



Traffic Engineering and Highway Safety Bulletin

Who Is SDDCTEA?



July 2009

Did You Know?

Joint Regulation (AR 55-80) states that Department of Defense (DoD) "transportation networks must meet national standards and guidelines". Therefore, one of the primary objectives of The Military Surface Deployment and Distribution Command Transportation Engineering Agency (SDDCTEA) is to assist installations with their traffic engineering concerns, especially those involving high crash locations or access control issues. Our mission is to improve highway safety and reduce traffic congestion on DoD installation roads and on routes providing access to installations.

Program goals include:

- ✓ Providing guidance and executing approval authority on traffic engineering matters
- ✓ Assisting installations with traffic engineering studies with an emphasis on identifying low-cost improvements that yield high benefits
- ✓ Implementing programs that save lives, decrease injuries, minimize lost time, and maintain readiness

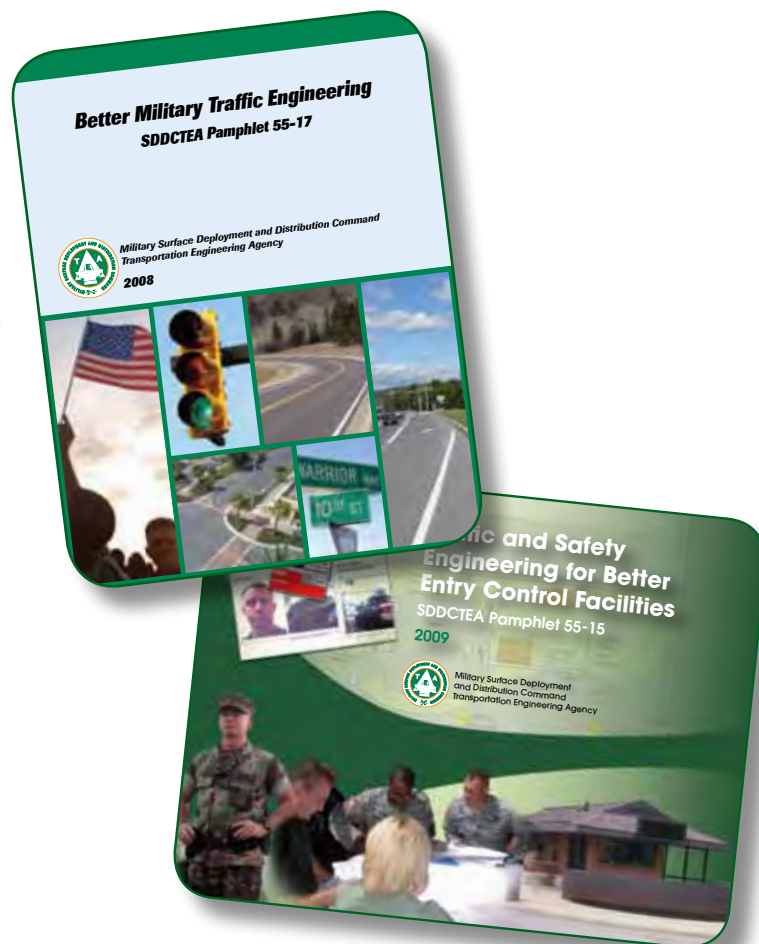
To achieve our mission and objectives, we focus our efforts on two key areas:

Training and Education – Includes the development of training and educational materials for distribution throughout the military. Materials include traffic engineering and highway safety bulletins, pamphlets, and interactive training materials.

Recent pamphlets include Pamphlet 55-15, *Traffic and Safety Engineering for Better Entry Control Facilities*, and Pamphlet 55-17, *Better Military Traffic Engineering*.

Engineering Services – Includes roadway planning, geometric design, road safety audits, traffic operations analysis, engineering guidance, and contract assistance.

Various examples of engineering services are discussed in the following pages.



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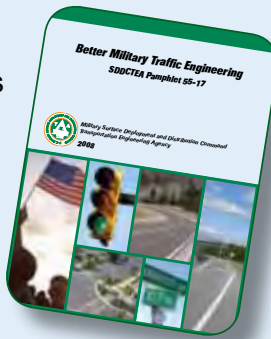
Military Surface Deployment and Distribution Command Transportation Engineering Agency (SDDCTEA)

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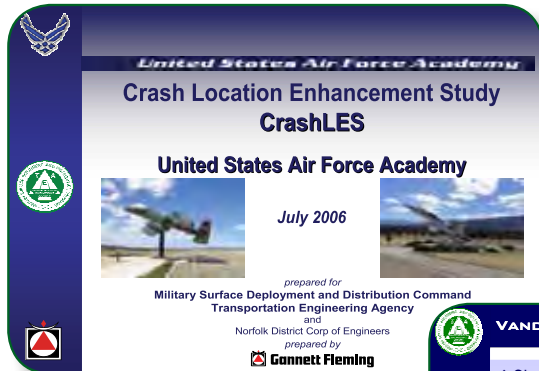
Exhibit 1: SDDCTEA Training and Education

Training and Education Program	Subject Matter Covered
Traffic Engineering and Highway Safety Bulletins Bulletins are published three to four times yearly and address a broad range of transportation and safety topics. When possible, timely issues such as Entry Control Facilities (ECFs) are covered. Bulletins are available online at http://www.tea.army.mil/pubs/dod.asp. Sign up to receive bulletins at http://www.tea.army.mil/cdrom/.	Recent bulletins include: ✓ Access Management ✓ Pedestrian Safety ✓ Parking ✓ Gates Revisited ✓ Traffic Calming ✓ Safety Audits ✓ Speed Limits ✓ Traffic Signs ✓ Markings ✓ Roadside Safety - A Forgiving Roadside ✓ Traffic Engineering For Better Gates ✓ Highway Safety Driver-Aid Treatments ✓ Safety Requirements of Active Vehicle Barriers ✓ Sign Retroreflectivity ✓ Intersection Control 
Pamphlets SDDCTEA has produced a variety of pamphlets and manuals on transportation issues. These materials provide specific, detailed engineering guidance on key issues. Pamphlets and manuals are available online at http://www.tea.army.mil/pubs/dod.asp. 	✓ Pamphlet 55-8, Traffic Engineering Study Reference ✓ Pamphlet 55-10, Traffic Engineering for Better Roads ✓ Pamphlet 55-14, Better Traffic Engineering for Signs and Markings ✓ Pamphlet 55-15, Traffic and Safety Engineering for Better Entry Control Facilities ✓ Pamphlet 55-17, Better Military Traffic Engineering
Traffic Engineering Training and Reference CD-ROM Originally released in June 2002 and updated in May 2005, SDDCTEA developed the interactive multimedia CD-ROM, Better Military Traffic Engineering (BMTE) 2005, to provide the military engineering community with state-of-the-art information regarding the proper use of traffic control and safety devices on military installations. The BMTE CD is an instructional tool to train installation personnel, but can also be used as a reference tool. Animation and original illustrations are only part of the features available. Links are available to reference materials, Web sites, and for e-mail assistance. Order copies of the BMTE CD at http://www.tea.army.mil/cdrom/.	The CD is divided into sections, each containing a different topic: ✓ Signs ✓ Signals ✓ ECFs ✓ Parking ✓ Roadside Safety ✓ Intersections The BMTE CD also includes several traffic calculators for reference when planning a variety of traffic engineering projects. 

Study Types, Costs, and Durations

Funded Crash Location Enhancement Studies

(CrashLES) – These studies generally involve one or more high crash locations and a safety audit. A high crash location is any location with five or more property-damage-only, three or more injury, or one or more fatal crashes in a 12-month period. Low-cost improvements are identified that can be implemented in a timely manner. Where low-cost solutions are not possible, higher cost solutions are identified. **These studies are FHWA funded, with no cost to the installation.**



The studies are typically performed in one week. A draft report with recommendations is provided at the end of the week along with an outbrief to installation personnel.

In and Out – These studies are of limited scope where the installation advises us of their most pressing problem locations. The study team can typically analyze three locations. We provide recommendations to correct deficiencies, and generally include low-cost improvements that are within installation funding capabilities.

The installation may be required to assist with funding.

The studies are typically performed in one week. A draft report, with recommendations, is provided at the end of the week along with an outbrief to installation personnel.

Comprehensive – Typically, studies may address 10 to 50 intersections, as well as ECFs, access roadways, master planning issues, speed limits, parking, pedestrian safety, and access management.

The installation pays for the study. We manage the study for the installation to include scope of work preparation, scheduling, and technical reviews.

SDDCTEA's engineer produces the pre-final and final studies over several months.



Exhibit 2 on page 4 shows additional focus areas. Any of these topics could be incorporated into the studies shown above.

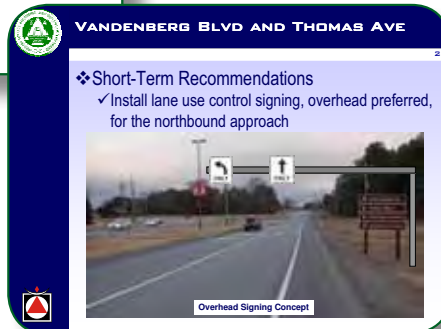


Exhibit 2: Additional Focus Areas

Study Type	Study Characteristics
Access Control Point/Entry Control Facility (ACP/ECF) Studies	The purpose of this type of study is to assess the four priorities of an ACP or ECF consisting of: ✓ Security and Functional Requirements ✓ Safety (guards and motorists) ✓ Traffic Flow and Congestion ✓ Aesthetics
Fatal Crash Analysis	This is similar to a CrashLES study; however, it focuses on a specific fatality at a specific location. These studies are generally considered confidential and would not be distributed without permission from the installation.
Safety Audits	Safety audits involve a procedural approach to evaluating roadway safety for specific corridors. Safety audits can focus on pedestrian accommodations, traffic signals, signing and pavement markings, drainage, and roadside hazards.
Pedestrian Studies	Pedestrian studies involve the evaluation of pedestrian facilities and related activity including crosswalks, overpasses, sidewalks, pedestrian signing, school walking routes, and Americans with Disabilities Act (ADA) requirements.
Speed Studies	Speed studies usually involve the collection of speed data for the purpose of establishing appropriate speed limits on installation roadways.
Traffic Calming Evaluations	This study assesses the need for and appropriate application of the use of physical measures to address speeding and excess traffic on neighborhood streets.
Sign Retroreflectivity Assessments	This type of study involves the inspection of installation signing to ensure that minimum retroreflectivity requirements are met for nighttime driving and to identify those signs that need replacement.
Traffic Impact Studies	Traffic impact studies typically involve identifying impacts and roadway or intersection improvement needs resulting from development or an increase in population. The study involves estimating the number of additional trips to be generated by the proposed development and conducting capacity analyses to assess existing and future operations.
Signal Warrant and Operations Analyses	This type of analysis involves conducting capacity analyses to identify operational conditions and comparing traffic volumes to the warrants set forth in the Manual on Uniform Traffic Control Devices (MUTCD) to determine if signalization should be considered. Operations analyses may include signal timing and phasing recommendations.
Corridor Evaluations	Corridor Evaluations involve the analysis of a group of intersections along a specific roadway corridor, and may include the identification of improvements to improve traffic flow and safety of the corridor.
Roadway and Intersection Design Reviews	This service involves the review of design plans prepared by others to ensure consistency with national and local standards. This primarily involves a review of roadway geometry, but may also include a review of supporting data utilized in the design process.
Intersection, Roadway, and ACP/ECF Designs	These designs involve advancing preliminary, conceptual designs to a final design stage so that they may be advertised for construction. They also include the development of construction specifications and cost estimates.
Parking Evaluations	Parking Evaluations include identifying existing parking shortages, projecting future parking demand, and developing conceptual parking improvement schemes.
Traffic Signal Inspections & Operational Audits	Traffic signal inspections include an inspection of traffic signal equipment (including mast arms, signal heads, controllers, loop detectors, etc.) to determine if improvements/updates are necessary. Operational audits include the analysis of parameters such as phasing, detectors, and timing to reduce motorist delay. Measures of Effectiveness reports can be provided to convey the savings in fuel, emissions, and driver delay.

SDDCTEA Points of Contact

As you may know, SDDCTEA was recently relocated by DoD's 2005 BRAC Act from Fort Eustis, VA to Scott AFB, IL. With last year's retirement of Rick Sumrak, and Richard Quesenberry's departure to Air Combat Command, SDDCTEA's Traffic Engineering Program is now being run by Dave Kirkpatrick and Tom Mannino. Dave Kirkpatrick came to TEA in August 2008 from the St. Louis District Corps of Engineers (25+ years, including 9 years as a Study Manager), and 2+ years as a highway designer at the Missouri Department of Transportation and with the private sector. Tom Mannino worked for 6 years in the private sector, and 13 years with the Illinois Department of Transportation. Dave and Tom bring a wide variety of experience and expertise to SDDCTEA and are excited to continue to provide SDDCTEA's services to installations.

Contact Us

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Contracting Options

Depending on the nature of a study, we can fund a study such that there is no cost to the installation. This is most common for CrashLES studies, or other types of In and Out studies.

For larger studies, our A/E can perform the work through our Indefinite Deliverable Contract (IDC). To use this option, we can prepare a scope of work and cost estimate in order to streamline the process. The installation can then MIPR funds directly to the Norfolk District Corps of Engineers (NDCOE). For these larger studies, we sometimes are able to cost-share a portion of the study.

Success Stories

Exhibit 3 identifies just a sample of the solutions developed for some of the issues and challenges that SDDCTEA has been involved with on studies.



See our web page at www.tea.army.mil
for access to over 240 completed Highway Traffic
Engineering Studies

Exhibit 3: Success Stories

Fort Stewart, Georgia

Issues and Challenges

- ✓ The 40+ mile section of Georgia Route 144 through Fort Stewart is commonly referred to as the “Green Tunnel” because of its monotonous scenery which lulls drivers to sleep.
- ✓ 15 fatalities occurred along this segment of roadway in a 5-year period.
- ✓ **70 crashes and 3 fatalities occurred in a 1-year period.**
- ✓ 15 crashes occurred along the part of this corridor in Bryan County in a 1-year period.

Solutions and Feedback

- ✓ SDDCTEA conducted a detailed engineering assessment which called for rumble strips, delineators, and shoulder improvements along with several other improvements.
- ✓ SDDCTEA assisted Fort Stewart officials in acquiring Georgia Department of Transportation support for improvements.
- ✓ In the first phase of improvements, rumble strips and delineators were installed in Bryan County with an estimated benefit to cost ratio of 13.78 and 5.03, respectively.
- ✓ Lighting was installed at select tank crossings.
- ✓ In Bryan County, crashes have been reduced from 15 per year to less than 3 per year.

Andrews Air Force Base, Maryland

Issues and Challenges

- ✓ SDDCTEA performed a traffic circulation study in 2003 to evaluate traffic patterns that had changed due to 9/11.
- ✓ Two of the areas evaluated were:
 - ♦ F Street, a two-lane, two-way roadway was congested approaching an intersection because of limited capacity. As a result, safety was also of concern.
 - ♦ The intersection of Brookley and Westover was a T intersection with its busiest movement as the side street and under STOP control.

Solutions and Feedback

- ✓ The SDDCTEA team recommended converting F Street to a two-lane, one-way road to increase capacity since other roads could handle diverted traffic without problem.
- ✓ The intersection was reconfigured with paint striping so that all major movements were free flow and only the low volume movement stopped.

Fort Campbell, Kentucky

Issues and Challenges

- ✓ Recommendations resulting from a Crash Location Enhancement Study in 2005 have been implemented throughout the installation.
- ✓ Along one corridor, several intersections were prone to crashes due to the mixture of Two-Way STOP and Four-Way STOP control. The study found that motorists mistakenly expected traffic to stop in all directions at the Two-Way STOP control intersections.

Solutions and Feedback

- ✓ Side street approach signing was modified at the intersections with Two-Way STOP control to emphasize that traffic on the major roads did not stop.
- ✓ This simple improvement has eliminated the crash problem that these intersections experienced.



Before

After



What are People Saying?

"Thanks so much for coming out and doing the traffic study at Andrews...We're already reaping the benefits of your suggestions and we really liked the final design that you proposed...We really benefited from your expertise."



Exhibit 3: Success Stories

Fort Carson, Colorado

Issues and Challenges

- ✓ As part of BRAC, Fort Carson will grow significantly. To prepare for this growth, SDDCTEA was hired to conduct an installation-wide comprehensive traffic engineering study.
- ✓ The study required an accelerated schedule. A team of eight was mobilized in less than three weeks. Efforts included data collection and analysis at 40 intersections, 6 access control points, and numerous roadway corridors.

Solutions and Feedback

- ✓ The draft report was completed and an outbrief was conducted in less than one month from completing the field work.
- ✓ Since the study's completion, several long-term recommendations, including the construction of a realigned roadway, have been implemented.

Yokota Air Base, Fussa, Japan

Issues and Challenges

- ✓ In October 2001, a new community center was constructed, which consolidated the commissary, BX and AAFES land uses.
- ✓ Although the new facility received numerous compliments, there were concerns over the contractor's design and implementation of roadway layouts.
- ✓ As an example, the main access drive had a median opening that created conflicts. Other problems included restricted sight distance due to a trash area, a poorly aligned intersection resulting in conflicts, and narrow lanes.
- ✓ There are similar issues at other access points and in the parking areas as well.

Solutions and Feedback

- ✓ The SDDCTEA team was onsite for two weeks to collect and analyze traffic data, develop designs and brief stakeholders.
- ✓ The installations leadership concurred with the study's recommendations. Many of the study recommendations were implemented within two months.

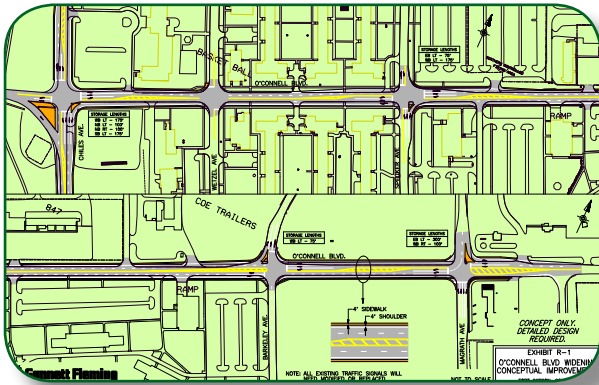
Keesler Air Force Base, Mississippi

Issues and Challenges

- ✓ Two signalized intersections along the base's primary roadways had not been upgraded since their construction in the early 1980's.
- ✓ Since that time, a major interstate was constructed east of the base, resulting in a major traffic pattern change not accounted for in the original signal design and its timings.
- ✓ The signal equipment was antiquated, and in many cases not functioning properly.
- ✓ One of the roadways had a significant amount of pedestrian activity crossing at mid-block locations resulting in safety concerns.

Solutions and Feedback

- ✓ An SDDCTEA team analyzed the study intersections and roadways.
- ✓ For signalized intersections, the team recommended upgrading signal indications for better visibility, installing loop detectors to allow signals to react to traffic demands rather than run on "fixed" time settings, revising signal phasing (movements) and timings to accommodate current travel patterns, and providing pedestrian indications and crosswalks.
- ✓ Along the roadway where pedestrian crossings were a concern, the team recommended installing pedestrian signing, along with a pedestrian safety campaign.
- ✓ Improvements are currently being phased in as funding permits. Signal improvements are estimated to cut intersection delay by $\frac{1}{3}$ to $\frac{1}{2}$ of existing delay times.



What are People Saying?

"This study is vitally important to the post in addressing the traffic issues resulting from our projected growth. The team has provided absolutely incredible support in this effort. On behalf of myself and all of those that will benefit from your excellent data and hard work, we offer our most sincere appreciation and thanks."



Before

After



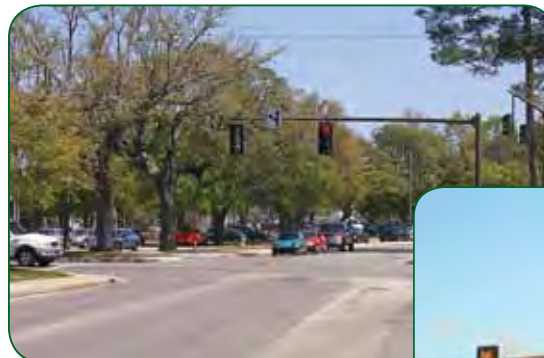
What are People Saying?

"Please congratulate (the team) on their superb performance in the Traffic Engineering Study at Yokota Air Base..."

At the outbrief, the 374th Airlift Wing Commander congratulated the team and presented them with coins to compliment their performance.



Before



After



Exhibit 3: Success Stories

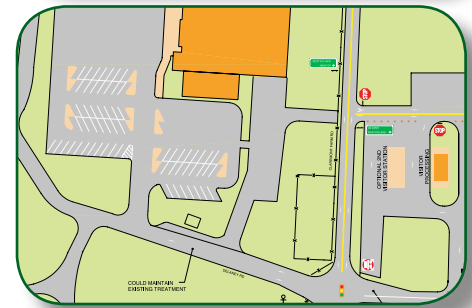
Carlisle Barracks, Pennsylvania

Issues and Challenges

- ✓ Immediately after September 11th, Carlisle Barracks needed to close a local roadway that serves local businesses in order to perform the necessary vehicle processing.
- ✓ Although all understand the installation's need for security, local business owners were concerned since their businesses could only be accessed through circuitous routes.
- ✓ The installation, local community, and Pennsylvania Department of Transportation (PennDOT) agreed that something needed to be done to address community concerns while maintaining the needed security at Carlisle Barracks.

Solutions and Feedback

- ✓ SDDCTEA worked with the installation, local businesses and PennDOT to develop a plan to open the local roadway while maintaining needed security procedures.
- ✓ The plan included reutilizing a parking area and demolished building site for vehicle and visitor processing.
- ✓ Through coordination with PennDOT, directional signs were installed on approach roadways, directing visiting motorists to the appropriate gate.
- ✓ Carlisle Barracks is currently moving forward with the study's long-term recommendation of redesigning the access control point.



What Are People Saying About SDDCTEA?

"I wanted to commend your employees for the outstanding job they did on the Carlisle Barracks Gate Assessment. Your engineers made recommendations on a new traffic pattern that would open Claremont Road while enabling the security personnel on Carlisle Barracks to conduct the necessary inspections of vehicles entering the post...The traffic pattern is an unqualified success. The thorough analysis and traffic simulation they developed in their study was right on the mark. The traffic flows smoothly into and out of the post with minimal wait. Their recommendations not only improved our security posture, but also helped the businesses that were affected by the road closure."

"I appreciate the professionalism and the information supplied by the report that your engineers presented at the outbrief concerning our Access Control Points. They worked long hours in preparation of the report and supplied a superb comprehensive product for us to use. I am sure that all in attendance at the outbrief were pleased by the report, for the short term and long term recommendations given for our consideration."

“The SDDCTEA team worked very hard and provided great suggestions on a few short-term fixes and as well as a number of key design inputs for our MILCON project. It was a pleasure working with these extremely professional engineers. Thanks for arranging their visit at this crucial time in our design.”

Are Roundabouts In Your Future?

A roundabout is a circular intersection that uses traffic calming techniques and geometric modifications to dramatically improve safety, and reduce congestion. Roundabouts can range from a very simplistic single lane design to a complicated multi-lane configuration. While a long established intersection design of choice in Europe, they are finally gaining widespread acceptance across the United States.

Many Department of Defense installations have chosen to utilize roundabouts as a tool for combating congestion and high crash rates at intersections. In fact, roundabouts have been shown to be extremely effective in reducing injury and fatality crashes, and provide excellent traffic flow and air quality benefits. However, roundabouts provide other benefits that offer the DPW additional flexibility as compared to signalized intersections.

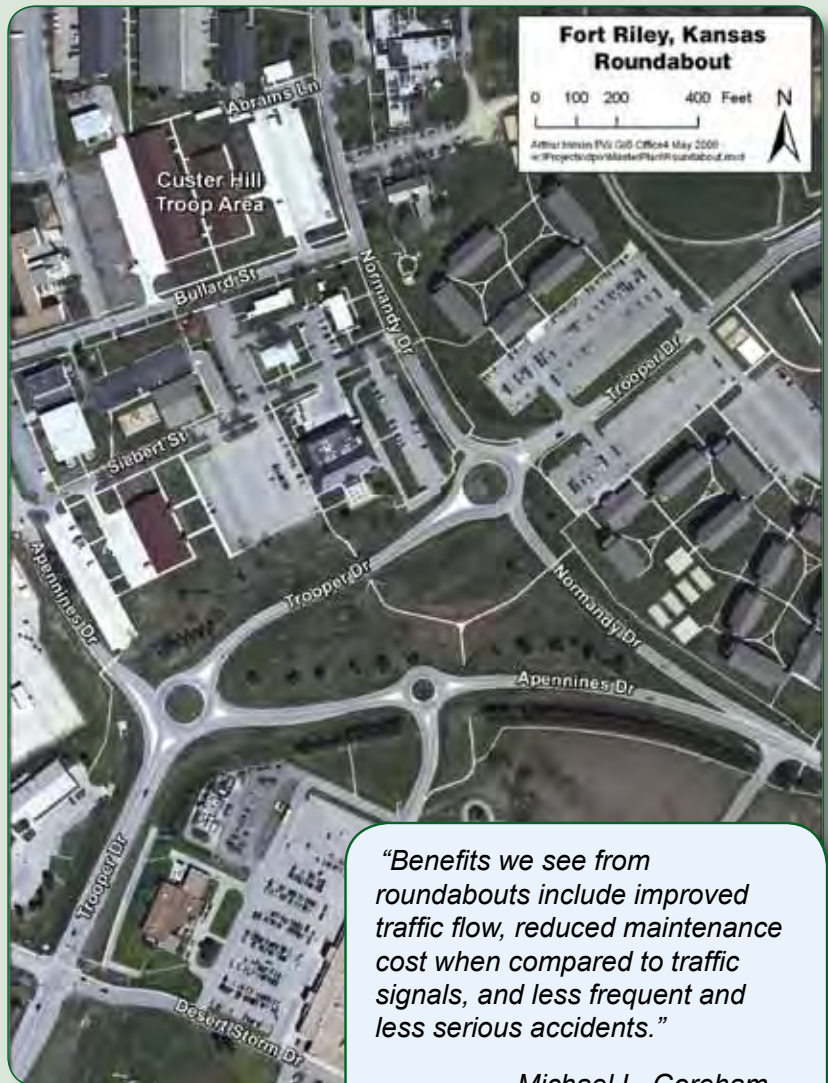
Here's a listing of many additional benefits provided by roundabouts directly related to mission critical and non-mission critical installation issues.

Roundabouts . . .

- ✓ Operate at full capacity without electricity
- ✓ Do not require the use of overhead traffic signals; allows for over-height loads to progress through the intersection unobstructed
- ✓ Reduce the complexity of locating active vehicle barriers near the intersection
- ✓ Provide intersection U-turn ability for traffic to avoid an activated AVB or traffic incident
- ✓ Provide a passive barrier for threat deterrence
- ✓ Provide passive speed control
- ✓ Allow for the interconnection of more than four roadway approaches without extraordinary measures
- ✓ Allow for entrances and access point to be closer to the intersection; no need for auxiliary turn lanes
- ✓ Provide an area for landscaping and installation beautification

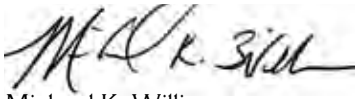
When planning roundabouts, consider that they can require more right-of-way compared to traffic signals. Also, consider that driver education is vital to the acceptance and success of a roundabout. Because people can be apprehensive about new things, it's important to educate the public about roundabout use.

For more information on roundabouts and their benefits please contact Tom Mannino (SDDCTEA) and visit the Federal Highway Administration safety website – <http://safety.fhwa.dot.gov/intersections/roundabouts.htm>.



"Benefits we see from roundabouts include improved traffic flow, reduced maintenance cost when compared to traffic signals, and less frequent and less serious accidents."

*Michael L. Goreham
Chief, Master Planning*



Michael K. Williams
Director, SDDCTEA

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OFFICIAL BUSINESS

Reference List

- ✓ Surface Deployment and Distribution Command Transportation Engineering Agency, SDDCTEA. Pamphlet 55-15, *Traffic and Safety Engineering for Better Entry Control Facilities*. Scott AFB, Illinois, 2009.
- ✓ Surface Deployment and Distribution Command Transportation Engineering Agency, SDDCTEA. Pamphlet 55-17, *Better Military Traffic Engineering*. Scott AFB, Illinois, 2008.
- ✓ www.tea.army.mil

Training

Continuing Education	Phone	Web Site
Pennsylvania State University; The Pennsylvania Transportation Institute	(814) 865-4700	www.pti.psu.edu
University of Maryland; Md. Transportation Technology Transfer Center	(301) 403-4623	www.ence.umd.edu/tttc
Georgia Institute of Technology	(404) 385-3501	www.gatech.edu
Northwestern University Center for Public Safety	(800) 323-4011	www.northwestern.edu/nucps/index.htm
Texas A&M University	(979) 845-3211	www.tamu.edu
University of Washington; College of Engineering	(206) 543-2100	www.engr.washington.edu/epp