



Traffic Engineering & Highway Safety Bulletin



Military Surface Deployment and Distribution Command Transportation Engineering Agency

February 2006

720 Thimble Shoals Boulevard, Suite 130 • Newport News, VA 23606-4537

Entry Control Facilities and Access Control Points

How SDDCTEA Can Help!

SDDCTEA continues to provide guidance regarding entry control facilities (ECF). SDDCTEA is available to assist in a variety of ECF issues by providing engineering and educational services and specialty expertise.

- SDDCTEA has performed more than 60 ECF engineering assessments at military installations all over the world
- SDDCTEA assisted in the development of the Department of the Army, Army Access Control Points Standard Definitive Design and as such has a thorough understanding of how to apply these standards
- SDDCTEA participated in the development of UFC 4-022-01 Security Engineering: Entry Control Facilities/ Access Control Points

SDDCTEA's philosophy is to address each of the four priorities of an ECF:

- Security and Functional Requirements
- Safety (guards and motorists)
- Traffic Flow and Congestion
- Aesthetics

In order to meet these diverse and sometimes conflicting priorities, SDDCTEA considers local site constraints and then uses creativity and innovation to develop design solutions that meet all of the ECF performance requirements. SDDCTEA recognizes that ECF planning and design must consider:

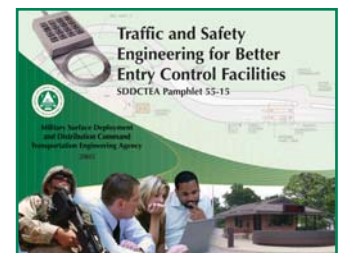
- Short and long-term needs as well as identification of low-cost enhancements
- Operational and manpower issues
- Practical and adaptive solutions
- Strategic use of technology
- The needs of all stakeholders including planners, engineers, security forces, safety officials, and command group

The next pages are answers to some common questions SDDCTEA receives on a regular basis as well as an announcement of SDDCTEA's Free Maintaining Control Workshops.

Frequently Asked Questions

SDDCTEA continues to provide guidance on a variety of ECF issues. In August 2005, SDDCTEA released a special bulletin entitled **Safety Requirements at Active Vehicle Barriers** [available at <http://www.tea.army.mil/pubs/dod.asp>]. In 2006, SDDCTEA will release Pamphlet 55-15, Traffic and Safety Engineering for Better Entry Control Facilities. Specific focus areas of the 200-page pamphlet include: Alternative Analysis, Traffic Engineering Studies, Geometric Design, Facility Considerations, Traffic Control, Lighting, Force Protection and Vehicle Barriers, Intelligent Transportation Systems, Pedestrian Considerations and Speed Management.

In the interim, the next pages are answers to some common questions SDDCTEA receives.



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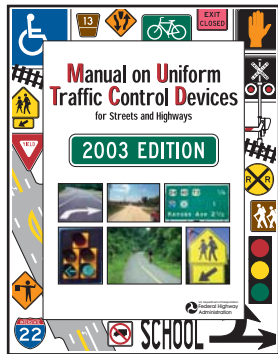
SDDCTEA ECF Services

- Short-term Assessments
- Traffic and Safety Engineering
- Lane Requirements Analysis
- Concept Development and Design Services
- Threat Assessment and Analysis
- Active Vehicle Barrier Location Assessments
- Active Vehicle Barrier Traffic Control and Safety Evaluation

Q: Does the Manual on Uniform Traffic Control Devices (MUTCD) apply to military reservations?

A: Yes, both national and military regulations dictate that the MUTCD be used.

National Requirement



*"The MUTCD is incorporated by reference in 23 Code of Federal Regulations (CFR), Part 655, Subpart F and shall be recognized as the **national standard for all traffic control devices installed on any street, highway, or bicycle trail open to public travel** in accordance with 23 U.S.C. 109(d) and 402(a)."*

Military Requirement

Joint Regulation (AR 55-80, OPNAVINST 11210.2, AFMAN 32-1017, MCO 11210.2D, and DLAR 4500.19) of the Department of Defense (DoD) Transportation Engineering Program identifies in Section 3-11 the Military's Highway Safety Program requirements:

- Under General: *"This section prescribes the policies and procedures related to DoD highway safety needs. It implements 23 USC 402 (see national requirement above), DODD 4510.11, and DoDI 6055.4."*
- Under Policies: *"Installation commanders will develop and maintain their roadways to nationally accepted standards that provide a safe driving environment for all drivers and passengers."*
- Under Traffic Control Device Plan: *"**All installation traffic signals, signs, and pavement markings will be in substantial conformance to FHWA's Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) (<http://mutcd.fhwa.dot.gov>). Variances in the design and application of installation traffic control devices from the standards contained in MUTCD must be approved by MTMC (now SDDC) and FHWA.**"*

Q: Military roads are not "open to public travel" so why does MUTCD apply?

A: Per national and military regulations, the MUTCD does apply to military installations.

The MUTCD defines a "public road" as "any road or street under the jurisdiction of and maintained by a public agency and open to public travel." Public are the people. Military roads are funded by taxpayers and used by motorists from across the nation who expect travel, safety and traffic control devices on a military reservation to be no different from those off the reservation.

Furthermore, even if someone argues that military roads are "private" roads it really doesn't matter because section 15-117 of the National Uniform Vehicle Code (used by most states), notes that *"no person shall install or maintain in any area of private property used by the public a sign, signal, pavement marking or other device intended to regulate, warn, or guide traffic unless it conforms with the State manual and specifications adopted under Section 15-104 of the Uniform Vehicle Code."*

Section 15-104 of the Uniform Vehicle Code states that *"The State shall adopt a manual and specification for a uniform system of traffic control devices consistent with the provisions of the UVC. Such uniform system shall correlate with and conform to the system set forth in the most recent edition of the Manual on Uniform Traffic Control Devices for Streets and Highways, and other standards issued or endorsed by the Federal Highway Administrator."*

Q: Are active vehicle barriers (AVBs) traffic control devices?

A: No.

A traffic control device is a sign, signal, marking, or other device used to regulate, warn, or guide traffic, placed on, over, or adjacent to a street, highway, pedestrian facility, or shared-use path by authority of a public agency having jurisdiction. An AVB is a design feature used to combat forced entry by threat vehicle(s) along a travelway.



Q: If the AVB is not a traffic control device, why does the MUTCD apply?

A: Other standards and precedence.

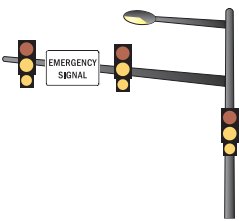
AVBs are a physical deterrent to terrorists and innocent road users just as resistance gates are a physical deterrent to road users at movable highway bridges and some highway-railroad crossings. Requirements for resistance gates are a design feature contained in AASHTO's (American Association of State Highway and Transportation Officials), Standard Specifications for Movable Highway Bridges.

National Requirement

AASHTO states ***"Warning signs, hazard identification beacons, traffic signals, signal bells and gongs, gates and barriers, and other safety devices shall be provided for the protection of pedestrian and vehicular traffic. These shall be designed to be operative prior to the opening of the movable span and until the span has again been completely closed. The devices shall conform to the requirements for "Traffic Control at Movable Bridges," in the MUTCD".*** These safety devices are required to warn and regulate innocent road users at AVBs.

Military Requirement

Section 6-8 (page 6-21) of DOD's Unified Facilities Criteria on Security Engineering: Entry Control Facilities/Access Control Points (UFC 4-022-01 dated 25 May 2005) states, ***"Signs, markings and signals are necessary to perform traffic control and satisfy regulatory requirements and should be provided in accordance with Service guidance and the MUTCD."***



Q: Is safety design required by military regulations?

A: Yes.

DOD Instruction 6055.4 [enclosure E3.13 (Roadway Safety) Highway Design, Construction, and Maintenance] states, ***"DoD installation roads shall be maintained in a safe condition. Capital improvements to modernize existing roads or to provide new traffic facilities shall meet the safety standards issued or endorsed by the Federal Highway Administration. Compliance shall be evaluated periodically by the Commander and Military Traffic Management Command (now SDDC), as stated below... Military commanders shall abate on-base traffic hazards as required in DoD Instruction 6055.1 (reference (f))."***

DoD Directive 4715.1 states under Policy, *"It is DoD policy to display environmental security leadership within DoD activities worldwide and support the national defense mission by:*

- ***Complying with applicable United States statutes, regulations, executive orders, binding international agreements, other legal requirements, and United States environmental, safety, occupational health, explosives safety, fire and emergency services, and pest management policies.***
- ***Developing comprehensive safety, occupational health, explosives safety, fire and emergency services, and pest management programs that protect:***
 - *DoD personnel from accidental death, injury, or occupational illness by exposure to stressors beyond established limits.*
 - *The public from risk of death, injury, illness, or property damage as a result of DoD activities".*

Q: Does Force Protection trump safety?

A: No.



Thousands of drivers and passengers cross AVBs ready to deploy in travel lanes at each ECF. Safety for innocent road users can be designed into Force Protection whether AVBs are deployed by accident, during a test, or during a perceived threat. Safety designs and conflict monitors can be used for AVB applications, similar to other traffic control signal applications used nationally where traffic flow is directed to stop on a travelway.

Q: Are AVB safety schemes required?

A: Yes.

Motorists don't anticipate AVBs popping in front of them without proper advance warning and regulatory controls per the MUTCD. Safety schemes are required to give innocent road users adequate time to react to conditions along a travelway. The safety schemes minimize death and injuries, vehicle damage, tort liability, mission distractions, morale, etc. Several SDDCTEA safety schemes have been developed based on real estate availability at ECFs.

Section 6-3.2.1 (page 6-10) of DOD's Unified Facilities Criteria on Security Engineering: Entry Control Facilities/Access Control Points (UFC 4-022-01 dated 25 May 2005) states, ***"Ensure that vehicle barriers are planned and constructed in accordance with UFC 4-022-02 including all***

Frequently Asked Questions continued on page 8

**MILITARY SURFACE DEPLOYMENT AND DISTRIBUTION COMMAND –
TRANSPORTATION ENGINEERING AGENCY (SDDCTEA)**



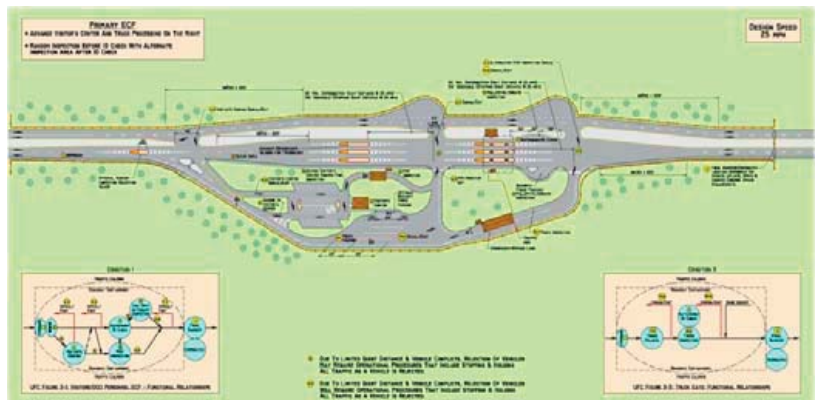
MAINTAINING CONTROL WORKSHOP

**WHAT YOU SHOULD KNOW ABOUT TRAFFIC AND SAFETY IN
ORDER TO OPERATE A BETTER ENTRY CONTROL FACILITY**



- DO YOU WANT TO PROVIDE A SECURE FACILITY?
- DO YOU WANT TO IMPROVE GUARD AND MOTORIST SAFETY?
- DO YOU WANT TO IMPROVE TRAFFIC OPERATIONS IN ORDER TO REDUCE CONGESTION?
- DO YOU WANT TO MAXIMIZE THE USE OF MANPOWER?

- DO YOU WANT TO UTILIZE TECHNOLOGY IN ORDER TO PROMOTE EFFICIENT OPERATIONS?
- DO YOU WANT TO BE ABLE TO IDENTIFY LOW-COST ENHANCEMENTS?
- DO YOU WANT TO BE ABLE TO BETTER PLAN FOR LONG-TERM NEEDS?

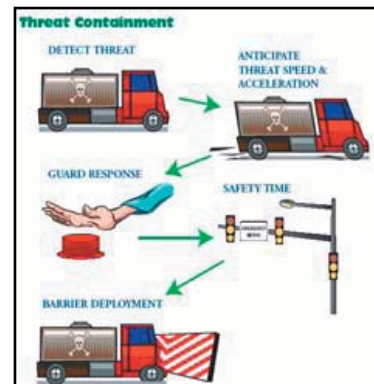


Then you should attend SDDCTEA's Maintaining Control Workshop. The course will provide comprehensive guidance on how to assess, plan, design and operate an Entry Control Facility (or Access Control Point)



WHO ELSE SHOULD ATTEND?

- Engineers and planners
- Security forces
- Safety office
- Command
- USACE/NAVFAC Engineers
- State DOT/FHWA representatives
- AE representatives
- Contractors and suppliers



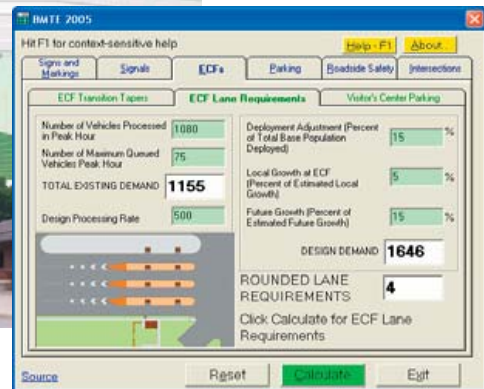
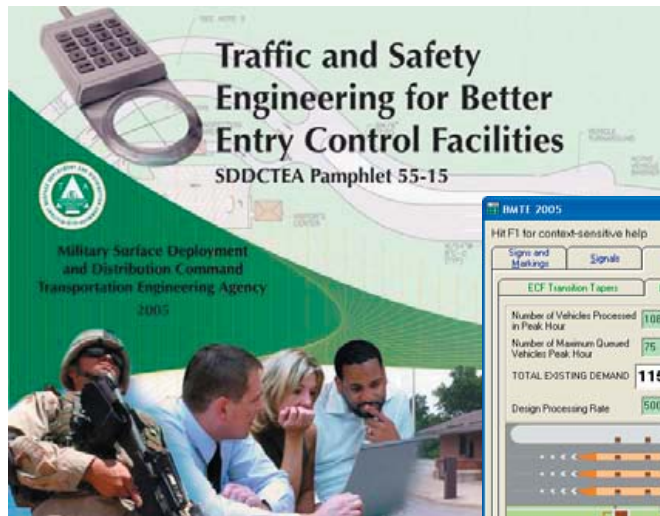


MAINTAINING CONTROL WORKSHOP

WHAT YOU SHOULD KNOW ABOUT TRAFFIC AND SAFETY IN ORDER TO OPERATE A BETTER ENTRY CONTROL FACILITY

WORKSHOP CURRICULUM

The three-day workshop will include hands-on exercises. Each participant will receive an “ECF Toolbox” consisting of useful tools and references as well as SDDCTEA’s, *Traffic and Safety Engineering for Better Entry Control Facilities* and their interactive training CD, *Better Military Traffic Engineering*. The syllabus is as follows:



- Course Overview
- ACP Background
- Traffic and Safety Engineering Studies
- Multimodal Considerations
- Functional Requirements Review
- Facilities Overview
- Geometric Design
- Signs
- Pavement Markings
- Lighting Considerations
- Intelligent Transportation Systems Overview
- Force Protection Considerations
- Active Vehicle Barriers, Traffic Control for AVBs and Alternate Strategies
- Speed Management
- Service Perspective
- Overview of Better Military Traffic Engineering CD

Instructors:

SDDCTEA: Richard L. Quesenberry, P.E., PTOE

- ☐ Assisted in development of US Army Standard Definitive Design Drawings
- ☐ Assisted in development of SDDCTEA Pamphlet 55-15
- ☐ Conducted many ACP/ECF Assessments

US Army Protective Design Center: John Trout, P.E.

- ☐ Developed Army Definitive Design Criteria

US Army Electronic Security Center: Craig Zeigler

- ☐ Electronic Security Expert

Gannett Fleming: Robert Taylor, P.E. and Eric Rensel

- ☐ Assisted in development of US Army Standard Definitive Design Drawings
- ☐ Assisted in development of SDDCTEA Pamphlet 55-15
- ☐ Conducted over 50 ACP/ECF Assessments



**MILITARY SURFACE DEPLOYMENT AND DISTRIBUTION COMMAND –
TRANSPORTATION ENGINEERING AGENCY (SDDCTEA)**



MAINTAINING CONTROL WORKSHOP

**WHAT YOU SHOULD KNOW ABOUT TRAFFIC AND SAFETY IN
ORDER TO OPERATE A BETTER ENTRY CONTROL FACILITY**

**WORKSHOP LOCATIONS AND
DATES**

March 28-30, 2006 – Salt Lake City, Utah

Workshop to be held at:
Holiday Inn - Salt Lake City
999 South Main Street
Salt Lake City, UT 84111
(888)465-4329

www.holiday-inn.com/slc-downtown

Lodging is \$78/day and 40 rooms have been reserved
under SDDCTEA. **Register by February 21, 2006.**

May 2-4, 2006 – San Antonio, Texas

Workshop to be held at:
Holiday Inn Downtown/Market Square
318 W. Durango Blvd
San Antonio, TX 78204
(210)225-3211

www.ichotelsgroup.com/h/d/6c/1/en/hd/satal

Lodging is \$96/day and 40 rooms have been reserved
under SDDCTEA. **Register by April 8, 2006.**

June 6-8, 2006 – Charleston, South Carolina

Workshop to be held at:
Sheraton North Charleston
4770 Goer Drive
North Charleston, SC 29406
(843)747-1900

www.starwoodhotels.com

(Location Tentative, email confirmation of event location will be sent
to those who sign up for this location)

Lodging is \$89/day and 40 rooms have been reserved
under SDDCTEA. **Register by May 6, 2006.**

Deadline
extended to
February 28

**ABOUT SDDCTEA
(FORMERLY MTMCTEA)**

MISSION: To improve highway safety and traffic flow efficiency
(reduce congestion/delays) on DoD installation roads and on
installation access routes

OBJECTIVE: Save lives, decrease injuries, minimize lost time
and tort liability, and maintain readiness

EXPERIENCE

SDDCTEA is actively involved in assessing ECFs and providing
solutions

- Performed more than 60 ECF engineering assessments
- Assisted in the development of the Department of the Army,
Army Access Control Points Standard Definitive Design
- Participated in the development of UFC 4-022-01 Security
Engineering: Entry Control Facilities/Access Control Points.
- Developed Pamphlet 55-15, Traffic and Safety Engineering for
Better Entry Control Facilities
- Developed a Special Edition Safety Bulletin on the Safety
Requirements at Active Vehicle Barriers

ECF/ACP SERVICES

- Short-term Assessments
- Traffic and Safety Engineering
- Lane Requirements Analysis
- Concept Development and Design Services
- Threat Assessment and Analysis
- Active Vehicle Barrier Location Assessments
- Active Vehicle Barrier Traffic Control and Safety Evaluations

SDDTEA CONTACT

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**MILITARY SURFACE DEPLOYMENT AND DISTRIBUTION COMMAND –
TRANSPORTATION ENGINEERING AGENCY (SDDCTEA)**



MAINTAINING CONTROL WORKSHOP

***WHAT YOU SHOULD KNOW ABOUT TRAFFIC AND SAFETY IN
ORDER TO OPERATE A BETTER ENTRY CONTROL FACILITY***

WORKSHOP COST

The cost of the workshop, materials and refreshments is FREE. Participants will be responsible for their own travel, lodging and food.

WORKSHOP REGISTRATION

Since space is limited, preference will be given to military and government officials first. **Hotel accommodations are the responsibility of the attendees. PLEASE SUBMIT ONE REGISTRATION FORM FOR EACH ATTENDEE.**

Name	
Title	
Agency/ Organization	
Address	
Phone DSN	
Phone Commercial	
E-mail	
Location (Select One)	Salt Lake City San Antonio Charleston
What are the top three things you would like to learn more about at the workshop?	1. 2. 3.

Please fax or email to

Joy Myers
Gannett Fleming, Inc
P.O. Box 67100
Harrisburg, PA 17106-7100
e-mail: jmyers@gfnet.com
phone: (717) 763-7212x2170
fax: (717) 763-8150

Frequently Asked Questions continued from page 3

necessary safety measures. Safety devices associated with active vehicle barriers are covered in UFGS 02840 Active Vehicle Barriers. **The design and operation of the ECF should include provisions to protect innocent users of the ECF from operation of the final denial barrier whether deployment is accidental, during a test, or during an actual response to a threat.**

Q: Are Traffic and Safety Engineering Studies required at ECFs?

A: Yes, since traffic control devices are required and their justification needs to be documented.

Per MUTCD, traffic signals and many other traffic control devices need to be justified by an engineering study. The MUTCD defines an “engineering study” as “*the comprehensive analysis and evaluation of available pertinent information, and the application of appropriate principles, standards, guidance, and practices as contained in the MUTCD and other sources, for the purpose of deciding upon the applicability, design, operation, or installation of a traffic control device. An engineering study shall be performed by an engineer, or by an individual working under the supervision of an engineer, through the application of procedures and criteria established by the engineer. An engineering study shall be documented.*” While many states have laws regarding engineering practice, the MUTCD’s language provides conditions to minimize tort liability against government’s “deep pockets.”



William J. Cooper
Director, SDDCTEA

DEPARTMENT OF THE ARMY

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Engineering Agency
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OFFICIAL BUSINESS

Q: What are the most common MUTCD violations noted at ECFs?

1. No or improper, non-conforming pavement markings thru checkpoints and around islands.
2. Barriers/AVB not properly marked with retro-reflective red-and-white stripes within travel lanes.
3. Improper or insufficient traffic control devices commensurate with the hazards within lanes.
4. Improper, substandard, and non-conforming signals at AVBs.
5. Signal sequence operation and colors in specific violation with MUTCD standards and motorists understanding.
6. Insufficient motorist’s clearance times.
7. No or improper safety design (a design that makes no distinction between the threat vehicle and innocent road users and deploys AVBs across all lanes when a guard “perceives a threat” without giving innocent road users proper traffic controls to stop is a flawed design).
8. No fail-safe monitoring of signal colors, barrier inputs, preemption sequence.
9. Lack of industrial/commercial quality controls with barrier deployment system.
10. Lack of uniformity across the military services, with personal instead of sound professional judgment compromising motorists’ safety and increasing tort liability.