



## **APPENDIX E**

### Standard Design for Tactical Infrastructure





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### STANDARD DESIGN FOR TACTICAL INFRASTRUCTURE

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A properly designed tactical infrastructure system is an indispensable tool in deterring those attempting to illegally cross the U.S. border. Tactical infrastructure is also integral to maintaining USBP's flexibility in deploying agents and enforcement operations. A formidable infrastructure acts as a force multiplier by slowing down illegal entrants and increasing the window of time that agents have to respond. Strategically developed tactical infrastructure should enable USBP managers to better utilize existing manpower when addressing the dynamic nature of terrorists, illegal aliens, and narcotics trafficking (INS 2002).

USBP apprehension statistics remain the most reliable way to codify trends in illegal migration along the border. Based on apprehension statistics, in a 2006 report on border security, the Congressional Research Service concluded that "the installation of border fencing, in combination with an increase in agent manpower and technological assets, has had a significant effect on the apprehensions made in the San Diego sector" (CRS 2006).

Since effective border enforcement requires adequate scope, depth, and variety in enforcement activity, any single border enforcement function that significantly depletes USBP's ability to satisfactorily address any other enforcement action creates exploitable opportunities for criminal elements. For example, the intense deployment of personnel resources necessary to monitor urban border areas without tactical infrastructure adversely affects the number of agents available for boat patrol, transportation check points, patrolling remote border areas, and other tasks. Tactical infrastructure reduces this effect by reinforcing critical areas, allowing the agents to be assigned to other equally important border enforcement roles (INS 2002).

#### **Fencing**

Two applications for fencing have been developed in an effort to control illegal cross-border traffic: pedestrian fences that are built on the border, and secondary fences that are constructed parallel to the pedestrian fences. These fences present a formidable physical barrier which impede cross-border violators and increases the window of time USBP agents have to respond (INS 2002).

There are several types of pedestrian fence designs USBP can select for construction depending on various site conditions and law enforcement tactics employed. Each option offers relative advantages and disadvantages. Fencing composed of concrete panels, for example, is among the more cost-effective options, but USBP agents cannot see through it. USBP prefers fencing structures offering visual transparency, allowing observation of activities developing on the other side of the border.

1 Over the past decade, USBP has deployed a variety of types of fencing, such as  
2 pedestrian fence (see **Figures E-1 through E-4**), pedestrian fence with wildlife  
3 migratory portals (see **Figures E-5 and E-6**), vehicle barrier with pedestrian  
4 fence (see **Figures E-7 through E-9**), and bollard fencing (see **Figure E-10**).



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6 **Figure E-1. Typical Pedestrian Fence Foundation**

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8 **Figure E-2. Typical Pedestrian Fence Design**

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**Figure E-3. Typical Pedestrian Fence Design**



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**Figure E-4. Typical Pedestrian Fence Design**



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**Figure E-5. Pedestrian Fence with Wildlife Migratory Portals**



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**Figure E-6. Wildlife Migratory Portals**

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**Figure E-7. Vehicle Barrier with Pedestrian Fence**



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**Figure E-8. Vehicle Barrier with Pedestrian Fence**



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**Figure E-9. Vehicle Barrier with Pedestrian Fence**



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**Figure E-10. Bollard Fence**

1 Bollard fencing has been effective in its limited deployment and can also be seen  
2 through. However, it is expensive to construct and to maintain. Landing mat  
3 fencing is composed of Army surplus carbon steel landing mats which were used  
4 to create landing strips during the Vietnam War. Chain-link fencing is relatively  
5 economical, but more easily compromised. In selecting a particular fencing  
6 design, USBP weighs various factors such as its effectiveness as a law  
7 enforcement tool, the costs associated with construction and maintenance,  
8 potential environmental impacts, and other public interest concerns. USBP  
9 continues to develop fence designs to best address these objectives and  
10 constraints.

## 11 **Patrol Roads**

12 Patrol roads provide USBP agents with quick and direct access to anyone  
13 conducting illegal activity along the border, and allow agents access to the  
14 various components of the tactical infrastructure system. Patrol roads typically  
15 run parallel to and a few feet north of the pedestrian fence. Patrol roads are  
16 typically unpaved, but in some cases “all-weather” roads are necessary to ensure  
17 continual USBP access (INS 2002).

## 18 **Lighting**

19 Two types of lighting (permanent and portable) might be  
20 constructed in specific urban locations. Illegal entries are  
21 often accomplished by using the cover of darkness, which  
22 would be eliminated by lighting. Lighting acts as a  
23 deterrent to cross-border violators and as an aid to USBP  
24 agents in capturing illegal aliens, smugglers, terrorists, or  
25 terrorist weapons after they have entered the United  
26 States (INS 2001). Lighting locations are determined by  
27 USBP based on projected operational needs of the  
28 specific area.

29 The permanent lighting would be stadium-type lights on  
30 approximately 30- to 40-foot high poles with two to four  
31 lights per pole. Each light would have a range of 400 to  
32 1,000 watts, with lower-wattage bulbs used where  
33 feasible. Wooden poles, encased in concrete and steel  
34 culvert pipe to prevent them from being cut down, would  
35 most often be used, although steel poles with concrete footings might also be  
36 used. The poles might be existing poles or they might need to be installed.  
37 Electricity would be run in overhead lines unless local regulations require the  
38 lines to be underground (DHS 2004). Lights would operate from dusk to dawn.  
39 Light poles adjacent to U.S. IBWC levees would be coordinated with and  
40 approved by the U.S. IBWC. The final placement and direction of lighting has  
41 been and would continue to be coordinated with the USFWS, with the USFWS  
42 having final review over both placement and direction along each fence section.



1 Portable lights are self-contained units with generators that can be quickly moved  
2 to meet USBP operational requirements. Portable lights are powered by a  
3 6-kilowatt self-contained diesel generator. Portable lights would generally  
4 operate continuously every night and would require refueling every day prior to  
5 the next night's operation. The portable light systems can be towed to the  
6 desired location by USBP vehicles, but they are typically spaced approximately  
7 100 to 400 feet apart, depending upon topography and operational needs. Each  
8 portable light would have a light fan directed toward the fence to produce an  
9 illuminated area of 100 ft<sup>2</sup>. The lighting systems would have shields placed over  
10 the lamps to reduce or eliminate the effects of backlighting. Effects from the  
11 lighting would occur along the entire corridor where they could be placed;  
12 however, in reality, only parts of the fence would be illuminated at a given time  
13 since the portable lights would be periodically relocated to provide the most  
14 effective deterrent and enforcement strategy (INS 2001).

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1   References

- CRS           Congressional Research Service (CRS). 2006. "Report For  
2006           Congress." *Border Security: Barriers Along the U.S. International  
                  Border*. 12 December 2006.
- DHS           U.S. Department of Homeland Security (DHS). 2004.  
2004           *Environmental Impact Statement for Operation Rio Grande*. CBP,  
                  Washington D.C. April 2004.
- INS 2001      Immigration and Naturalization Service (INS). 2001. *Final  
                  Environmental Assessment, Portable Lights within the Naco  
                  Corridor*. Cochise County, Arizona. December 2001.
- INS 2002      Immigration and Naturalization Service (INS). 2002. *Draft  
                  Environmental Impact Statement for the Completion of the 14-Mile  
                  Border Infrastructure System, San Diego, CA*. Immigration and  
                  naturalization Service. January 2002

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