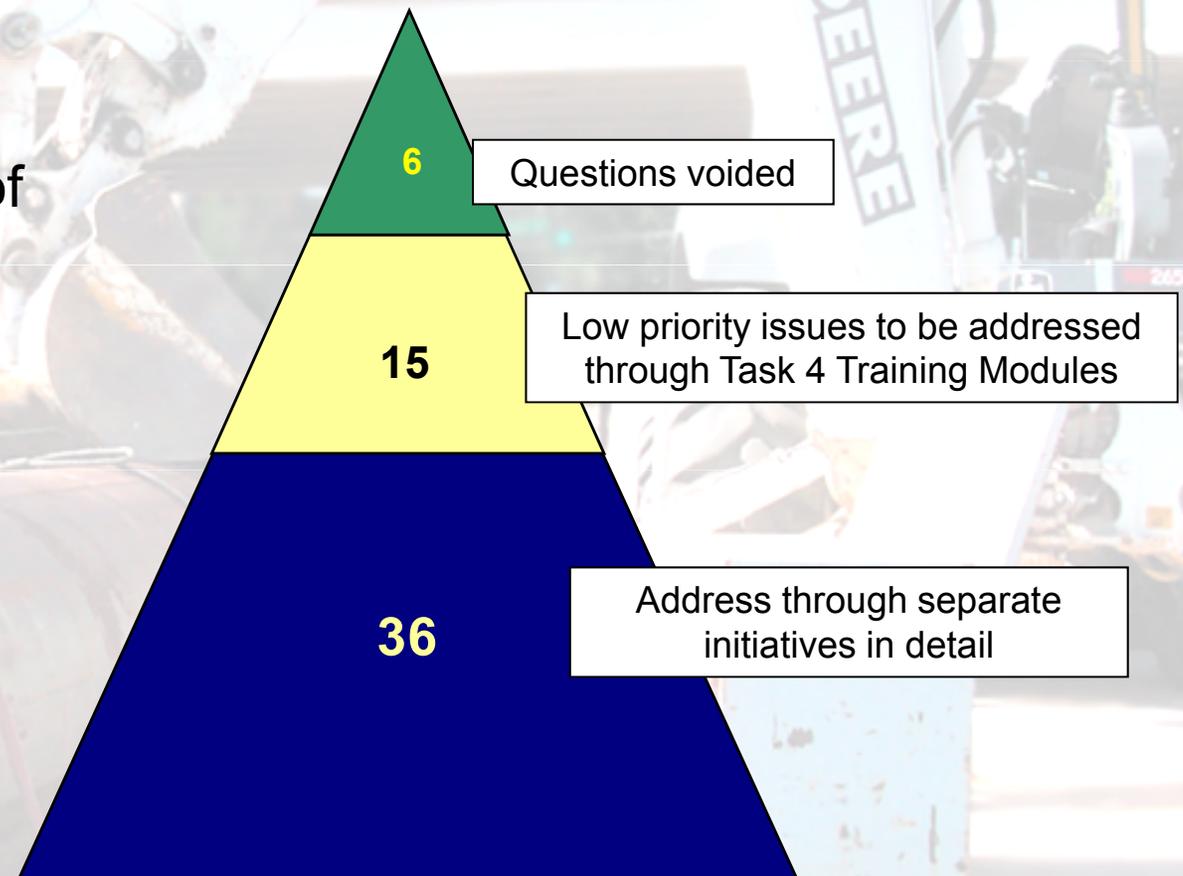
**pennsylvania**

DEPARTMENT OF TRANSPORTATION



# Summary of Survey Results

- + This project included the investigation of 101 individual questions
- + From that list, 57 identified issues were documented





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# Design Process Mapping

Initiatives 1 through 6





# Initiative 1: Design (template for implementation)

## Issues

- Schedule
- Conflict Avoidance
- Design Changes
- R/W considerations

## Solutions

- + WELCOM
- + SUE involvement and training
- + CPM
- + Open End agreements



# Initiative 2: Utility Payments

## Issues

- Processing UAO Invoices for Reimbursement
- Consider UAO Reward / Penalty Process

## Solutions

- + Streamline Process
- + Authorize DUA to Make Direct Payment <\$25,000
- + New Payment System:

### List A –

Preferred UAO (performs “Prior Work”)

**Upfront Payment from Estimates**

### List B –

Usually Uncooperative UAOs

**Reimbursement Method**



# Initiative 3: Utility Staffing Training, Certification, Career Path

## Issues

- Heavier and More Complex Work Loads
- Lack of a Career Path Leads to Staff Departures
- New Employees Required to Re-Invent the Wheel

## Solutions

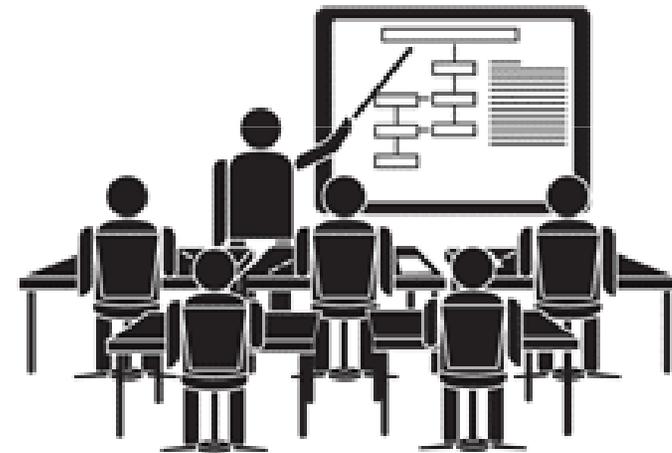
- + Optimum Staff Size
  - Rural – 3 employees
  - Urban – 4 employees
- + A Career Path for Technicians is Critical
- + Training at Technician Level is Necessary
- + Employee Certification



## Initiative 3 – List of Training Needs

### + Identified Training Needs:

- DM-5 knowledge
- Basic Computer Skills
- Blue Print Reading
- Design Processes/Experience
- PA One Call
- ECMS (for Administrators)
- Bridge Construction Issues
- Design Procedures
- Constructability
- CPM Knowledge
- UREDMS
- SUE Training
- R/W Training
- Project Development Process





# Initiative 4: Promote More Prior Work

## Issues

- Address Conflicts During Construction
- Utility Delay Claims
- Resources to Support “Prior Work”
- Schedules
- No “Hammer” to Force Compliance

## Solutions

- + Promote More “Prior Work”
- + Improve Communications
- + Structured Tracking Process
- + District Open-End Utility Relocation Support Agreement
- + Reimburse Upfront for 25% of UAO Work Within Legal R/W
- + Design Manual Compliance
- + UAO Annual Coordination Meetings
- + Avoid Confrontation
- + UAO Payment for Delay Claims



# Initiative 5: Expand UAO Meeting Coordination

## Issues

- UAOs Unable to Adjust to PennDOT Changes
- Loss of UAO Experienced Staff

## Solutions

- + Two Annual Coordination Meetings:
  - 1<sup>st</sup> - PennDOT/UAOs (provide schedule of future projects)
  - 2<sup>nd</sup> - PennDOT/UAOs/Contractors/Consultants (discuss technical issues and training needs)
- + PennDOT Staff Available 1 Day per Month
- + Uniform Let Schedule on Website
- + Track Design Avoidance / Mitigation Efforts



## Initiative 6: Construction / Utility Issues

### Issues

- Joint UAO Operations
- Competing UAO Priorities
- Lack of Materials, Funding, and Resources
- Lack of Cooperation
- Locating Underground UAOs
- Schedules

### Solutions

- + Provide UAO Relocation Designs
- + Perform More “Prior Work”
- + Reimburse Upfront for 25% of UAO Work Within Legal R/W
- + Upfront Payments to “List A” UAOs
- + Develop Incentive Opportunities
- + Install Indicators on Non-Metallic Facilities
- + UAO Concurrence on Contractor Scope Schedule Changes



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# Best Practice Considerations



**pennsylvania**

DEPARTMENT OF TRANSPORTATION



# Best Practice Considerations

## Issues

- Utility Coordination During Construction
  - Heavy Workloads**
  - Lack of Department Staff**
- Failure of UAOs to Provide Timely Relocations

## Solutions

- + PennDOT Authorizes Either Contractor or Consultant Forces
- + Adopt Legislation to Hold UAOs Liable for Direct Contract Damages



# Best Practice Considerations

## Issues

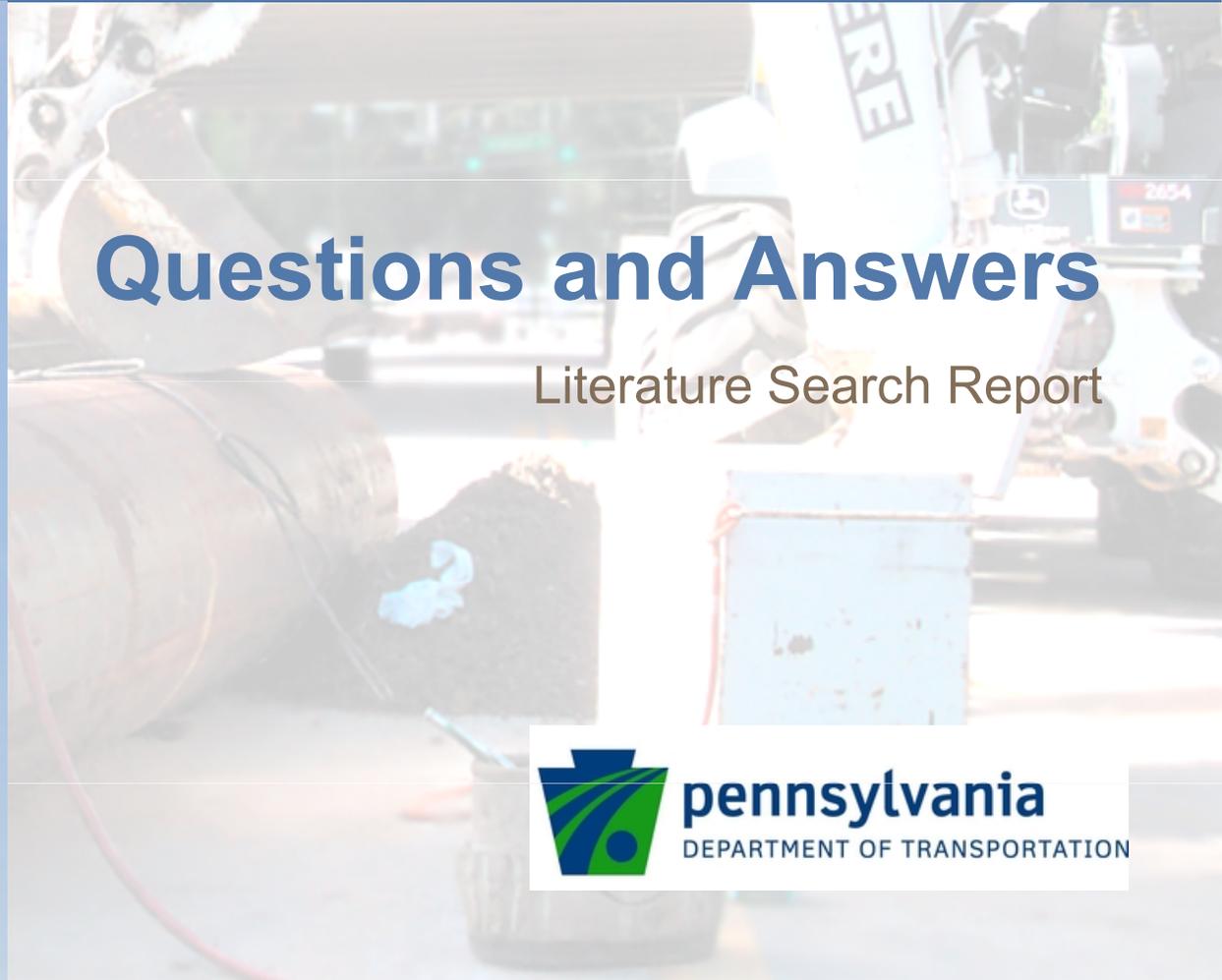
- Unable to Assist UAOs with Prior Work

## Solutions

- + Provide a District Utility Relocation Support Open-End Agreement:
  - SUE**
  - Survey Staking**
  - Clearing & Grubbing**
  - E&S Controls**
  - Minor Excavation**
  - Traffic Control**
  - Inspection**



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# Questions and Answers

Literature Search Report



**pennsylvania**

DEPARTMENT OF TRANSPORTATION

## Recommendations Matrix

Issue	Process Owner	Recommendations	Action Plan	Obstacles	Time Line	Measures	Cost Benefit
1) Lack of available resources for the Department to support more prior work, such as staking of R/W; clearing and grubbing, etc.	District Utility Administrator (DUA)	Authorize each engineering district to administer their own "Utility Relocation Support" open-end agreement, to provide, the following when needed: SUE Engineering Survey staking of R/W Clearing and grubbing E&S controls Minor excavation Traffic Control Inspection	PennDOT allocates appropriate level of funding for each District. Encourage the use of these open-end agreements to provide more prior work by UAO's. Monitor the usage/benefits over a given period of time to determine future use. Notify UAO's of this service.	Provide adequate funding. Train District Utility Administrators to manage open-end contracts. Encourage DUA's to work with UAO's to complete more "prior work".	This process can be initiated as soon as all action plan issues are addressed.	Monitor future construction projects to determine the amount of utility conflicts, coordination, and amount of prior work completed. Track level of funding per project/per District/per year.	Actual level of funding is unknown at this time. Current assumption is a \$1,000,000 open-end/per District for a five-year period. Once expended, reevaluate. More prior work is the largest single factor to reduce future utility delay claims and issues.
2) PennDOT's ability to maintain project schedules considering UAO impacts. Initial plans to UAO for verification are sent out late in the design process. Presently the utility avoidance/mitigation process is compromised.	Design Project Manager (PM)	Initiate utility verification process directly after survey or base map is available, in accordance with DM-5.	Through PennDOT's DM-5 Relocation Training Program, emphasize importance of compliance with DM-5. Send initial plans to UAO's early.	Cultural change for the project managers. Today, preliminary design is started before plans are sent to UAO's.  This change must occur to provide maximum effort for UAO avoidance or mitigation. Today these efforts are compromised.	This issue can be addressed during the Departments next DM-5 training.	DUA will monitor for compliance. Annual summary status provided to Chief Utility Relocation Administrator.	No additional funds, staff training, and tracking procedures. Results will provide a minimum of three additional months of time for UAO responses and provide more time during design for utility avoidance/mitigation without extending the design schedule.
3) Timely notification to the DUA of available plans and plan changes.  Lack of involvement of DUA's in development of original WELCOM schedules.	District Utility Administrator (DUA)	Permit the DUA to provide input during the development of the initial WELCOM schedule and be included during future revisions.  Develop a formal design revision notification process and tracking form. All design revisions must be provided to the DUA regardless of how late they are developed.  Train all DUA's to develop a utility CPM schedule.  Develop a DUA committee representative of the entire state to meet annually to discuss issues, results of changes and future needs.	Conduct an initial statewide PennDOT meeting with appropriate staff, including District Executive/ADE's for design and construction/Portfolio Manager and DUA's.  Stress importance of working consistently across the state, everyone following the same process and procedures.  A committee of portfolio manager, and DUA's develop the formal design revisions notification process and tracking form.  Provide appropriate training of staff Quarterly monitor compliances and annually track results.	Scheduling of the initial statewide meeting, which is critical to building buy in and support.  <ul style="list-style-type: none"> <li>Development of the formal design revision notification process and tracking forms.</li> <li>Provide appropriate training.</li> <li>Who tracks compliances and annual results?</li> </ul>	This initiative will require at least one year of preparation at various levels before actual initiatives can begin.	DUA's can track all notifications of design revisions and following them through construction if necessary. Annually track utility delay claims, conflicts, and issues resolved during construction.  Annual DUA committee will monitor statewide results and issues and provide a summary report to the Chief Utility Relocation Administrator.	Initially a large amount of Department Staff time is required for meetings. Potential for great rewards statewide compliance to our noted goals and objectives.
4) Complicated, involved, time-consuming UAO reimbursement process. Should PennDOT consider some type of reward/penalty process to promote more cooperation.	Secretary of Transportation	<ul style="list-style-type: none"> <li>Authorize each DUA to make direct payments for \$25,000 or less.</li> <li>Streamline the entire existing process, including agreements.</li> <li>Develop a new payment system. List A – preferred UAO's (those who cooperate) advance, upfront payment from estimates. List B – Other UAO's receive conventional reimbursement.</li> </ul>	Major decisions required at the very top to adopt these recommendations.  Appropriate training will be required for approved changes.  Audit procedures will be necessary.  Tracking procedures will also be necessary.	<ul style="list-style-type: none"> <li>Major change in policy with a significant level of empowerment.</li> <li>Audit procedures will need developed or modified.</li> </ul>	Adoption of these recommendations will require a significant amount of time, multiple years to enact.  1 to 3 years required.	DUA's will track the number and amount of payments, annually to UAO's. Provide that data for audits and chief utility relocation administrator.  Track amount of prior work being performed. Track notable changes to lists A and B.	It is our position that the additional responsibility and work required here is a reappointment of existing staff and effort.  Additional manhours and staff will be required originally, but will be less over time.  Potential rewards could be significant.

## Recommendations Matrix

Issue	Process Owner	Recommendations	Action Plan	Obstacles	Time Line	Measures	Cost Benefit
<p>5) Current issues with the retention, training, and advancement of District Utility Technicians. A major concern is the lack of a career path at the technician level, overall lack of support, insufficient compliment at lack of training.</p>	<p>Secretary of Transportation</p>	<p>DUA's desire a more formal, rigid statewide process, which provides more consistent support. The following is also recommended:</p> <ul style="list-style-type: none"> <li>• Optimum staff size per District Rural – 3 employees Urban – 4 employees</li> <li>• PennDOT's HR to develop a career path for utility technicians, which would increase employee retention.</li> <li>• Initiate an ongoing training program, which will lead to employee certifications, which will be considered during future advancements.</li> </ul>	<p>Develop appropriate staff size for each District Utility Unit. During periods of slow workload staff can be temporarily re-assigned.</p> <p>Central Office HR develops a formal career path for appropriate positions.</p> <p>Develop an annual on-going training program for all staff members in need.</p> <p>Develop an internal PennDOT, certification process for all employees.</p>	<p>Over the past years the utility unit has been viewed as an overlooked resource. As a result, today's concerns, issues, and needs have evolved.</p> <p>Appropriate action is necessary to bring this critical design process resource up to the same level of the other design reallocation.</p> <p>The committee is not promoting increasing staff size, rather a relocation of existing staff.</p> <p>Efforts for employee certification may have union impacts.</p>	<p>This is an annual ongoing effort, which needs retained for new employees and could be expanded to include other employees.</p>	<p>District and Central office HR staff must track all successful training accomplishments for all employees.</p> <p>Amount of participation reflects on level of interest.</p>	<p>No additional funds required but sufficient amount of staff time is required to attend training.</p> <p>HR efforts to track training and certification will promote employee satisfaction and possible retention, which is a major cost reduction for the Department.</p>
<p>6) Many utility conflicts are not being addressed adequately during construction. Too many construction delay claims due to utility conflicts</p>	<p>Secretary of Transportation</p>	<ul style="list-style-type: none"> <li>• The Department must develop an atmosphere of trust with all UAO's.</li> <li>• Maintain open, ongoing communications.</li> <li>• To promote more "prior work" consider a payment, upfront for 25% of all UAO cost, including that for work within legal R/W.</li> <li>• Adopt the recommendation for a District Utility Relocation support open-end agreement.</li> <li>• When required provide utility coordination through the contractor or consultant forces.</li> <li>• Develop a formal tracking process for utility delay claims.</li> </ul>	<p>Hold two (2) annual meetings with PennDOT/UAO/Contracts and Consultants to discuss projects schedules and issues.</p> <p>Hold an annual meeting within each District between design, construction, and the DUA to discuss that year issues.</p> <p>Promote more prior work.</p> <p>Evaluation of 25% payment for all UAO work.</p>	<p>More meetings.</p> <p>Legislative action may be necessary for any payment of UAO work was within legal R/W.</p> <p>Funding and contract needs for utility coordination during construction.</p> <p>Funding for other noted efforts for more "Prior Work".</p> <p>Training of PennDOT construction staff to track utility delay claims.</p>	<p>Ongoing annual initiative required.</p> <p>Possible legislative action could require considerable time. Opposition is expected. This is a noted best practice used in another state.</p>	<p>Measure the total amount of utility delay claims, annually.</p> <p>Track multiple years looking for a reduction.</p> <p>Track amount of prior work.</p>	<p>Based on 2008/2009 cost for UAO work, state reimbursement \$26.4 million, total UAO cost \$45.4 million.</p> <p>The option of a 25% payment for UAO work within legal R/W would cost PennDOT \$4.8 million/year.</p> <p>Benefit:</p> <p>A noted major problem for all UAO's is their inability to respond to changes in priorities or scope of work within any single year. Their budgets are set for each year and contracts awarded for scheduled work. A lack of funding prevents additional work. This 25% payment will provide UAO's additional resources to meet PennDOT's needs.</p>
<p>7) Working relationships with UAOs need to be improved to attain more "prior work".</p>	<p>District Utility Administrator (DUA)</p>	<p>Committee recommends two separate meetings held each year.</p> <p>First meeting – PennDOT/UAO's discuss future transportation projects, priorities and schedules.</p> <p>Second meeting PennDOT/UAO's/Contractors/Consultants: Discuss technical issues, concerns, training needs, etc</p>	<p>DUA to take the lead and arrange these meetings.</p> <p>Prepare minutes and circulate to all attendees.</p>	<p>Individual schedules and availability of time.</p> <p>PennDOT's ability to follow up on recommendations.</p>	<p>This is an annual ongoing effort, which may require staff and available time to address identified issues and recommendations.</p>	<p>Each DUA will note identified issues and/or recommendations.</p> <p>The DUA will lead efforts to resolve those issues and document the entire process and provide that information to the Chief Utility Relocation Administrator.</p>	<p>No additional funds required but sufficient amount of staff time is required to attend meetings and provide appropriate follow-up.</p>

## Recommendations Matrix

Issue	Process Owner	Recommendations	Action Plan	Obstacles	Time Line	Measures	Cost Benefit
<p>8) PennDOT's inability to keep contractors on schedule, due to delayed utility relocations.</p>	<p>Secretary of Transportation</p>	<ul style="list-style-type: none"> <li>• PennDOT develops a formal process to track utility delay claims to document the magnitude of problem.</li> <li>• The State Legislator should adopt legislation similar to: "Should a UAO fail to comply with the notice to remove, relocate or adjust all required facilities as specified in the original contract or agreed to revised schedule, the UAO is liable to the Department for direct contract damages, including costs, fees, penalties, or other contract changes, for which the Department is proven liable to a contractor caused by the utilities failure to timely remove, relocate or adjust".</li> <li>• No contractor should be permitted to incorporate any revisions after the bid letting which involves UAO's without their approval.</li> </ul>	<ul style="list-style-type: none"> <li>• PennDOT tracks utility delay claims.</li> <li>• Evaluate data to identify magnitude of problem.</li> <li>• Work with the State Legislature to draft legislation.</li> <li>• PennDOT must develop a formal legal process.</li> <li>• Central Office utility administrator, in conjunction with Department Council, will file necessary paperwork to obtain the cost of the contractor's claim from the UAO.</li> </ul>	<ul style="list-style-type: none"> <li>• Difficulty getting State legislature to pass legislation.</li> <li>• PennDOT's ability to collect funds.</li> <li>• Timing</li> <li>• Long-term relationship with UAO's may be compromised.</li> </ul>	<p>This is a long, involved process, requiring from 1 to 3 years to complete before any efforts to collect for damages could occur.</p>	<ul style="list-style-type: none"> <li>• Track the number and amount of utility delay claims for two years to document level of problem.</li> <li>• After legislation is passed, track amount and level of utility delay claims to determine level of impacts.</li> <li>• Have District Construction Unit track project schedule compliance before and after to determine any change.</li> <li>• Provide all responses to Chief Utility Relocation Administrator.</li> </ul>	<p>This cost/effort is unable to be determined this time. The level of the problem is not even known. A major effort and staff time will be required.</p> <p>Confrontations with UAO's are counterproductive, but may be necessary.</p>

## **Appendix B**

DM-5 Utility Relocation Training

Power Point Presentation  
(including Study Recommendations)

# DM-5 Utility Relocation Training



**Sponsored by Design Community Training Program**

Revised to incorporate Effective Utility Accommodation recommendation 7/20/09

# Introduction

- Purpose
- Class Agenda
- Logistics
- Instructor
  - Larry Ditty, 717-214-8762

# Objectives

At the end of this course, you will be able to:

- Identify utility right-of-way documentation needed for reimbursement, retention of rights, and substitute right-of-way
- Compile the required documentation necessary to issue the utility clearance (Form D-419)
- Determine when permits are required
- Examine the types of agreements and when to use them

# Day 1 Topics

- Chapter 1 -- Definitions
- Chapter 2 – Legal
- Chapter 3 – Reimbursement Basis
- Chapter 4 – Engineering Services and Contractors
- Chapter 5 – Design
- Chapter 6 – Right-of-Way Procedures
- Chapter 7 – Utility Occupancy of Highways and Bridges
- Chapter 8 – Cost Development, Reimbursement, Estimates and Billings
- Chapter 9 – Agreements

# Chapter 2 - Legal

- Purpose
- Topics addressed include:
  - Requests for Legal Opinions
  - State Highway Law
  - Public Utility Code
  - Business Corporation Law
  - Pennsylvania One Call

# Chapter 2 - Legal

- 2.0 Requests for Legal Opinions
  - Directed to Office of Chief Counsel through Central Office Utility Relocation Unit
  - Should Include:
    - Real Property Interest Documents
    - Marked Plans
    - Scope of Work
    - Detailed Explanation for Clarification

# Chapter 2 - Legal

- 2.1 State Highway Law
  - 36 P.S. §670-412 (Occupancy of Right-of-Way of Public Service Companies)
  - 36 P.S. §670-412.1 (Adjustment of Municipality or Municipality Authority, Owned Public Utility Facilities)
  - PA Legislature considering legislation to hold UAOs liable for direct contract damages caused by delay claims

# Chapter 2 - Legal

- 2.2 Public Utility Code

- General Rule – Without Prior Order of Commission:

- No public utility shall construct its facilities across facilities of any other public utility or across any highway
    - No highway shall be constructed across facilities of public utility

# Chapter 2 - Legal

- 2.3 Business Corporation Law
  - Gives businesses right to take, occupy and condemn property
  - List of principle purposes

# Chapter 2 - Legal

- 2.4 Pennsylvania One Call
  - Act (73 P.S. §176, ET. SEQ) protects public health and safety
  - Single toll-free telephone number to notify intent to perform excavation, demolition or similar work



**Pennsylvania One Call System**

**Call Before You Dig!**

**1-800-242-1776**

**[www.paonecall.org](http://www.paonecall.org)**

# Chapter 3 – Reimbursement Basis

- Purpose
- Topics Addressed Include:
  - Authority to Contribute
    - DM-5 is clear on this issue
  - Cost Sharing with Municipal and Municipal Authority Utilities
  - UAOs are made whole during relocation process by:
    - Providing private status within legal R/W
    - Providing substitute R/W

# Chapter 3 – Reimbursement Basis

- 3.1 Authority to Contribute
  - Private Right-of-Way
  - Public Right-of-Way

	Municipalities/ Authorities	Utilities
<b>Cost Share</b>	<b>Y</b>	<b>N</b>
<b>Reimbursement</b>	<b>Y</b>	<b>Y</b>
<b>Incorporated Work</b>	<b>Y</b>	<b>Y</b>

# Chapter 3 – Reimbursement Basis

- 3.2 Cost Sharing with Municipal and Municipal Authority
  - No employee is authorized to negotiate, commit or bind PennDOT
  - Secretary of Transportation determines PennDOT's share of actual relocation cost
  - 50% cost sharing requests are considered without documentation; 100% requests are not considered
  - **Communication/coordination is critical**

# Chapter 4 – Engineering Services and Contractors

- Purpose
- Topics Addressed Include:
  - Consultant Engineers
    - When necessary, PennDOT will provide utility coordination during construction with in-house staff or consultant forces.
  - Contracts and Contractors
    - Once a project is let, any contractor changes/revisions which impacts UAOs must secure UAO's written approval or reimburse the expense of the UAOs

# Chapter 4 – Engineering Services and Contractors

- 4.1 Consultant Engineers
  - Utility Submissions
  - Existing Written Continuing Contracts
  - Contracts for One Specific Relocation
  - Payment Methods

# Chapter 4 – Engineering Services and Contractors

- 4.2 Contracts and Contractors
  - Awarded to lowest qualified bidder
  - Work performed under terms of existing written contract
  - Utility may use qualified contractor without prior approval when impractical to solicit bids
  - Municipality or Authority may hire qualified contractor when work is minor in nature and cost is <\$10,000
  - Utility completes pages 4 & 5 of Preliminary Estimate

# Chapter 5 – Design

- Purpose
- Topics Addressed Include:
  - General
  - Preliminary Design – Utility Contacts
  - Commencement of Utility Relocation Activities
  - Utility Verification Plans and Related Activities
    - **Begin this process early per DM-5 prior to start of the design phase**
  - Initial Utility Design Stage Meeting
  - Incorporation of Utility Work in Highway Contract
  - Activities Subsequent to Initial Design Stage Meeting
  - Final Utility Design Stage Meeting
  - Minor Projects

# Chapter 5 – Design

- 5.0 General

- Designating and Locating of Existing Underground Utility Facilities

- Provide accurate locations **and elevations**
  - Each District Utility Administrator (DUA) administers a “Utility Relocation Support” open-end agreement which provides:
    - SUE engineering
    - Survey staking of required R/W
    - Clearing and grubbing
    - E&S Controls
    - Minor excavation
    - Traffic Control (if needed)
    - Inspection
  - Sub-surface utility engineering **is required on all projects, except those deemed as exceptions by the DUA.**
  - One Call compliance is mandatory
    - **Project manager makes PA One Call**
    - **Provide information to DUA**



**\$4.62 is  
saved for  
every \$1.00  
spent on SUE**

# Chapter 5 – Design

- What is the impact on design when SUE is used?
- What are some successful examples of its use?
- What are the factors that prevent it from being used?
- Are there financial and safety consequences to consider?

# Chapter 5 – Design

- 5.0 General

- Utility Lead Time Policy

- Establish time schedules
      - DUAs develop a utility CPM schedule
      - PennDOT maintains a uniform let schedule on their website
    - Consider utilities' time requirements
      - Forcing UAO compliance is counter productive, develop incentive opportunities
    - Maintain communication between PennDOT and utilities
      - DUA identifies UAO ownership
    - Effective coordination
      - Share existing technologies (example video logs)
      - Promote electronic information exchange
      - Provide Department staff one day a month to assist UAOs
      - Notification to UAOs adjustments must occur early
      - Maintain ongoing communications

# Chapter 5 – Design

- 5.0 General

- Utility Lead Time Policy (Cont.)

- Effective coordination (Cont.)
    - Conduct second annual PennDOT/UAO meeting
      - Include contractors/consultants
      - Schedule at end of the construction season
      - Discuss proposed PennDOT changes or revisions.
      - Technical issues and concerns
      - How to accomplish more “prior work”
      - UAO training needs/assistance with PennDOT requirements
      - Other issues impacting professional working relationship
    - Assure project letting schedules will be met
      - Promote more “prior work”
    - Outline flow chart and suggested time frames (A-502)
    - Discuss with the District Utility Administrator

# Chapter 5 – Design

- What's the impact on design when lead times are established?
- What are some examples of its use?
- What are the factors that prevent it from being used? How can a schedule be implemented when suggested time frames are impossible?
- Why is it important to provide Minimum Plan Requirements for the utilities?
- What happens when a utility does not receive all the data needed from PennDOT to start engineering?
- Are there any special utility lead time considerations?

# Chapter 5 – Design

- 5.0 General

- Highway-Utility Coordination Meetings

- Periodic Meetings

- Schedule utility coordination meeting early through DUA
- Schedule design field view meeting early
- Promote more prior work

- Discuss procedures

- Designer compliance with DM-5
- Submit topo plans to UAOs early
- Design using utility avoidance techniques
- Document designers efforts/success of utility avoidance/mitigation

- Address issues

- Survey relocated utilities and incorporate on new as-built plans
- Maintain a formal design revision notification process
- During utility verification process, R/W status can be submitted separately

# Chapter 5 – Design

- 5.0 General
  - Highway-Utility Coordination Meetings
    - Periodic Meetings
      - Schedule utility coordination meeting early through DUA
      - Schedule design field view meeting early
      - Promote more prior work
    - Discuss procedures
      - Designer compliance with DM-5
      - Submit topo plans to UAO's early
      - Design using utility avoidance techniques
      - Document designers efforts/success of utility avoidance/mitigation
    - Address issues
      - Survey relocated utilities and incorporate on new as-built plans
      - Maintain a formal design revision notification process
      - During utility verification process, R/W status can be submitted separately

# Chapter 5 – Design

## •5.0 General

### ➤ Highway-Utility Coordination Meetings

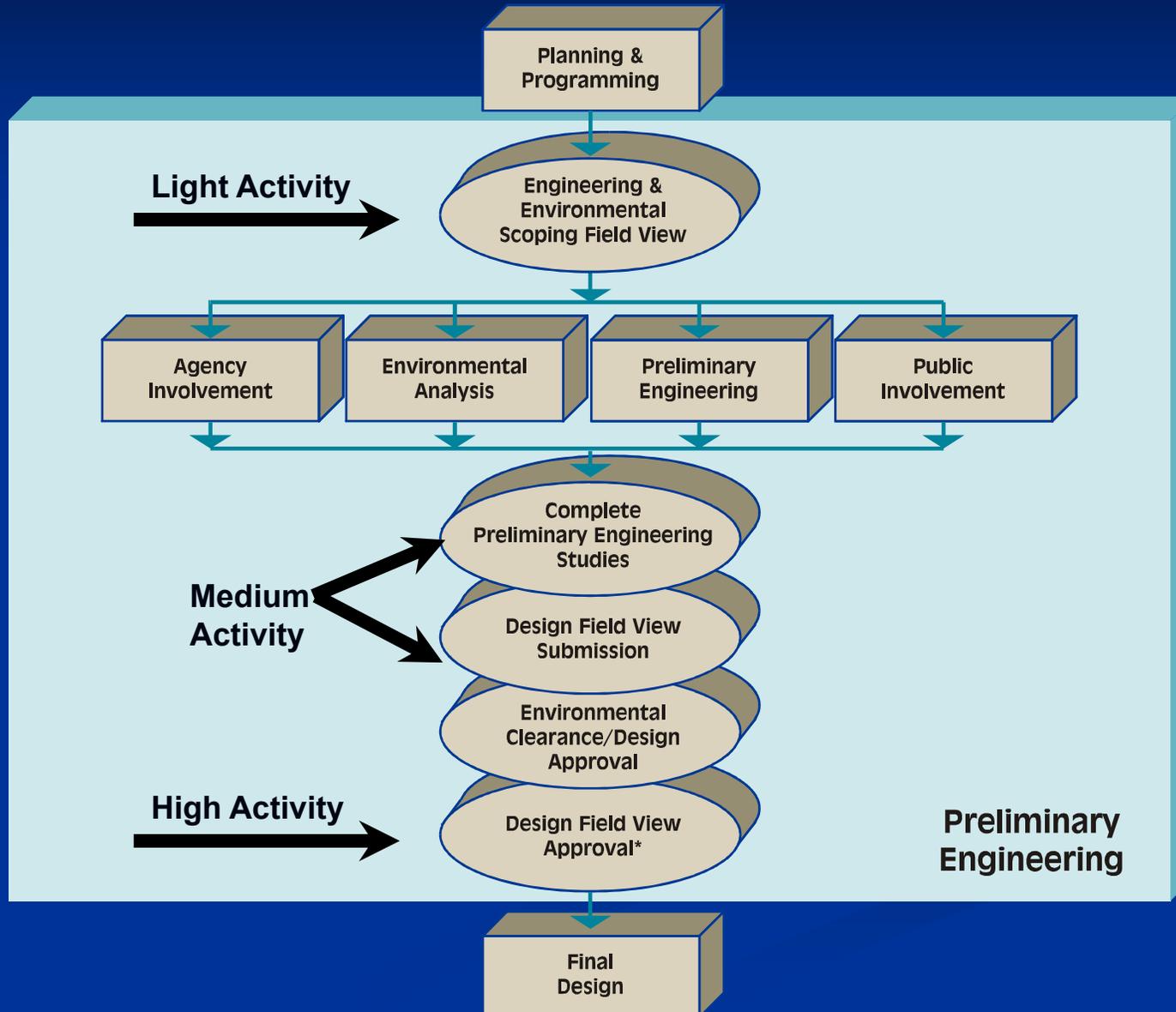
- Inform of projects under study, in design or being advertised for construction
  - PennDOT /UAO Annual District Meeting
    - DUA schedules annual meeting
    - Directly after program approval
    - Review project schedules/let schedules
    - Review known scopes of work
    - Both short term and long term

# Chapter 5 – Design

- 5.0 General

Design Process		Purpose	DM-5 Section
1.	Engineering and Environmental Scoping Field Views	<ul style="list-style-type: none"><li>Determine probable impact on existing utility facilities</li><li>Recommend solutions to conflicts</li></ul>	5.0
2.	Preliminary Alternatives Development and Review	<ul style="list-style-type: none"><li>Part of Preliminary Engineering</li><li>Designer contacts utilities</li></ul>	5.1
3.	Detailed Alternatives Development and Review	<ul style="list-style-type: none"><li>Utility relocation activities start</li><li>Verify type, size and location of existing facilities</li></ul>	5.2 5.3
4.	Initial / Final Design Meeting	<ul style="list-style-type: none"><li>High involvement</li><li>Prepare ROW, cost estimates, specifications, survey references and benchmarks for project</li></ul>	5.4 5.6 5.7

# Chapter 5 – Design



# Chapter 5 – Design

- 5.1 Preliminary Design – Utility Contacts
  - Designer contacts all known utilities **early**
  - Designer requests information on existing and proposed facilities **early:**
    - **Project Manager/designer identifies conflicts**

# Chapter 5 – Design

- 5.2 Commencement of Utility Relocation Activities
  - Starts during Detailed Alternatives Development and Review
  - Designer sends letter advising utility about study
  - Maintain close relationship with designer

# Chapter 5 – Design

- 5.3 Utility Verification Plans and Related Activities
  - Occurs during Design Field View and Detailed Alternatives Development and Review
    - Discuss installation of indicators for non-metallic or dielectric facilities.
  - Highway plan shows type, size, location of existing utility facilities
  - Utilities verify in writing type, size, location of facilities
  - District Utility Unit authorizes accumulation of charges for Preliminary Engineering

# Chapter 5 – Design

- 5.4 Initial Utility Design Stage Meeting
  - Scheduled and conducted by District Utility Unit
  - Discuss probable methods to relocate utilities
  - Prepare Project Utility Relocation Estimate
  - Role of District Utility Unit

# Chapter 5 – Design

- 5.5 Incorporation of Utility Work in Highway Contract
  - Utility requests in writing to incorporate design and/or relocation into highway contract and to have highway contractor do physical work
  - PennDOT empowered by Section 412.1 of State Highway Law to design and incorporate work into its highway construction contract and bill utility when Municipality or Authority refuses to relocate facility

# Chapter 5 – Design

- 5.6 Activities Subsequent to Initial Stage Meeting
  - District Utility Unit authorizes designer to forward plans and drawings to utilities
  - Actions taken by utility
  - Actions taken by District Utility Unit

# Chapter 5 – Design

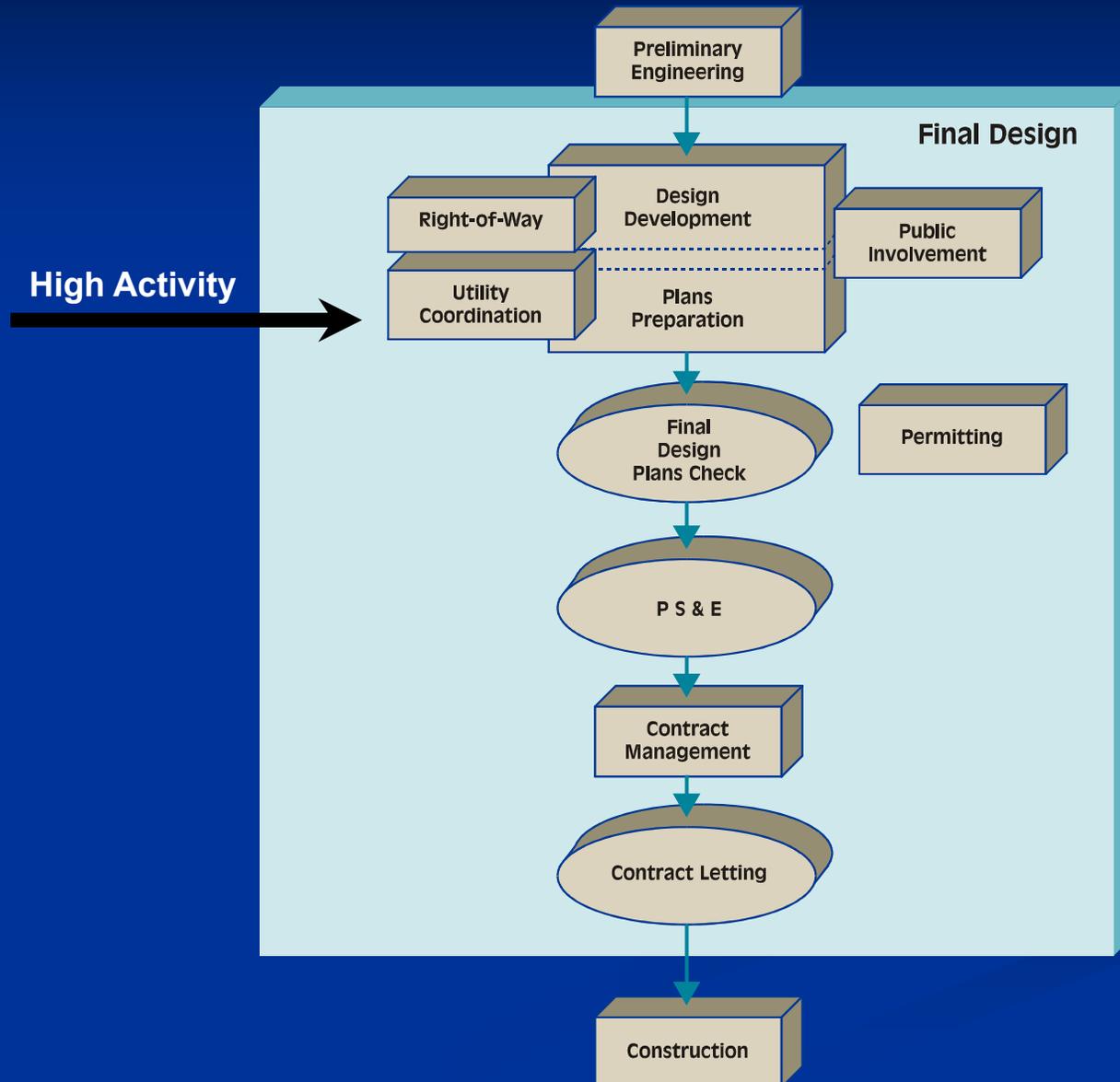
- 5.6 Activities Subsequent to Initial Stage Meeting
  - Plan Symbols

DESCRIPTION	EXISTING	PROPOSED
Sanitary Sewer & Manhole	— <i>S</i> — ○	— <i>S</i> — ○
Water Line & Valve	— <i>W</i> —	— <i>W</i> —
Gas Line & Valve	— <i>G</i> —	— <i>G</i> —

# Chapter 5 – Design

- 5.7 Final Utility Design Stage Meeting
  - Final determination made
  - Finalize method and responsibility of all related hazardous substances

# Chapter 5 – Design



# Chapter 5 – Design

- 5.8 Minor Projects
  - DM-1 Definition
  - Procedure

# Chapter 5 – Design

- When is an Initial Utility Design Stage Meeting not necessary?
- When is a Final Utility Design Stage Meeting mandatory?
- When do you discuss the use of Consultant Engineers?
- How do you find out if the work or design will be incorporated?
- How important is it to inquire about lead time for strategic materials?
- When are substitute right-of-way issues discussed?

# Chapter 6 – Right-of-Way Procedures

- Purpose
- Topics Addressed Include:
  - Required Documentation of Utility's Real Property Interest
  - Retention of Existing Right-of-Way Status
  - Acquisition of Substitute Right-of-Way
  - Highway Plan Terminology
  - Utility Access Roads
  - Relocation of High Voltage Electric Transmission Lines

# Chapter 6 – Right-of-Way Procedures

- 6.1 Required Documentation of Utility's Real Property Interest
  - Copy of interest document OR affidavit as evidence
  - Reimbursable agreement not prepared until interest documentation is received and approved

# Chapter 6 – Right-of-Way Procedures

- 6.2 Retention of Existing Right-of-Way Status
  - Consider joint highway and utility use right-of-way

# Chapter 6 – Right-of-Way Procedures

- 6.3 Acquisition of Substitute Right-of-Way
  - PennDOT authorized by law to occupy right-of-way of utilities for highway purposes
  - PennDOT must provide substitute right-of-way
  - Requests for substitute right-of-way
  - Coordinating acquisition of substitute right-of-way (prior to completion of plan)

# Chapter 6 – Right-of-Way Procedures

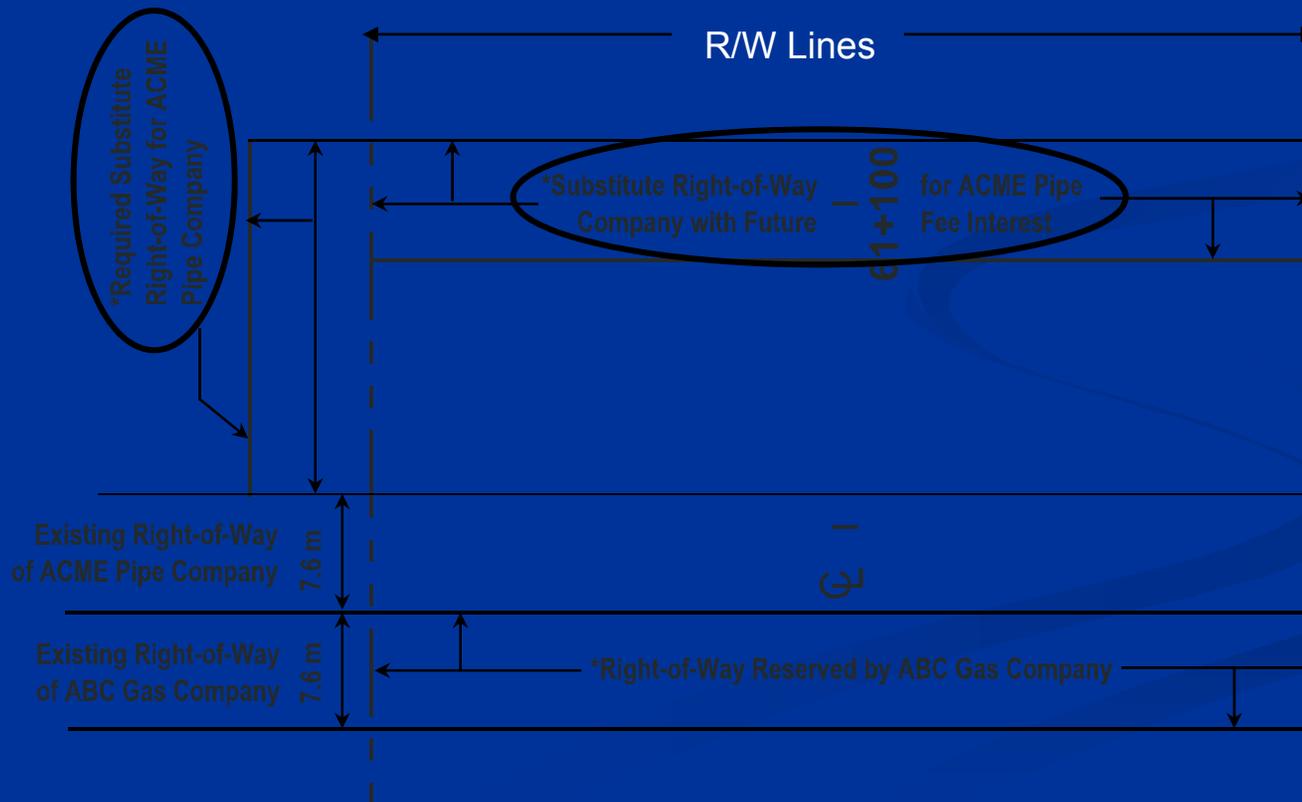
- 6.3 Acquisition of Substitute Right-of-Way
  - Coordinating acquisition of substitute right-of-way (after completion of plan)
  - Limits of utility right-of-way
  - Description of rights
  - Future easement and fee interests
  - Utility Right of Entry Form (A-605)

# Chapter 6 – Right-of-Way Procedures

- 6.4 Highway Plan Terminology
  - Title Sheet
  - Detail Sheets
  - Declaration of Taking
  - Conveying Substitute Right-of-Way Utilities

# Chapter 6 – Right-of-Way Procedures

- 6.4 Highway Plan Terminology (cont'd)
  - Highway Plan Terminology for Utility Right-of-Way



# Chapter 6 – Right-of-Way Procedures

- 6.5 Utility Access Roads
  - Minimum width is same when replacing existing access road
  - Minimum width for terrain and utility needs for new access road

# Chapter 6 – Right-of-Way Procedures

- 6.6 Relocation of High Voltage Electric Transmission Lines
  - Electric company needs PUC approval for relocation

# Chapter 7 – Utility Occupancy of Highways and Bridges

- Purpose
- Topics Addressed Include:
  - General
  - Occupancy of Highway Right-of-Way
  - Types of Occupancy
  - Minimum Plan Requirements
  - Utility Relocation Highway Occupancy Permit
  - Data Required for Revision to a Permit
  - Accommodation of Above Ground Utility Facilities Within Right-of-Way

# Chapter 7 – Utility Occupancy of Highways and Bridges

- Topics Addressed Include: (cont'd)
  - Location of Above Ground Utility Facilities
  - Replacement of Existing Aerial Facilities
  - Replacement or Installation within Utility Pole Accident Clusters
  - Replacement of Accident Damage Poles
  - Accommodation of Underground Utility Facilities Within Right-of-Way
  - Establishment of Utility Corridors on Freeways Joint Development and Multiple Use

# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.0 General
  - Utility applies for, and must be issued, Utility Relocation Highway Occupancy Permit (UR-HOP) prior to constructing, relocating or adjusting existing facility
  - Utility applies for, and must be issued, Highway Occupancy Permit (HOP) for access to maintain or service existing facility

**DEPARTMENT OF TRANSPORTATION  
UTILITY RELOCATION  
HIGHWAY OCCUPANCY PERMIT**

Fayette County  
S.R. 6040, Section A09

PERMIT NO. 123456  
DATE: November 12, 2001

Michael Rich Telephone Company  
1091 Maple Leaf Lane  
Mill Run, PA 15464

This is your authorization to enter upon and occupy the highway right-of-way to effect the required adjustment, relocation or installation of facilities...

NOTE: A COPY OF THIS PERMIT MUST BE PRESENT ON THE PROJECT SITE.

\_\_\_\_\_  
SECRETARY OF TRANSPORTATION

BY: \_\_\_\_\_

FOR:

# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.0 General
  - Utility facility occupation on highway right-of-way can materially affect highway's safe operation and maintenance
  - Test Hole Permits

# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.1 Occupancy of Highway Right-of-Way
  - Occupancy of Federal-Aid Freeways
  - Occupancy Permits on Existing Highways

# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.1 Occupancy of Highway Right-of-Way
  - Occupancy of Roads Other than State Routes
  - Occupancy of Structures
    - Coordination Procedure for Proposed Highway Structures
    - Designer's Responsibilities

# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.1 Occupancy of Highway Right-of-Way
  - Occupancy of Structures
    - Guidelines for Accommodating Utilities on Structures
  - Occupancy of Highway Tunnels

# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.2 Types of Occupancies
  - Crossing Occupancies
  - Longitudinal
  - Located

# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.3 Minimum Plan Requirements
  - Show pertinent highway features in detail to provide clear picture of proposed work on highway drawings
  - Minimum data required

# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.4 Utility Relocation Highway Occupancy Permit (UR-HOP)
  - Authorizes utility to construct or adjust and occupy highway right-of-way when construction requires relocation
  - Utility uses form D-4181
  - District Utility Unit reviews application and grants permission
  - Approved plan of relocation retained as permanent PennDOT record
  - Unaffected utility within proposed right-of-way

# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.4 Utility Relocation Highway Occupancy Permit (UR-HOP)
  - When Permit is / is not Required

# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.4 Utility Relocation Highway Occupancy Permit (UR-HOP)
  - Application Process for Utility
  - After Construction Process

# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.5 Data Required for Revising a UR-HOP
  - Utility provides letter, as built plans showing changes and revised form D-4181
  - District Utility Unit issues revised UR-HOP
  - Items requiring change to permit

# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.6 Accommodating Above Ground Utilities within State Highway Right-of-Way
  - PennDOT cannot refuse occupancy of right-to-way to utility
  - PennDOT can prohibit installation of above ground utility structures where high accident potential would result
  - PennDOT can regulate where and how above ground facilities are placed
  - Maximum roadside clearance is provided

# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.7 Location of Above Ground Utilities Structures
  - Sections A – D
    - Outside of roadside clear zone
    - Behind or adjacent to fixed objects that will remain
    - Fire hydrants not considered as fixed objects
    - Utility can remain in location when project limited to existing pavement and shoulders; location consistent with safety of traveling public

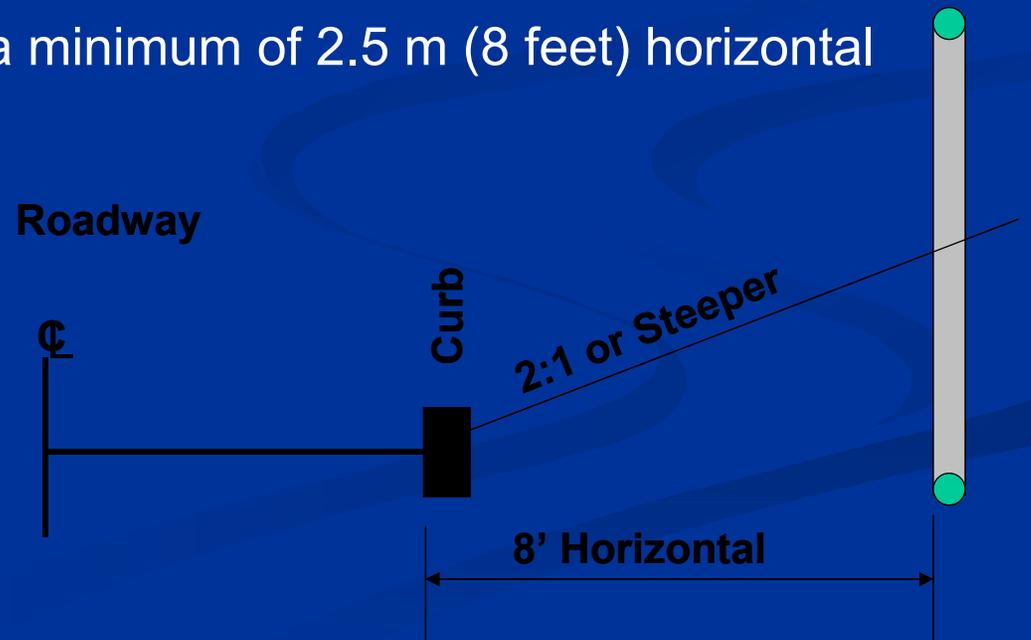
# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.7 Location of Above Ground Utilities Structures
  - Section E
    - Behind existing or proposed guiderails

TYPE DESIGNATION	DESCRIPTION	MOUNTING HEIGHT	MINIMUM UNOBSTRUCTED DISTANCE	POST SPACING
2-W	WEAK POST W-BEAM GUIDE RAIL (NORMAL POST SPACING)	770 mm (30 inches) to top of beam	2.1 m (7 feet)	3810 mm (12 feet 6 inches)
2-WC	WEAK POST W-BEAM GUIDE RAIL (CLOSE POST SPACING)	770 mm (30 inches) to top of beam	1.5 m (5 feet)	1905 mm (6 feet 3 inches)
2-WCC	WEAK POST W-BEAM GUIDE RAIL (CLOSE POST SPACING)	770 mm (30 inches) to top of barrier	1.2 m (4 feet)	952.5 mm (3 feet 1- ½ inches)
2-S	STRONG POST W-BEAM GUIDE RAIL	706 mm (27 inches) to top of beam	0.9 m (3 feet)	1905 mm (6 feet 3 inches)

# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.7 Location of Above Ground Utilities Structures
  - Section E
    - Beyond parallel drainage ditches, top of steep cut slopes or behind retaining walls
    - In cut areas, place a minimum of 2.5 m (8 feet) horizontal beyond toe of slope

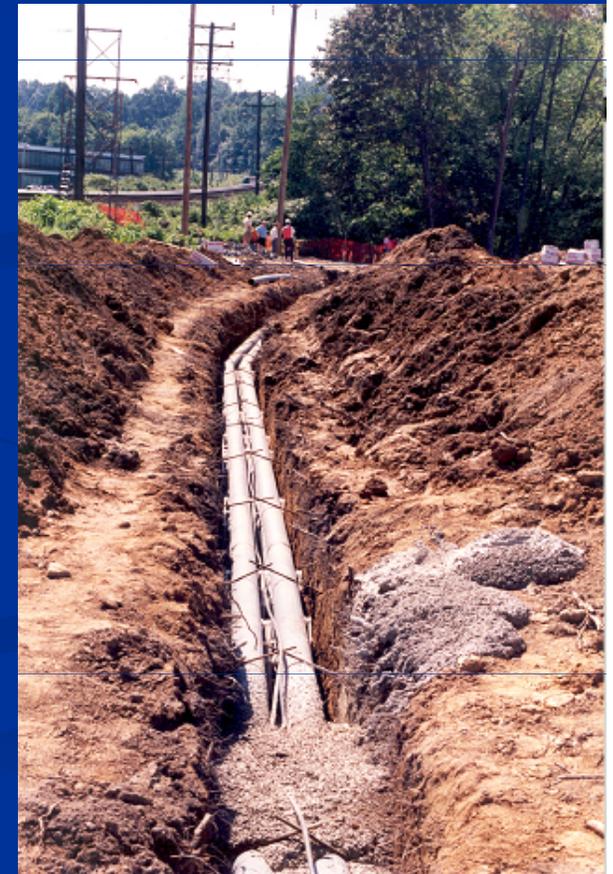


# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.7 Location of Above Ground Utilities Structures
  - Section F
    - Depends on available space within right-of-way
    - Three “ideal” locations
    - Apply minimum standards when “ideal” location cannot be met
    - Utility can request exception to policy if physical limitations exist
    - Consider joint pole use when 2 or more utility lines are to be relocated
- Modifications to Safety Standards are Field Viewed

# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.8 Replacement of Existing Aerial Facilities with Underground on Highway Relocations
  - Where highway right-of-way widths exceed utility's design criteria for maximum span length limits
  - Utility may install one space duct for each duct in use



# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.9 Replacement/Installation of Poles within Utility Pole Accident Clusters
  - District Utility and Traffic Units review and approve prior to issuing UR-HOP
  - Pole replacement in emergency situation done under authority of Emergency Permit Card
  - PennDOT's Comprehensive Pole Safety Policy

# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.10 Replacement of Accident-Damaged Poles
  - District personnel review replacement of accident-damaged utility pole if it is:
    - Under terms of Emergency Permit Card
    - Not within accident cluster area
  - Field view could be required to determine final location

# Chapter 7 – Utility Occupancy of Highways and Bridges

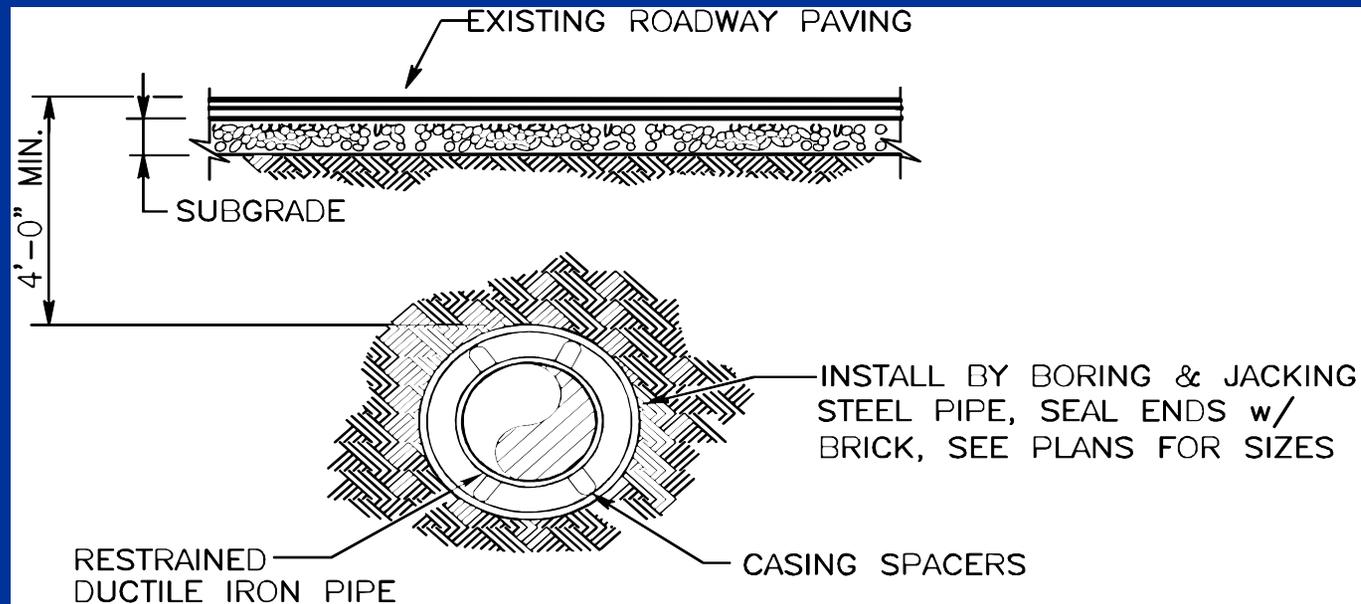
- 7.11 Accommodating Underground Utility Facilities within State Highway Right-of-Way
  - General Provision
  - Longitudinal Installations

# Chapter 7 – Utility Occupancy of Highways and Bridges

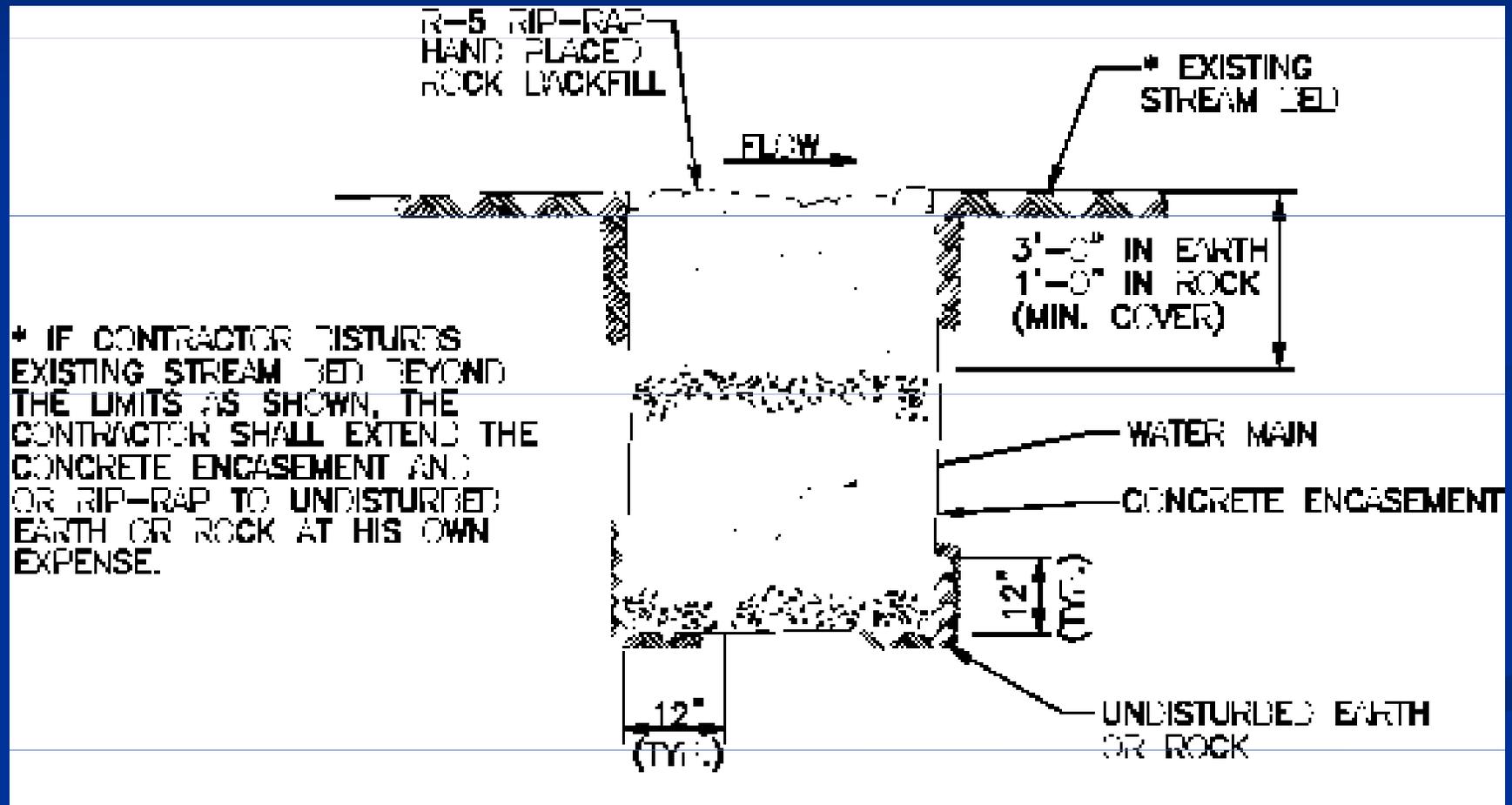
- 7.11 Accommodating Underground Utility Facilities within State Highway Right-of-Way
  - Crossing Facilities

# Chapter 7 – Utility Occupancy of Highways and Bridges

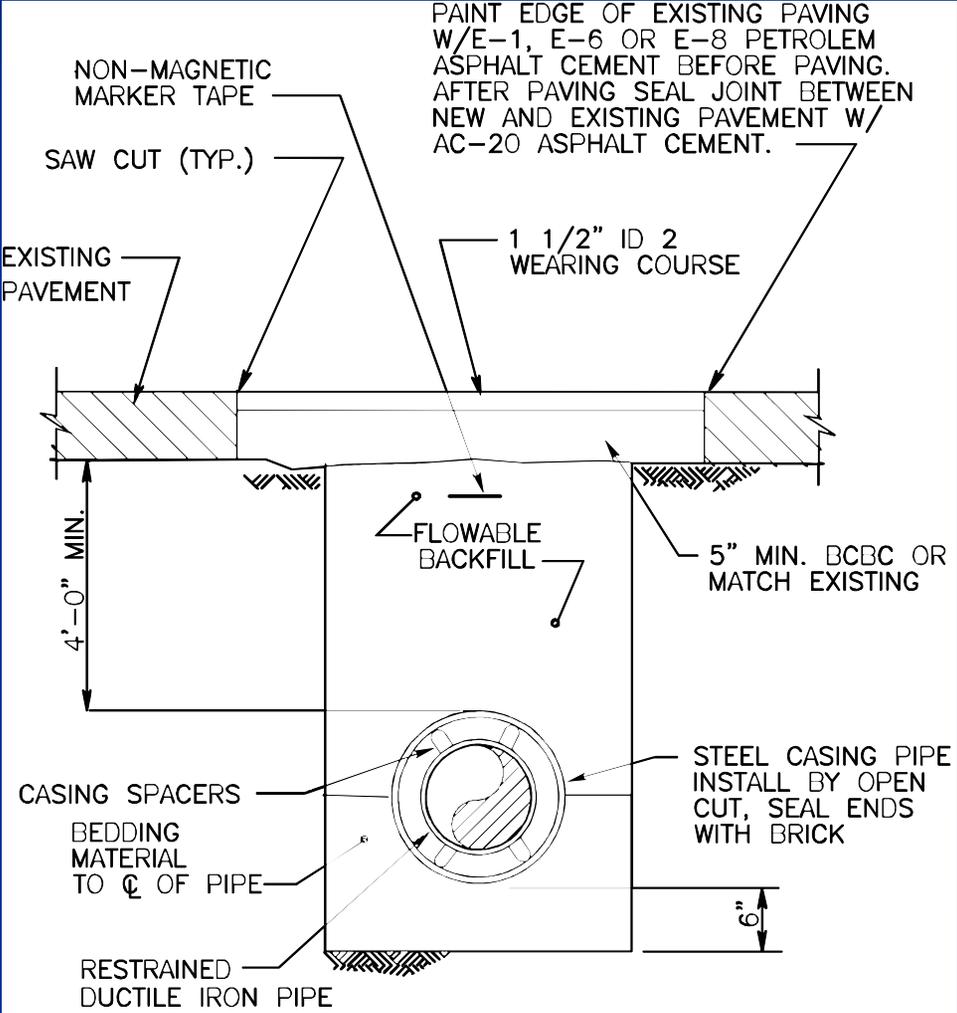
- 7.11 Accommodating Underground Utility Facilities within State Highway Right-of-Way
  - Casing and Encasement



# Chapter 7 – Utility Occupancy of Highways and Bridges



# Chapter 7 – Utility Occupancy of Highways and Bridges



# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.11 Accommodating Underground Utility Facilities within State Highway Right-of-Way
  - Casing and Encasement
    - Uncased crossings

# Chapter 7 – Utility Occupancy of Highways and Bridges

- 7.12 Establishing Utility Corridors on Freeway Joint Development and Multiple Use
  - PennDOT can develop utility corridor by moving limited access right-of-way toward centerline and retain right-of-way line at same location as original limited access right-of-way
  - Corridor can be established for trunkline or transmission type facilities
  - Monetary reasons cannot be only justification

# Chapter 8 – Cost Development, Reimbursement, Estimates & Billings

- Purpose
- Topics Addressed Include:
  - General
  - Request for Estimate Preparation
  - Utility's Preparation of Plans
  - Utility Relocation Questionnaire
  - Preliminary Estimate for Utility Relocation
  - Central Office Track Utility Delay Claims
    - At minimum authorize each District to track delay claims

# Chapter 8 – Cost Development, Reimbursement, Estimates & Billings

- Topics Addressed Include (cont'd):
  - Rental Charges Relating to Utility Relocation
  - Preparation of Lump Sum Estimate Package
  - Required Number of Plans and Estimates
  - District Review of Estimate Package
  - Central Office Review and Processing of Estimate Package
  - District Review and Approval of Final Billing
  - **Central Office Track Utility Delay Claims**
    - **At minimum, authorize each District to track delay claims.**

# Chapter 8 – Cost Development, Reimbursement, Estimates & Billings

- 8.0 General
  - Developing and Recording Costs
  - Direct Labor Costs
  - Labor Surcharges

# Chapter 8 – Cost Development, Reimbursement, Estimates & Billings

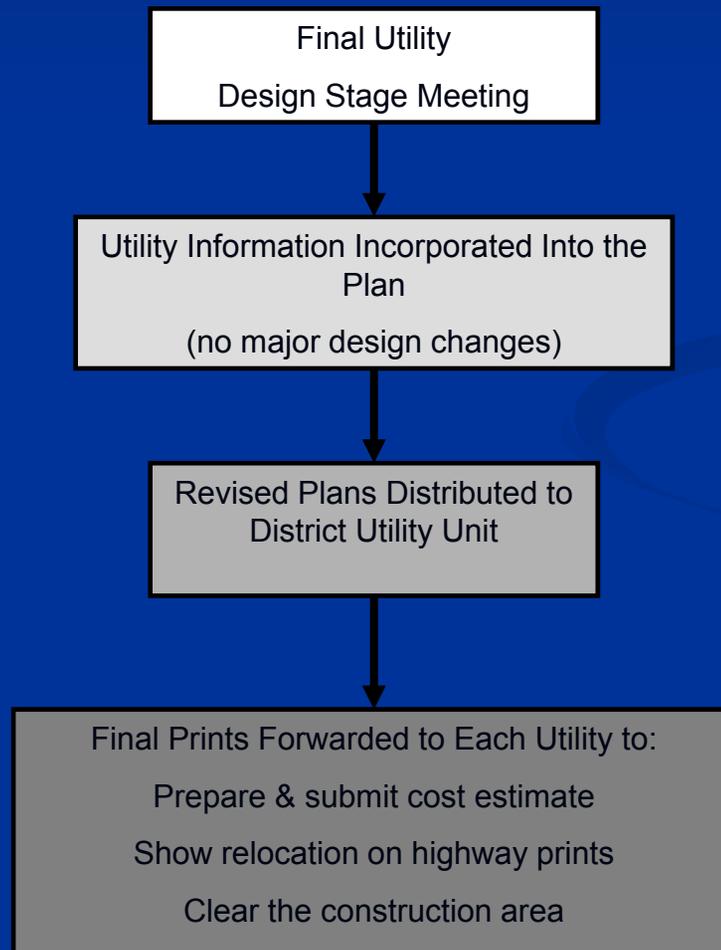
- 8.0 General (cont'd)
  - Overhead and Indirect Construction Costs
  - Material and Supply Costs

# Chapter 8 – Cost Development, Reimbursement, Estimates & Billings

- 8.0 General (cont'd)
  - Equipment Costs
  - Transportation Costs
  - Credits

# Chapter 8 – Cost Development, Reimbursement, Estimates & Billings

- 8.1 Request for Estimate Preparation



# Chapter 8 – Cost Development, Reimbursement, Estimates & Billings

- 8.2 Utility's Preparation of Plans
  - Index Sheet
    - Shows overall view of project
    - General Notes provide justification required by utility
    - Legend of symbols

# Chapter 8 – Cost Development, Reimbursement, Estimates & Billings

- 8.2 Utility's Preparation of Plans

- Detail Sheets

- Show location, length, size and/or capacity and design features of existing and proposed facilities
- Supporting drawings include cross sectional view of each underground crossing
- Typical view required for each aerial crossing showing vertical clearances
- On underground installations, utility provides types of restoration to be used

# Chapter 8 – Cost Development, Reimbursement, Estimates & Billings

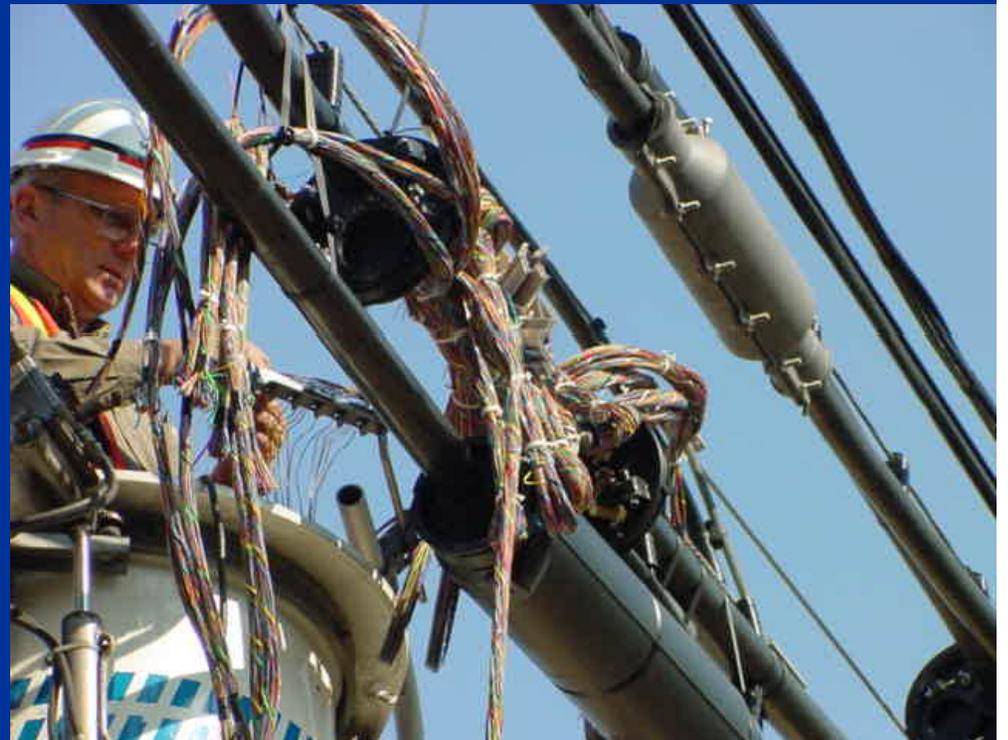
- 8.3 Utility Relocation Questionnaire
  - Questionnaire, Form D-4181, provides information of proposed relocation
  - Required to issue occupancy permits and to determine relocation time
  - Completed by utility; copies sent to District Utility Unit

# Chapter 8 – Cost Development, Reimbursement, Estimates & Billings

- 8.4 Preliminary Estimate for Utility Relocation
  - Estimate checklist completed by utility; verified by District Utility Unit
  - Provides detailed utility cost estimate for relocation proposal
    - Alternative payment process
      - List A (Preferred UAOs) receive upfront payment based on estimates
      - List B – Conventional reimbursement
  - Shows estimated amounts for each item and sub-item
  - Must include: detailed scope of work, permit request, and necessary supplemental sheets

# Chapter 8 – Cost Development, Reimbursement, Estimates & Billings

- 8.5 Rental Charges Relating to Utility Relocations Required by Construction Projects
  - Pole Rental



# Chapter 8 – Cost Development, Reimbursement, Estimates & Billings

- 8.6 Preparation of Lump Sum Estimate Package
  - Up to \$25,000
    - Utility completes Lump Sum Estimate/Agreement upon approved and signed Master Agreement
    - Utility attaches relocation plan and real property interest
    - **DUA authorized to make direct payment of \$25,000 or less**

# Chapter 8 – Cost Development, Reimbursement, Estimates & Billings

- 8.7 Requesting Conventional Lump Sum Agreements
  - Conventional Lump Sum Agreements up to \$100,000
    - Must provide clear picture of work performed
    - Prepared in accordance with 23 CFR, Utility's standard accounting and work order procedures, and DM-5

# Chapter 8 – Cost Development, Reimbursement, Estimates & Billings

- 8.9 District Review of Estimate Package
  - Review proposed location, estimated costs and supporting data
  - Obtain approval of traffic control plan
  - Obtain approval of restoration types to be used
  - Forward package to Central Office

# Chapter 8 – Cost Development, Reimbursement, Estimates & Billings

- 8.9 Central Office Review and Processing of Estimate Package
  - Prepares agreement draft
  - No reimbursement made until fully executed agreement is approved

# Chapter 8 – Cost Development, Reimbursement, Estimates & Billings

- 8.10 Preparation and Submission of Billings
  - Summary of Billing Form
  - Summary of Billing Cost Comparison Sheet

# Chapter 8 – Cost Development, Reimbursement, Estimates & Billings

- 8.10 Preparation and Submission of Billings
  - Three Payment Options
    - Prorated Periodic Invoices
    - Final Invoice
    - Lump Sum Billing

# Chapter 8 – Cost Development, Reimbursement, Estimates & Billings

- 8.11 District Review and Approval of Final Billing
  - Check for Completeness and Accuracy

# Chapter 9 – Agreements

- Purpose
- Topics Addressed Include:
  - Relocation Agreements
  - Standard Agreements for Reimbursement and Incorporation
  - Lump Sum Agreements \$100,000 or less
  - Master Agreements for Reimbursable Costs \$25,000 or less
  - Lump Sum Estimate/Agreement for Reimbursable Costs \$25,000 or less

# Chapter 9 – Agreements

- Topics Addressed Include (cont'd):
  - Master Casting Agreements
  - Letter Agreements for Casting Adjustments
  - Standard Reimbursement Agreement Supplements
  - Utility Corridor Agreements
  - Second Move Agreements
  - Resolutions

# Chapter 9 – Agreements

- 9.0 Relocation Agreements
  - Four Types of Agreements
    - Standard Reimbursement
    - Lump Sum Reimbursement
    - Master (Lump Sum Estimate Agreement)
    - Master Casting
  - Utility cannot make changes to PennDOT's agreement without PennDOT's approval

# Chapter 9 – Agreements

- 9.1 Standard Agreements for Reimbursement and Incorporation
  - Based on approved plan and estimate package
  - Prepared according to current PennDOT policies

# Chapter 9 – Agreements

- 9.2 Lump Sum Agreements of \$100,000 or Less
  - Used when PennDOT's share of utility's reimbursable costs does not exceed \$100,000
  - Based on utility's estimate
  - Upon completion of work, utility invoices PennDOT for amount on agreement

# Chapter 9 – Agreements

- 9.3 Master Agreements for Reimbursable Costs of \$25,000 or Less
  - Basic boilerplate language of Standard Agreement
  - Reference A-905

# Chapter 9 – Agreements

- 9.4 Lump Sum Estimate/Agreement for Reimbursable Costs of \$25,000 or Less
  - Utility prepares and signs Lump Sum Estimate/Agreement
  - Supplements Master Agreement for individual projects
  - Defines financial obligations
  - Signature by utility's local personnel saves processing time

# Chapter 9 – Agreements

- 9.5 Master Casting Agreements
  - Utility wants multi-year Master Agreement for adjusting castings
  - Supplemented by letter agreement for each specific highway project
  - Sets unit cost per casting

# Chapter 9 – Agreements

- 9.6 Letter Agreements for Casting Adjustments
  - Supplements Master Casting Agreement
  - Utility originates
  - Utility reimburses PennDOT
  - Unit cost times number of castings

# Chapter 9 – Agreements

- 9.7 Standard Reimbursement Agreement Supplements
  - Supplements prepared when:
    - Major change in “scope of work” requiring PennDOT approval
    - Increase of 10% or more to pro-rated share of participation
    - Monetary increases exceed (chart)

# Chapter 9 – Agreements

- 9.8 Utility Corridor Agreements
  - Based on data in Section 7.12
  - Defines utility's financial obligations, highway occupancy requirements, and other related data

# Chapter 9 – Agreements

- 9.9 Second Move Agreements
  - Utility required to move facilities again after original relocation
  - Central Office Utility Unit must review and approve

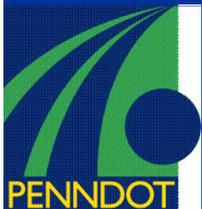
# Chapter 9 – Agreement Matrix

	<i>\$ Limit of State Responsibility</i>	<i>Special Requirements</i>	<i>Convert / Supplement</i>	<i>Periodic Billing Requirements</i>	<i>Final Billing Requirements</i>
<b>Standard Agreement (Conventional)</b>	Unlimited	Checklist, 4181, 4181-A, Plan Sheets, supporting documentation	Supplement (see Chapter 9.3)	Cannot exceed 75% of Reimb. Amount Invoice Only	Must include Invoice, 4181-B, and Required Documentation
<b>Lump Sum Agreement</b>	\$100,000	Checklist, 4181, 4181-A, Plan Sheets, supporting documentation	Convert to Standard Agreement	N/A	Invoice, 4181-B
<b>LSEA</b>	\$25,000	Master Required	Convert to Standard Agreement	N/A	Invoice

# Day 1 Summary

- Review
- Questions

# DM-5 Utility Relocation Training



Sponsored by Design Community Training Program

# Day 1 Review

- Chapter 2 – Legal
- Chapter 3 – Reimbursement Basis
- Chapter 4 – Engineering Services and Contractors
- Chapter 5 – Design
- Chapter 6 – Right-of-Way Procedures
- Chapter 7 – Utility Occupancy of Highways and Bridges
- Chapter 8 – Cost Development, Reimbursement, Estimates and Billings
- Chapter 9 – Agreements

# Day 2 Topics

- Chapter 10 – Authorizations
- Chapter 11 – Utility Clearance Procedures
- Chapter 12 – Construction
- Chapter 13 – Highway/Railroad Involvement

# Chapter 10 – Authorizations

- Purpose
- Topics Addressed Include:
  - Obtaining FHWA Authorization for Utility Relocations
  - Authorization for Preliminary Engineering
  - Authorization for a Utility to Proceed
  - Changes in Utility's Plan of Relocation
  - Budgetary Restrictions

# Chapter 10 – Authorizations

- 10.1 Obtaining FHWA Authorization for Utility Relocations
  - Three procedures to obtain federal participation:
    - Stewardship and Oversight Agreement
    - Alternate Procedure
    - Normal Procedure
  - PennDOT authorized to use Alternate Procedure for most utility relocations

# Chapter 10 – Authorizations

- 10.2 Authorization for Preliminary Engineering
  - Contingent on PMC approval and federal programming approval
  - Minor project
  - Canceling project
  - Prior authorization

# Chapter 10 – Authorizations

- 10.3 Authorization for Utility to Proceed with Physical Utility Adjustment
  - District Utility Unit authorizes utility to enter right-of-way for relocation work
  - If reimbursement/cost sharing agreement required, authorization contingent on execution of agreement
  - Copy of authorization letter sent to Central Office

# Chapter 10 – Authorizations

- 10.4 Changes in Utility's Plan of Relocation
  - Utility reports and justifies revisions to relocation plan
  - District Utility Unit approves change
  - Minor Changes
  - Major Changes

# Chapter 10 – Authorizations

- 10.5 Budgetary Restrictions
  - Budget may necessitate project delay
  - District communicates with utility

# Chapter 11 – Utility Clearance Procedures

- Purpose
- Topics Addressed Include:
  - General
  - Preparation of Utility Clearance Form
  - Utility Relocation Clearance Report
  - Utility Clearance Assurance Statement
  - Utility's Refusal to Perform Relocations
  - Pre-Bid Conference
  - Highway Contractors Sequencing of Operation
  - Highway Contractors Compliance with Act 187

# Chapter 11 – Utility Clearance Procedures

- 11.0 General
  - Every effort made to complete utility work before construction begins
  - Clearances inform concerned parties of utility relocations
  - Utility Clearance Form

# Chapter 11 – Utility Clearance Procedures

- 11.1 Preparation of Utility Clearance Form
  - District Utility Unit prepares form
  - Form cannot be submitted until written arrangements are received from utilities
  - List of utilities and areas affected / not affected

# Chapter 11 – Utility Clearance Procedures

- 11.1 Preparation of Utility Clearance Form
  - Types of Relocation Work
    - Prior work
    - Restrictive work
    - Concurrent work
    - Coordinated work
    - Not affected
    - Incorporated

# Chapter 11 – Utility Clearance Procedures

- 11.1 Preparation of Utility Clearance Form
  - Conditional Restrictions and Time Requirements

Right-of-Way Acquisition  
by the Department

Clearance of Right-of-  
Way by Department



**Demolition**



**Time of Day**



**Week or Year Facility  
Cannot be Shutdown**

# Chapter 11 – Utility Clearance Procedures

- 11.2 Utility Relocation Clearance Report
  - Utilities report current status of relocations

# Chapter 11 – Utility Clearance Procedures

- 11.3 Utility Clearance Assurance Statement
  - Central Office Utility Unit prepares UCAS certifying arrangements for relocation
    - Federal Participating Projects
    - Local Funded Projects
    - 100% State Projects
  - Written Arrangements

# Chapter 11 – Utility Clearance Procedures

- 11.4 Utility's Refusal to Perform Relocations
  - Office of Chief Counsel handles legal affairs and will resolve issue
- 11.5 Pre-Bid Conference
  - Held for major construction projects

# Chapter 11 – Utility Clearance Procedures

- 11.6 Highway Contractor's Sequencing of Operations
  - Arrangements made with utility companies must be considered
- 11.7 Highway Contractors Compliance with Act 187

# Chapter 12 – Construction

- Purpose
- Topics Addressed Include:
  - Preconstruction Conference
  - Commencement and Performance of Utility Work
  - Inspection of Utility Relocation Work
  - Changes in Utility's Plan of Relocation During Highway Construction
  - Certification of Completion

# Chapter 12 – Construction

- 12.0 Preconstruction Conference
  - Held to discuss matters pertaining to project
- 12.1 Commencement and Performance of Utility Work
  - Utility to begin relocation work as soon as District authorizes work
- 12.2 Inspection of Utility Relocation Work
  - PennDOT to receive notice five days, minimum, prior to starting date

# Chapter 12 – Construction

- 12.3 Changes in Utility's Plan of Relocation During Construction
  - Utility Responsibilities
- 12.4 Certification of Completion
  - Certificate completed and signed by utility and PennDOT
  - Used with, or in place of, Utility Inspection Report
  - Form submitted prior to billing to District Utility Unit

# Chapter 13 – Highway/Railroad Involvement

- Purpose
- Topics Addressed Include:
  - General Procedures for Filing PUC Application
  - Utility Relocation Agreements and the PUC
  - Billing Preparation and Payment
  - Other Related PUC Proceedings

# Chapter 13 – Highway/Railroad Involvement

- 13.1 General Procedures for Filing PUC Application
  - PennDOT files application for project approval
  - PUC schedules field conference to discuss project and establish PUC jurisdictional limits
  - If parties agree, PUC issues Order or Secretarial Letter
  - If parties disagree, PUC schedules Hearing

# Chapter 13 – Highway/Railroad Involvement

- 13.2 Utility Relocation Agreements and PUC
  - PennDOT may have obligations to reimburse utility
- 13.3 Billing Preparation and Payment
- 13.4 Other Related PUC Proceedings

# Day 2 Summary

- Review
- Course Evaluations
- Course Examination