Embedded Engineering A Solution to Agency Staffing Issues

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Burns & McDonnell / KDOT



Why this topic?

- An option to help mitigate the staffing shortages
- Today's purpose:
 - What's a consultant's role?
 - What's an agency's role?
 - KDOT ITS Program Overview



Different Types of Embedded Positions

Embedded Engineer - An engineer from outside of an organization that is integrated into an agency to work on its behalf

- Internal
- External
- Task
- Project



How Did KDOT ITS Embedded Start?

- KDOT ITS had 3 employees
- Other divisions used embeds

- Recruiting and retaining challenges
- Upcoming projects
- Oversee consultants' work



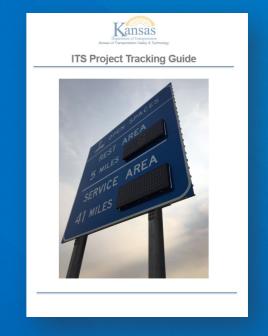
How has KDOT ITS evolved over the years

- Year 1
 - 40 hours
 - Topeka
- Year 2
 - 32 hours
 - ½ in Topeka / ½ Remote
- Year 3+
 - 2 embeds
 - 20 hours
 - Remote



KDOT ITS Embedded Engineers

- Point of contact
- Balance workload
- Construction management
- Activity tracking
- ITS device operations
- Maintenance tracking
- Review plans
- Future planning
- Procurement of equipment
- Guide for future KDOT employees and/or embeds



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Benefits

- Consultant
 - Learn agency's processes and procedures
 - People and culture of the agency
 - Build connections
 - Variety of projects
 - Fresh perspectives
 - Full life cycle of a project

- Agency
 - Additional workload capacity
 - Consultant's experience and background
 - Consultant's company resources
 - Additional staff when hiring is not an option
 - Not competing with private sector



Challenges

- Consultant
 - Assigned away from company office
 - Represents the company to an agency
 - Can not send a new engineer
 - Low profitability
 - Some projects are "off limits"

- Agency
 - Roughly twice as expensive as hiring an employee
 - Need to get leadership on board with program
 - Errors and omissions, liability
 - The embed consultant would be omitted from certain tasks or projects



Conflict of Interest

- ASCE's Code Of Ethics: Canon 4

 "Engineers shall act in professional matters for each employer
 or client as faithful agents or trustees, and shall avoid conflicts
 of interest"
- Case Study ITS Maintenance

Future of Embedded Engineering at KDOT and Beyond

- 2nd contract / 5th year
- Two embedded
 - part-time
 - partially remote
- Agreed to contract extensions
- Possible embedded positions with multiple agencies





QUESTIONS?

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