

Research Results

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State Traffic Volume Systems Count Estimation Process

[KTC-04-28/SPR-264-02-1F]

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Purpose: The KyTC has an extensive traffic data collection program that is an essential source for many other programs. The Division of Planning processes traffic volume counts annually. These counts contain over 20,000 separate station locations and some traffic counts from as early as 1963. The Division of Planning collects volumes on a revolving 3-year cycle for all non-interstate routes. The focus of this study was to research potential estimating methods that may

assist the Cabinet and to analyze possible contributing factors such as traffic growth, population and economic development.

Objectives:

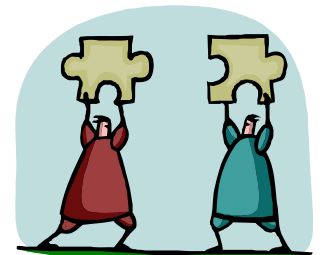
1. Evaluate the current methods and processes used by the Cabinet for estimating traffic volumes.
2. Review information from other states and related literature search for estimating traffic counts.
3. Analyze the various options for traffic volumes estimation for possible improvements to the states procedures.

Conclusions/Recommendations:

- **The current program for volume counts has been in place since 1973 and generally performed well. However, during the last few years it has begun to deviate beyond the normal “count acceptance program” standard.**
- Some of the irregularities may be due to traffic pattern fluctuations that are not easily addressed by linear estimation methods.
- Changes to “neural” network methodology may be a solution to this problem and offer more accurate volume counts.
- Use of neural networks should also better account for growth factors such as population and employment.

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Evaluation of Current Incentive/Disincentive Procedures in Construction

[KTC-04-27/SPR-243-01-1F]

Principal Investigator:

Brad Rister

Study Advisory Chair:

Purpose: The current time and material Incentive/Disincentive program for construction projects carried out by contractors was initiated in the mid 90's. In general, some concern has been expressed as to when you use this procedure and the resulting quality on construction projects. Typically Incentives/Disincentives (I/D) have been used to expedite project time, reduce delays for the users, and enhance construction quality.

Objectives:

1. Evaluate the use of the I/D procedures on construction projects.
2. Evaluate both time and material I/D applications.
3. Evaluate the quality of projects that use I/D.
4. Offer recommendations for enhancing the program as appropriate.

Conclusions/recommendations:

1. The Cabinet is using some of the best techniques for assigning time I/D's on construction projects.
2. Although time I/D bonuses outweigh those of material bonuses for the project the overall quality has been relatively constant.
3. Project quality is not suffering when the contractor is pursuing both quality and time incentives on the same project.



Safety and Health Concerns for KyTC and Contractor Personnel

[KTC-04-24/SPR-268-02-2F]

Principal Investigator:

Theodore Hopwood

Study Advisory Chair:

Allen Ravenscraft

Purpose: Worker safety and health issues impact a wide range of KYTC activities in the field, garages, and laboratories. One of the major goals of the Cabinet is to improve safety and health for their employees in the work place. This same concern is applicable to those working on construction contracts.

Objectives:

1. Review literature regarding safety and health issues
2. Conduct interviews with KYTC personnel
3. Identify safety and health requirements mandated by regulations and assess related training and policy needs.
4. Provide recommendations to improve safety and health regulatory compliance
5. Identify possible funding sources and partnering opportunities for safety programs.

Conclusions/recommendations:

Recommendations are provided in 10 areas and some of the specific items are as follows (reference Appendix 3 of the report)

1. The issue of safety and health on construction project needs to be elevated as a priority item and consistency established in funding, staffing and training. It is suggested that a new construction safety program be established to address these issues.
2. Organizational changes to move construction safety and health into the Division of Employee Safety and Health. This might allow for greater emphasis on the safety and health issues vs. completion the project on a defined schedule.
3. Expand the role of District safety coordinator.
4. Provide expanded training opportunities for District personnel.
5. Develop partnerships with the construction industry, the Department of Labor, and other to address safety and health.



Evaluation of the ET2000 Guardrail End Treatment

[KTC-04-01/SPR-107-04-2F]

Principal Investigator:

Kenneth Agent

Study Advisory Chair:

Wesley Glass

Purpose: Questions have been passed about the end treatment and its safety characteristics as well as its appropriateness for use on Kentucky's highway. (The ET2000 has an energy absorbing design in which the vehicle will push a guardrail extruder back as posts breakaway. During this process the W-Beam guardrail is flattened and directed away from traffic.)

Objectives:

1. Analyze collisions involving the ET2000 end treatment of which 135 were identified. This included visual inspection of damaged sections on site or by photographs. Crash reports (80) were examined when available.
2. Assess the performance of the end treatment.

Conclusions/recommendations:

1. All but seven of the crashes occurred on Interstates or Parkways and typically involved high-speed.
2. Most of the collisions involved a passenger car striking the device at a shallow angle.
3. No injuries occurred in about one-half of the 80 crashes with a police report.
4. The most common actions of the vehicle after impacting were to rebound, break through, or stop at the end of the extruded rail.
5. Performance was judged to be proper in 88% (70) of the collisions where an accident report was available.
6. Seven of the ten impacts where performance was considered improper involved a vehicle overturning after hitting the end treatment.
7. Overall the end treatment performed as designed.

