May 1, 2012
AASHTO Breakout Session #5

Outsourcing Utility Coordination:
Needs and Benefits Beyond Utilities

Presenters:
Drew Markewicz, P.E. – RBA Group (NJ)
Eileen Sien, P.E. – RK&K (MD)
Outsourcing Utility Coordination: Needs and Benefits Beyond Utilities

Drew Markewicz, P.E. – Senior PM for RBA Group

Work Experience 27 Years of Industry Experience

- Transportation Projects – *Project Manager and Technical Design Leader on Transportation Agency Projects*
- Utilities – *Project Manager and Technical Lead on Utility Company Projects.*
- Project Management – *PMP (PMI) and CQIA (ASQ)*
- Ability to Support “Both Sides of the Fence”
  - *Project Manager/Designer on Multi-Disciplined DOT Transportation Projects*
Outsourcing Utility Coordination: Needs and Benefits Beyond Utilities

Eileen Sien, P.E. – Project Engineer for RK&K

Work Experience 17 Years of Industry Experience

• Manage MDOT contracts with work involving SUE, Utility Coordination and Utility Design
• Utility Coordinator for MDOT projects
  – Liaison between the MDOT and the Utility agencies
• Utility Work within Transportation Projects
  – Roadway and Transit Projects in MD, VA and DC
Outsourcing Utility Coordination: Needs and Benefits Beyond Utilities

Summary of the Session

- Review of the Typical Utility Process
- Need for Outsourcing Utility Coordination
- Outsourcing: Consideration and Skills
- Examples
- Lessons Learned
- Questions/Comments
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Utility Typical Process & Coordination Needs

Part 1: Data Collection

- Utility Record Research
  - Overhead and Underground Utilities
- Identify Utility Owners
  - Letters, Calls, Email requests, One Call services
  - Utility Record Research
- Perform Site Investigations
  - Subsurface Utility Engineering
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Utility Typical Process & Coordination Needs

Part 2: Conflict Evaluation

- Combine the latest utility information in the plans
- Review with design options for impacts to utilities
- Develop a cost analysis for the utility impacts
- Look at ways to minimize utility impacts
- Develop Utility Relocation Concept Plans
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Utility Typical Process & Coordination Needs

Part 3: Preparation of Relocation Plans

- Review design options for utility impacts
- Develop relocation plans for utilities
- Develop utility cost estimates
- Prepare utility relocation documents to standards
- Coordinate design efforts with effected utilities
- Prepare Utility Documents for Advertisement
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Need for Outsourcing of Utility Coordination

- Increased Demand on the DOT to move projects forward
  - Utility Impacts Can be Expensive and Create Delays
- Utilities are not part of the DOT organization
- Utilities not a primary focus
- Utilities have difference design and construction standards
- Strain on the DOT to organize utility coordination
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Outsourcing Considerations and Skills

- Utilities typically the design component with the least control.

- Selection of Design Team by choice, Utility Team members are given.
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Outsourcing Considerations and Skills

Proximity of Work Environment….

- Highway, Traffic, Survey, Structures,…. ”under one roof”

- Utilities, electric, gas, communications, water, sanitary, etc. …. ”off premises”
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Outsourcing Considerations and Skills

Outsourcing can help Transportation Agencies control….

- Excessive Costs
- Schedule Delays
- Outside Negative Influence
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Outsourcing Considerations and Skills

Transportation Agencies must have confidence in the assigned team…..

- Use of their Funding Resources
- Schedule obligations must be met
- May feel they “lose control” of the utility aspects of the project
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Outsourcing Considerations and Skills

Transportation Agencies must realize utility coordination is more than…

- An Administrative Task
- Independent Design Performed by the Utility Company
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Outsourcing Considerations and Skills

Consultants must realize utility coordination is more than…

- **An Administrative Task**
- **Independent Design Performed by the Utility Company**
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Outsourcing Considerations and Skills

Consultants must realize utility coordination is more than...

- A Non-Technical Discipline, typically delegated to Junior Level Staff
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Outsourcing Considerations and Skills

Utility Companies must have confidence in the assigned team.....

- *Use of their Company limited & Specialized Resources*
- *Schedules are often a strain on their other commitments.*
- *Specialized Technical Expertise and Requirements*
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Outsourcing Considerations and Skills

Recognize *Transportation Agency* Priorities…

- *Design Constraints* – Numerous Design Disciplines
- *Cost*
- *Schedule*
- *Permitting*
- *Environmental*
- *Construction Staging & Sequencing*
- *Multiple Agency Involvement*
- *Political*
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Outsourcing Considerations and Skills

Recognize *Utility* Constraints & Priorities.....

- *Design Constraints*
- *Existing Condition/System Integrity*
- *Outages & Emergencies*
- *Material Availability – Ordering Lead Times*
- *Resources - Crew Availability*
- *Seasonal Restrictions*
- *Utility Staging & Sequencing*
- *System Shut-down Constraints*
- *Tie-in Constraints*
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Outsourcing Considerations and Skills

Skills Required for Successful Outsourcing...

- **Knowledge in BOTH Agency and Utility Company Policies, Procedures, & Requirements**

- **Experience in Identifying, Prioritizing, & Mitigating Risks for BOTH Transportation & Utilities**
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Outsourcing Considerations and Skills

Skills Required for Successful Outsourcing

- "Cross Discipline” Design Experience in BOTH Transportation & Utilities…highways, drainage, structures, traffic, environmental, ROW, etc.

- Experience in resolving Utility Field Construction Issues

- Understand Construction Staging & Sequencing constraints for BOTH Transportation & Utilities
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Outsourcing Considerations and Skills

Skills Required for Successful Outsourcing

✓ Ability to Establish Relationships, based on Mutual Understanding & Trust
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Outsourcing Considerations and Skills
Skills Required for Successful Outsourcing

Understand Transportation Agencies and Utility Companies each have their own unique set of:

- Standards and Requirements
- Needs & Priorities
- Politics
- Emergencies
Don’t let the “Indirect” utility conflicts kill the project.

They are the greatest cause of costly and time consuming unanticipated construction field problems.

...subgrade compaction, temporary sheeting, construction vibrations, unstable cast iron utility, utility staging, etc.
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Outsourcing Considerations and Skills

Often project delays are not caused by the Utility Companies....

…but by an unanticipated “utility related” field issue not properly identified during design.
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EXAMPLES
Success with Outsourcing Utility Coordination

**BEFORE:**
- Extensive Aerial Utility Facilities
- Improper usage of Pole Zones
- Conflicting Wires & Cables
- Improper Clearances between Electric Primary Wires and Traffic Signal Standards
Success with Outsourcing
Utility Coordination

AFTER:
Positive Results of Outsourcing
Success with Outsourcing Utility Coordination

BEFORE:
Positive Results of Outsourcing
Success with Outsourcing
Utility Coordination

AFTER:
Positive Results of Outsourcing
Outsourcing Utility Coordination: Needs and Benefits Beyond Utilities

Success with Outsourcing Utility Coordination

Example: Advance Utility Relocation Contract

Advancing utility work ahead of contract can provide great benefit….however, the need for clearing and rough grading is often overlooked.

Approach: Advance Clearing & Rough Grading Contract
Construction Staging/Advanced Utility Work

Roadway Construction Stage I Work Zone

- Stage I Construction Work Zone

Existing Utility in conflict

- Advanced utility work not feasible

Existing pole line

Proposed relocated pole line

Existing road

Proposed Utility

Problem: Utility relocation work can not be advanced due to significant grade changes.
Outsourcing Utility Coordination: Needs and Benefits Beyond Utilities

Success with Outsourcing Utility Coordination

Example: Utility Construction Staging & Sequencing

Evaluate the utility construction staging & sequencing first….typically it controls.

Approach: Integrate Utility Construction Staging Plans into the Transportation Contract
Problem: Roadway and utility construction staging not compatible.
Success with Outsourcing Utility Coordination

Considerations:
- Size of Tie-in Pit
- Need for Sheeting
- Extended Time Frame Pit to remain Open.

Approach:
Incorporated a separate Sub-Stage to exclusively accommodate the gas main tie-in.
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Success with Outsourcing Utility Coordination

Example: Utility Construction Staging & Sequencing

“Sometimes it takes one thing to go bad to lead to many future success stories.”

Approach: Integrate Utility Construction Staging Plans into the Transportation Contract
**Problem:** Roadway and utility construction staging not compatible

**Consequences:** Construction delay, temporary utility tie-Ins, multiple unanticipated utility mobilizations, additional cost.
Success with Outsourcing Utility Coordination

Example:
NJ Turnpike Widening Program:

*Largest Capital Program in the Country the last several years.*
Success with Outsourcing Utility Coordination

45+/- Design Firms and Contractors, 20+/- Utility Companies, including Colonial Pipeline, Sunoco, Transco, Electric Transmission, Gas, Communications/Fiber, etc

Over 20 Structural Crossings of Bridge-Mounted Utilities
Success with Outsourcing Utility Coordination

Considerations:
Utility Relocation Work integrated into the Construction Contracts could adversely impact schedules by several years.

Extensive changes in proposed elevations

Significant proposed Structure and Stormwater Management Facilities

Approach:
Advanced Utility Work required to meet schedule commitments.
Success with Outsourcing Utility Coordination

**Approach:**

“Surveyed an As-built location prior to installation”
A-1 Denotes Alignment Coordinate Position

C-5 Denotes Potential Conflict Location Position
### Table: Conflict Locations

<table>
<thead>
<tr>
<th>POINT NAME</th>
<th>NORTHING</th>
<th>EASTING</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-1</td>
<td>451860.85</td>
<td>420202.82</td>
<td>Crosses under proposed Guide Rail</td>
</tr>
<tr>
<td>C-1</td>
<td>453170.08</td>
<td>421792.72</td>
<td>Crosses proposed 18&quot; RCCP drainage</td>
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<td>421980.81</td>
<td>Crosses proposed 18&quot; RCCP drainage</td>
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<td>Crosses proposed 18&quot; RCCP drainage</td>
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<td>Crosses proposed 18&quot; RCCP drainage</td>
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<td>Crosses proposed 30&quot; RCCP drainage</td>
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<td>454785.86</td>
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<td>Inlet type D2</td>
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<td>455138.29</td>
<td>424546.40</td>
<td>Inlet type Double D2</td>
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<tr>
<td>C-18A</td>
<td>458668.93</td>
<td>425158.92</td>
<td>Proposed Water Quality Chamber - 13.23' x 13.23'</td>
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<td>C-11</td>
<td>467660.17</td>
<td>438699.44</td>
<td>Sign Structure - 50.00' x 12.25' x 3'</td>
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<td>C-11A</td>
<td>467615.98</td>
<td>438673.45</td>
<td>Crosses under proposed Guide Rail</td>
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<td>467716.64</td>
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<td>A-50</td>
<td>457993.65</td>
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<td>C-14</td>
<td>458028.73</td>
<td>438004.44</td>
<td>Inlet type D2</td>
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<td>458658.18</td>
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<td>Sign Structure - 51.48' x 13.25' x 3'</td>
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<td>Crosses proposed 24&quot; RCCP drainage</td>
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<td>Crosses proposed 18&quot; RCCP drainage</td>
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<tr>
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<td>430691.16</td>
<td>Crosses proposed 18&quot; RCCP drainage</td>
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<td>C-24</td>
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<td>430752.94</td>
<td>Crosses under proposed Guide Rail</td>
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<td>Crosses under proposed Guide Rail</td>
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<td>C-26</td>
<td>465676.79</td>
<td>431446.47</td>
<td>Crosses proposed 42&quot; RCCP drainage (Pipe lacking)</td>
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<td>C-27</td>
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<td>RC-3</td>
<td>468043.41</td>
<td>425437.80</td>
<td>Crosses under proposed Guide Rail</td>
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</tbody>
</table>

Note: Points C-20S and C-31S are supplemental and not staked out in field.

**C-5** Denotes Potential Conflict Location Position
Northing 451656.56
Easting 420220.42
Remarks: Crosses Proposed 24" Drainage Pipe
Success with Outsourcing Utility Coordination
Success with Outsourcing Utility Coordination
Success with Outsourcing
Utility Coordination
Success with Outsourcing
Utility Coordination

TEMPORARY CONSTRUCTION ZONE
(SIGN STRUCTURE CONSTRUCTION)

CONFLICT POINT: C-17
NOT TO SCALE
Success with Outsourcing Utility Coordination

Example:
Secaucus Interchange Project & Secaucus Rail Transfer Station:

Replacement of Dual 71-inch Jersey City Water Aqueducts
Success with Outsourcing Utility Coordination

100 Year Old Riveted Steel – Cultural Significance

Never Replaced – only repaired

Tie-ins Critical – Special Couplings

Of Interest:
• Pressure Testing
• Disinfection
Success with Outsourcing Utility Coordination

- Replacement of Dual 72-inch Water Mains
- 100 Year Old Riveted Steel – Cultural Significance
- Never Replaced – only repaired
- Tie-ins Critical – Special Couplings

Of Interest:
- Pressure Testing
- Disinfection
Success with Outsourcing Utility Coordination

Dual 72-inch Water Mains

- Installed Under Railroad
- Open Cut

- One Weekend – Remove Tracks; Install Casings; Replace Tracks.
Success with Outsourcing Utility Coordination

**Example:**

**NJ Transit Rail Link**

**Considerations:**
- Proposed Rails over existing dual 24-inch 60 year old cast iron gas mains.

- **Cost, Schedule, and Future Maintenance** concerns.

**Approach:**
Replace two existing Gas crossings with one without losing capacity.
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Example:

Indirect Conflict Impact on Roadway Project
“Indirect Utility Conflicts”

Excavation area for proposed drainage

Existing cast iron pipe within angle of repose will likely be a “conflict” in the field during construction.
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Result of not considering “Indirect Conflicts”

- Cost Overruns – Millions
- Schedule – 2 Year Delays
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A few Innovations as a result of Outsourcing
Utility innovation

Innovation: Roadway widening results in pipe under traveled way – no other conflict.

Typical stub for future utility expansion

- Widened roadway section

Five miles +
Success with Outsourcing Utility Coordination

Example:
Raritan River Crossing – Installed six 1-1/4 inner duct within 8-inch Gas Main.

Advanced abandonment of 8-inch Gas Main

20-year “Carrier” rental revenue for gas company

$250,000 Construction Cost savings for fiber company
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- Success with Outsourcing Utility Coordination
  Woodrow Wilson Bridge
Outsourcing Utility Coordination: Needs and Benefits Beyond Utilities

- Success with Outsourcing Utility Coordination

MD 5 Branch Avenue Metro Access
(Phase 2 Access Road)
Outsourcing Utility Coordination: Needs and Benefits Beyond Utilities

• Success with Outsourcing Utility Coordination
  MD 200 – Intercounty Connector (ICC)
Outsourcing Utility Coordination: Needs and Benefits Beyond Utilities

- Success with Outsourcing Utility Coordination
  MD 32 Linden Church Road
Outsourcing Utility Coordination: Needs and Benefits Beyond Utilities

- Success with Outsourcing Utility Coordination
  Purple Line – Light Rail in Alignment
Outsourcing Utility Coordination: Needs and Benefits Beyond Utilities

- Lessons Learned from Outsourcing Utility Coordination
  - Does not work for every project
  - Changes to approach
  - Clarifying the ideal project for utility coordination
  - What is different with Design Build
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• Outsourcing and Utility Engineering...

...Transition to Wednesday’s Session

Address the Utility Technical Discipline void....
Outsourcing Utility Coordination: Needs and Benefits Beyond Utilities

Outsourcing and Utility Engineering…..Transition to Wednesday Session …

Recognition of UTILITIES as a Technical Design Discipline… the strategic foundation for future success and career path to develop future utility experts.
Outsourcing Utility Coordination:  
Needs and Benefits Beyond Utilities

Recognition of Utilities as a Technical Design Discipline:
- Highways
- Structures
- Traffic
- Drainage/Stormwater Management
- Environmental
- Survey
- UTILITIES
Outsourcing Utility Coordination: Needs and Benefits Beyond Utilities

Questions/ Comments