Appendix I
LAX SPECIFIC PLAN AMENDMENT STUDY REPORT

SPAS Security Assessment

July 2012

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Los Angeles World Airports

Specific Plan Amendment Study (SPAS):
A Security Assessment

July 27, 2012

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EXECUTIVE SUMMARY

Executive Summary

This security evaluation arises from the LAX Specific Plan and the LAX Master Plan Stipulated Settlement, which require LAWA to conduct a Specific Plan Amendment Study (SPAS).   To fulfill this requirement, LAWA is charged with identifying "LAX Specific Plan Amendments that plan for the modernization and improvement of LAX in a manner that is designed for a practical capacity of 78.9 million annual passengers while enhancing safety and security, minimizing environmental impacts on the surrounding communities, and creating conditions that encourage airlines to go to other airports in the region, particularly those owned and operated by LAWA".

LAWA has developed nine SPAS Alternatives, each of which proposes a set of improvements, to be studied through SPAS, and per the terms of the Stipulated Settlement Agreement, LAWA is to conduct "the evaluation of security for the Alternative Projects in consultation with security experts."   The Alternative Projects are designed at a programmatic level; therefore, the security evaluation will be conducted at a programmatic level.

This security evaluation of the Alternative Projects for SPAS will not be another security study of LAX. This work will not attempt to duplicate the detailed analysis of the recently released Mayor's Blue Ribbon Security Panel analysis or the previous RAND security studies. Nor will it report on progress regarding implementation of the suggestions contained in those documents.

This assessment also fulfills the provisions of the LAX Specific Plan, specifically Section 7.G(2), which requires LAWA to analyze the security benefits of the projects yet to be initiated in the LAX Master Plan.

It is important to note at the outset that this is a very high-level programmatic assessment, a preliminary review of potential facilities variations that are still quite far removed from the selection, detailed planning, design and implementation stages. It is conceptual in nature, reaching out several years, and is dependent upon a wide range of future operational, technological, regulatory, and political variables, each of which could potentially cause changes in some or all of the other elements.

Individual elements of SPAS-based improvements and modifications may not be implemented for several years, during which time the relevant security and aviation technology is likely to have significantly advanced, regulatory requirements continue to evolve, and any major aviation security-related event in the United States could cause TSA to impose additional requirements on the entire industry.

Further, several of the proposed SPAS alternatives incorporate off-airport, non-aviation facilities outside TSA jurisdiction (Automated People Mover [ATM], Consolidated Rent-A-Car facility [ConRAC], busway, intermodal facilities, roadways, parking) which brings additional city, county and State requirements, constraints and finance into the equation. Thus, the nature of this security assessment will of necessity be equally programmatic in nature, changing dynamically depending on numerous possible combinations and permutations of variables in threat mitigation, design, implementation, and operational response, and cannot be used for specific qualitative or quantitative decision-making. It will focus primarily on the potential SPAS impacts on the proposed physical facilities, rather than on the continuing dynamic conditions surrounding the facilities and their operations.

The proposed improvements associated with the SPAS alternatives are grouped into three categories:

1) Airfield Improvements: Changes to the runways, taxiways, navigational aids, and service roads associated with the North Airfield;
2) Terminal Improvements: Changes to concourses/gates at/near Terminals (T) 1-3, Tom Bradley International Terminal (TBIT), and the planned Midfield Satellite Concourse (MSC), as well as construction of terminal and landside facilities;
3) Ground Access Improvements: Changes to airport and off-airport roads, addition of specific transportation facilities such as the ConRAC, and the Intermodal Transportation Facility (ITF), development of dedicated access (i.e., busway or APM) into Central Terminal Area (CTA), and changes in off-site parking facilities.

In summary, elements of the various SPAS proposals, separately or in combination, would have the following likely security impacts:

a. Airfield Improvements

Moving the runway closer to perimeters or public areas, absent any mitigating security measures, increases the vulnerability of the airport in two ways:

- First, the ability to conduct an off-airport attack on an aircraft on the runway using high caliber weapons, rocket propelled grenades (RPG), or light anti-tank weapons would improve because the firing range would be decreased, especially from public roadways to an aircraft holding for takeoff.
- Second, a vehicular or personnel breach of the fence would provide an attacker the opportunity to reach its target in less time than the present fence line configuration.

Measures to decrease the vulnerabilities from movement closer to the fence line might include increased patrols of the perimeter, analytical cameras and motion sensing mechanisms on the fence, and additional crash-rated fencing near the ends of the runways and other locations.

Attacks of this type have not been widely used against civil aviation targets and are considered a minimal risk.

b. Terminal Improvements

1) Facilities
Changes to the terminal configurations will have limited security implications with the exception of those related to passenger and vehicle access to the Central Terminal Area (CTA). Security measures such as access control systems, employee I.D. requirements, and other current TSA requirements in the Airport Security Program (ASP) will remain the same for movement between public and protected areas for any new or remodeled facilities.

The proposed reduction of passenger and vehicle flow to the CTA (through the use of a dedicated transitway from remote locations) will dramatically reduce traffic congestion at the curb with a concurrent statistical decrease in the vulnerability to a Vehicle-Borne Improvised Explosive Device (VBIED). Those locations include the ConRAC, Ground Transportation Center, Intermodal Transportation Center, Intermodal Transportation Facility, potential transfer stations from the regional rail system, and remote parking areas. It is a statistical decrease only, absent the screening or other controls of authorized and unauthorized vehicles into the CTA.

2) Vehicle Inspection

Alternative 3 provides the opportunity to restrict the CTA to authorized vehicles. If vehicular screening is conducted at a vehicle inspection center (VIC) for "authorized" and special purpose vehicles having access to the CTA with implementation of this alternative, the vulnerability to a VBIED attack is reduced to the extent of the quality and effectiveness of the screening process and the isolation of passengers and baggage thereafter while still in public space.

The screening of vehicles authorized to access the CTA could take many forms. Physical security measures may include 100% or random vehicle inspections, underside vehicle inspections using mirrors or cameras embedded into the pavement, and technological devices to detect explosives or chemical-biological-radiological (CBR) weapons.

Non-physical measures applied to vehicles may include granting CTA access only to vehicles and drivers that have undergone security checks mandated by the airport authority. For example, a vehicle granted access to the CTA may only be authorized if the driver has undergone a background check, and the vehicle has been inspected by its owner at predetermined intervals. Access control devices such as stickers, placards, or an electronic transmitter similar to the "E-Pass" used on many toll roads could be issued to "authorized" vehicles and their drivers. Administrative costs to manage such a background clearance system for a typically transient population of drivers, and the technology and personnel to install, maintain, monitor and enforce the system, can be significant.

In addition to any actual security benefits of vehicle screening, a significant deterrent effect would be realized with any one or combination of the measures mentioned above.

c. Ground Access Facilities Improvements

1) Consolidated, Dedicated Transit Pathways

The use of dedicated transit links, such as Automated People Movers (APM) or segregated bus corridors, creates new passenger congestion points outside of the terminal complex that become increasingly attractive for an armed assault by automatic weapon, IED's, etc., and could change the general security posture of the airport. However, an attack of this kind might not directly affect the long-term airport operation, assuming that the passenger transit link could be put back into service within a reasonable amount of time, or alternative means of transporting passengers from the damaged passenger entry site to the CTA are available.

A similar attack scenario is possible on the rail or bus link while enroute to the CTA. Absent passenger or baggage screening, the rail or bus pathways are highly vulnerable to a variety of attacks, both along the dedicated pathway, and in the terminal complex once the passenger-borne threat arrives.

2) Security Measures at Remote Locations

There is no current operational description of potential screening processes or technology and off-airport facilities, both of which continue to evolve. Obviously, screening measures applied at dedicated passenger transit entry points would decrease the vulnerability of transit cars and terminal facilities corresponding to the degree of effectiveness of the screening procedure and the isolation of the link's pathways.

The cost in terms of equipment and personnel to perform remote facility screening of all passengers and their baggage to TSA standards would be significant. It is also likely that some passengers and meeters-and-greeters would object to screening of this nature, since it will not replace TSA screening at the terminal checkpoints.

There are other forms of passenger "screening" that could provide some response to personnel-borne attacks that do not necessarily require enormous investments in equipment and personnel, although some can be financially costly. They include the presence of uniformed K-9 teams, random passenger and baggage screening using traditional equipment and behavioral pattern recognition by trained personnel, and video analytics.

Several security measures may be suitable for a dedicated passenger link to mitigate a hostile event while enroute such as on-board CCTV, a "cage" enclosure of the rail or bus pathway, and sensor technology and surveillance to detect unauthorized access to the restricted pathway area.

3) Other Ground Transportation Improvements:

Development of a GTC, ITC or ITF, and ConRAC will create new passenger congestion points that could become an attractive target for an armed assault or introduction of an IED. However, as in the case of the congestion envisioned at the APM entry sites, attacks on any of these facilities would not damage critical airport infrastructure. Alternative means of distributing passengers in the event of severe damage to any or all of these facilities should be considered, and implies a sizable investment in stand-by capability.

d. Conclusion

The future facility and transportation improvements described in the LAX SPAS Alternatives can dramatically reduce passenger and vehicle congestion in the CTA. By itself, these improvements can allow for increased surveillance and response capabilities by law enforcement officers (LEO) or technological means at curbside and within the terminal area.

Vulnerability to the introduction of a personnel-borne IED into the terminal or an armed assault could decrease due to that increased observation and response capability. The introduction of any remote security measure for passengers and baggage prior to CTA access would further mitigate those threats, but only to the extent of the type and quality of the screening and the isolation of passengers and their baggage thereafter while still in public space.

There is no debate whether or not civil aviation continues to be a favorite target of ideologists with the capability and intent to cause major damage to the global or regional aviation system. Enormous efforts by local, state, National, and International law enforcement and intelligence organizations are attempting to prevent or mitigate that damage.

However, those efforts may drive potential attackers to so-called "soft" targets that could certainly include airport and off-airport facilities. A leading source of public information on terrorist activity summarized events in 2011 involving civil aviation as, "…we did not see plots directed at aircraft. Instead, we saw aviation-related plots often focused on soft targets outside airport security."[1]   Looking ahead to 2012 and beyond, they believe that the trend will continue, stating, "…soft targets -- public gatherings and mass transportation hubs, for example -- will continue to be the most popular target set."[2]

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[1] Jihadism in 2012: A Persistent, Low-Level Threat, STRATFOR Global Intelligence, January 16, 2012. (Stratfor.com)
[2] Ibid.

Whatever alternatives are selected in the LAX improvement plan, vulnerabilities will continue to exist curbside, inside the public terminal, and at passenger gathering points to the extent that efforts put into place may not be fully effective. This condition is not confined to LAX; rather, it is the prevailing circumstance at every commercial airport in the world.

In summary, the various SPAS alternatives, with no introduction of additional security measures, do not themselves create greater or lesser vulnerabilities to hostile actions than do existing conditions. Potential security measures to mitigate known or conceivable threats are discussed at length throughout this report.

Potential countermeasures associated with each alternative, if applied, exhibit significant differences in capital investment, personnel, and recurring costs. Additionally, the threats and vulnerabilities affecting a secure environment for LAX are constantly evolving. Once an alternative plan is approved, it is imperative that LAWA reexamine the current or anticipated threats, as well as the procedural or technological countermeasures available at that time.

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Los Angeles World Airports

Specific Plan Amendment Study (SPAS):

A Security Assessment

SECTION 1

1. Introduction

a. Overview

The types of improvements associated with the SPAS alternatives are grouped into three categories:

1) <u>Airfield Improvements</u>: Changes to the runways, taxiways, navigational aids, and service roads associated with the North Airfield;
2) <u>Terminal Improvements</u>: Changes to concourses/gates at/near Terminals (T) 1-3, Tom Bradley International Terminal (TBIT), and the planned Midfield Satellite Concourse (MSC), as well as construction of new terminals; and,
3) <u>Ground Access Improvements</u>: Changes to airport and off-airport roads, addition of specific transportation facilities such as the Consolidated Rental Car (ConRAC), the Intermodal Transportation Facility (ITF), development of dedicated access (i.e., busway, Intermodal Transportation Center [ITC] or Automated People Mover [APM]) into Central Terminal Area (CTA), and changes in off-site parking facilities.

Further, for purposes of this study of the security implications:

- Alternatives 1 through 4 as a group are considered to be "fully-integrated" alternatives that include specific improvements in all of the three categories above;
- Alternatives 5 through 7, as a group, focus only on proposed variations to the airfield and terminal improvements, and
- Alternatives 8 and 9 focus only on proposed improvements to the ground access facilities on the public side.

This report will address the security-related elements that are common within each of the three categories, and some of the unique qualities and differences among each of the alternatives within a group that have security implications.

Although the primary focus of each group is on specific categories of improvements, there is a certain amount of compatibility or "interchangeability" among several SPAS alternatives. For example, the airfield and terminal improvements in Alternatives 5 through 7 are compatible with the ground access improvements in Alternatives 1, 2, 8, and 9, and the ground access improvements in Alternatives 8 and 9 are compatible with the airfield and terminal improvements in Alternatives 1, 2, 5, 6, and 7. For purposes of this study, none are deemed as "preferred" alternatives or components, although solely from a security perspective, some may suggest themselves to be individually more (or less) desirable, and the presence or absence of changes in each could potentially have both immediate and future security implications on other improvements. The relative risk, estimated in some discussions as low, moderate, or high, has no quantitative boundaries and thus may vary with changed conditions. This report does not make value judgments or specific recommendations; it will lay out the general pros and cons of each alternative, as well as areas where an alternative is neutral with respect to existing conditions (i.e., equivalent levels of security), which can then be further modified by conditions that are current at some future time when design decisions are being made.

b. Purpose and Scope of the Study[3]

LAWA is currently implementing the LAX Specific Plan Amendment Study (SPAS). Pursuant to the LAX Master Plan Stipulated Settlement, SPAS is to include a security assessment of the alternatives.

The Scope of Work that defines this study states:

> **"*Security Implications -*** The focus of the evaluation will be on security, particularly as related to the security implications introduced by the SPAS proposals identified as Alternatives 1 through 9. The evaluation will focus on aspects generally within the jurisdiction of LAWA, although it may consider requirements of other agencies having security- related responsibilities.   An analysis of safety considerations (i.e., runway incursions) associated with airport operations is not within the scope of the security evaluation, given that such safety issues have been evaluated in other studies."

However, having said that, it may be appropriate from time to time to note that a given alternative, although it may independently have strong positive or negative elements, cannot always be considered solely in the security context. It may have additional implications arising beyond its regulatory, operational, or SPAS environments that could become equal or greater influences in the ultimate selection process.

There are important future considerations beyond the references to security threats and risk reduction; these include initial and recurring costs (personnel, training and maintenance), infrastructure compatibility and necessary upgrades, evolving technology, regulatory changes, or response and recovery requirements. Among other considerations that may introduce significant modifiers to the security evaluations might be that once implemented, a particular feature could become a single point of failure, or be limited to a single type of evolving threat.   It could potentially change passenger throughput time, influence related infrastructure and changing technology, or have implications for back-up alternatives (i.e., stand-by buses and trained/certified drivers when the APM goes down).   There can be considerable commonality among the future effects of several SPAS alternatives, but given their conceptual nature, we can state with confidence that many, if not all of these scenarios, when they reach the planning and design stage, would require significant attention to the future security and operational consequences, both mid- and long-term, before final decisions can be made.

c. Methodology

1) The report examines the SPAS alternatives in the context of TSA §1542 regulations, comparing what is required against programmatic descriptions of Alternatives 1 through 9. Passenger and baggage screening will be performed by TSA, no matter how the LAX SPAS alternatives evolve (at least, under current regulations). TSA regulations allow for an airport to petition for private contractor screening, currently done at 17 US airports of all sizes, and although there is pending Congressional legislation to expand the program, the TSA has indicated a reluctance to approve additional contracts.

2) In addition to the SPAS alternatives, TranSecure reviewed the LAX Master Plan for background information, but since the scope of this assessment is limited to the SPAS alternatives, we note that for security purposes, Alternative D is essentially the same as SPAS Alternative 3.

   Threat and technology information has been updated to the extent possible to make the comparisons current. The core reference documents used are TSA's "Recommended Security Guidelines for Airport Planning, Design and Construction," and "Commercial Airport Innovative

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[3] The relevant portion of the Scope of Work for this study is included as Appendix 1.

Security Measures," as well as ancillary guidance such as the Radio Technical Commission for Aeronautics (RTCA) "Integrated Security System Standard for Airport Access Controls" and other extensive background information cited in the bibliography to this report.

3) There are various Federal security guidance documents available from such agencies as the Departments of Defense, Justice, and Federal Emergency Management Administration, that suggest building setbacks of as little as 50 ft. to mitigate potential VBIED attacks, but this is highly impractical in a fully open, accessible and high-traffic public facility such as an airport. If applied to the terminals at LAX, the 50 ft. setback would reduce access to authorized and screened vehicles within the CTA complex as proposed in several alternatives and would impose similar setbacks or equivalent protective barriers for the proposed APM, ITF/ITC, GTC, and ConRAC remote facilities.

4) The concept of "authorized" vehicles mentioned throughout these discussions begs the question of how they are identified, selected, prioritized, managed and enforced; whether each driver must be similarly "authorized" and/or matched with a specific vehicle, and what processes, personnel, infrastructure and technology are necessary to deal with the approach of both authorized and unauthorized vehicles as well as persons on foot. Answers to these questions are not SPAS related; they are operational, and largely dependent upon which, and how, the various combinations of alternatives and their security measures might be implemented and integrated with existing infrastructure, and are thus left to a later planning and design deliberation.

5) Threat Vectors - The report postulates various threat scenarios taken from open sources and what actions resulted therefrom (as a precursor to what might happen if a Terminal or APM were to be targeted). This does not limit our assessments at the programmatic level, and enables the report to be made publicly available to selected interest groups. Note that these are not to be construed as LAX-specific threats; they are merely a selection of those among the most commonly considered in threat and vulnerability analyses at most airports in the world. Each individual situation or combination of threat vectors would require a focused analysis of all the elements, both pro and con, before determining the most appropriate response.

Another important ongoing implication to be considered when evaluating any such approach to determining appropriate security alternatives is that of cost – not only initial acquisition and installation, but costs for maintenance, personnel requirements, training, administrative costs, and adverse impact on operations.

As Figure 1.1 illustrates, it is axiomatic that 100% security is not attainable; no matter what security measures are put in place, there will *always* be some remaining residual risk. The first dollar spent is probably very cost effective – a new fence, a camera, locks on the doors, hiring more officers, etc. However, as one seeks to advance from, say, 60% secure to 70% secure – assuming that can be defined (we suggest it cannot) – the incremental cost for each added undefinable "unit of security" begins to rise dramatically, and is furthe example, biometric access controls may enhance general secu
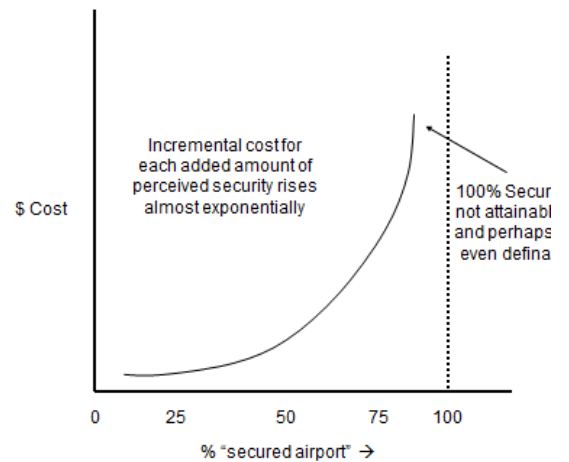
1.1 - Conceptual Relationship of Security Cost to Security Effectiveness

but also introduces a significant but equally undefinable cost in acquisition and installation, continuing physical and software maintenance, a possibly shorter life cycle, upgrades to the underlying IT infrastructure, considerable administrative overhead in ID management, training and reporting requirements, additional CCTV surveillance to monitor activity, and additional law enforcement capability for response.　This must be prioritized against other threats, other vulnerabilities, and other measures, through a risk assessment, and with a view toward limited resources.

A 2005 TSA threat assessment at LAX focused primarily on MANPADs/RPGs.　While it remains an issue of some concern, it is generally accepted that this threat would likely come from outside an airport's perimeter boundaries. There may be a case for brief discussion of some off-airport facilities such as the ConRAC or public parking as a staging area, but given the multitude of better opportunities for attack with less discoverability, they would be much less likely.　More specifically, in the context of this report, such threats would not be addressed by any of the SPAS alternatives, other than perhaps the much broader notion that if a MANPAD attack were successful from any external or internal launch point, all the SPAS review alternatives become irrelevant because the airport shuts down, and terminal evacuation via the transportation network becomes the primary concern.

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Los Angeles World Airports

Specific Plan Amendment Study (SPAS):

A Security Assessment

SECTION 2

2. The Regulatory Environment

Beyond the general need to protect persons and property from a wide range of potential threats, perhaps the most obvious driver of that process is the series of Federal regulations that must be met by every commercial airport in the United States.   The most relevant of these is Transportation Security Regulation (TSR) §1542, Airport Security, which is the primary regulation that affects the airport and this report. Other guidance and regulations have additional security and safety related effects on airports, including separate regulations for both domestic and foreign air carriers, freight forwarders and the passenger and baggage screening regulations imposed by TSA. This report will touch on some choices as having future secondary effects, but they are not sufficiently SPAS-specific to include in detail in this discussion; many such guidance resources are referenced in an appendix.[4]

It is important to note that TSR §1542 is intentionally non-specific; it is structured as "performance standards" which establish a security goal to be reached, and which each airport may meet very differently. The regulations have been designed so that they are both reasonable and enforceable at airports of every size and complexity. One example of this concept is that §1542 does not require a specific type or size of security fence; it merely requires that the airport protect its perimeter against intrusion. A fence is typically the most logical, common and cost effective way to do so, but there are, for example, airports with water boundaries and small rural airports with other fence-less natural barriers such as swamps and wetlands, that are quite sufficient for that particular environment.

Further, TSA has retained the pre-existing FAA categorization of airports for security purposes into five groups: Category X, 1, 2, 3 and 4. LAX is one of 28 Category X airports in the United States considered to be relatively high-risk. This is not to suggest that some airports provide variable security; it simply allows them the flexibility to reflect their local differences in their operational, structural and environmental requirements. For purposes of this report, we remain focused on how the regulations apply to LAX only.

Within §1542.101 is a requirement that each airport have an Airport Security Program (ASP). These are locally unique to each individual airport, and when approved by TSA, they spell out the specific manner in which the airport will meet regulatory requirements. Typically, the ASP itself remains relatively stable in the near-to-midterm, but there are three closely related "wild cards" in the process that can bring about change. The first is the airport's contingency plan, which as the name implies, lays out the airport's security measures in the event of a wide range of possible emergencies. The second is a TSA instrument called a "security directive" (SD), which the agency can issue at any time to meet a specific immediate threat either nationally or to a specific region or airport. SD requirements are typically procedural and usually short-term; they are not intended for making structural changes in security systems. The third issue is the continually on-going TSA process of security audits and inspections, which may discover perceived weaknesses or vulnerabilities, and will be addressed as needed by the airport and TSA.

a.   Regulatory Analysis: TSR §1540-1542 Relevance to SPAS Alternatives

Los Angeles World Airports (LAWA) is fully compliant with all required TSA rules and regulations, Security Directives, amendments, and other State and local security guidance.   It is with certainty that we state there are no elements or combination of elements of any of the nine alternate proposals under consideration that would create a situation that could not be made similarly fully compliant with the application of appropriate situation-specific physical, operational and financial resources.

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[4] These include such resources as FAA Advisory Circulars, ICAO Annex 17 and ICAO Document 8973, Presidential Directives, DoD and FEMA guidance, RTCA and other industry standards, etc.

Risk Based Security

TSA has recently begun to move toward a regime loosely described as "risk-based" security at the checkpoint, which is essentially an effort to determine by intelligence gathering which passengers may require more or less close scrutiny, and to apply TSA's limited screening resources accordingly. Screening is a TSA function, entirely separate from and unaffected by any of the SPAS alternatives, but we introduce the concept here primarily for the purpose of explaining why this TSA-proposed program does not apply in the context of this assessment.

There are myriad operational, intelligence gathering and managerial concerns that accompany TSA's risk-based approach. However, for purposes of the subject SPAS review, they are for the TSA to resolve in the CTA and other facilities where passengers are delivered for eventual screening which, in turn, continues to be subject to new policies, procedures and regulations, and new and evolving technologies. For any of the SPAS alternatives that suggest appropriate procedural security measures for the purpose of protecting the APM or other remote facilities, those passengers arriving from remote facilities would still be subject to the higher level of TSA screening at the checkpoint.

Certainly, there can be varying degrees of protection in the "risk-based" security environment, which can be illustrated by two pertinent maxims:

"He who seeks to protect everything, protects nothing"

Gen. Sun Tzu, "The Art of War" 600 B.C.

"If you protect your diamonds and your toothbrushes with equal vigor,

you will certainly lose more diamonds and save more toothbrushes"

McGeorge Bundy

Airports, like the cities they serve, operate with limited resources on budgets that typically vary from year to year, and must plan both capital and operational expenditures several years into the future. However, in airport security, even the short term future is much less predictable, being largely dependent on the actions of others, including Congress, the regulatory agencies, and the whims of uncounted antagonists, terrorists and other malefactors. The essence of risk-based security is that one should apply resources appropriate to the threat, with sufficient flexibility to accommodate changes as they arise.

Further, there are two distinctly separate, and very different, types of security at commercial airports. The first and most visible is the screening of passengers and baggage performed by the Transportation Security Administration – a government function aimed at keeping weapons, explosives, and other dangerous items and substances from getting on passenger aircraft. Aside from a generally diligent observation of day-to-day activity, the screening process is not an airport function, although law enforcement response to checkpoint incidents is. While these might include activity in such areas as general aviation or cargo operations, they have no relevance to the SPAS alternatives. The second type of security is the series of physical, procedural and operational measures performed by the airport itself, and by its designated law enforcement support agency, to protect the complete airport operational environment from intrusion, criminal activity and a myriad of other damaging and disruptive threats that can and do arise daily.

This report is concerned almost exclusively with the second type, although changes in the former can directly affect how some of the Alternatives under consideration might be implemented. For example, a VBIED attack on any USA airport could lead TSA to ban curbside access by unscreened vehicles, or to mandate full screening at remote access facilities, in which case any of the SPAS alternatives could be adapted accordingly.

The regulatory environment for airport security remains relatively stable by virtue of the fact that the regulations are purposefully written to be sufficiently flexible to meet most normal challenges at the local level; there are also mechanisms to immediately accommodate unanticipated requirements as they arise. In summary, the regulations and ancillary TSA processes are easily adaptable to virtually any risk-based circumstances that the various SPAS proposals might introduce, and those accommodations may fluctuate with any given combination of design elements undertaken by LAWA.

Further, the great majority of the airport security regulatory requirements are operational in nature; that is, they do not dictate design, only that the airport must protect whatever has been designed by the architect and engineer. Thus, most of the regulations are entirely neutral to the various SPAS alternatives; the specific differences in how security is accomplished from one alternative to the next, or one airport to the next, are found in each airport-specific Airport Security Program (ASP). Each is designed to meet that airport's specific operational environment, physical layout, IT system, personnel requirements, financial constraints, and threat and vulnerability assessments.

While it is inappropriate to discuss the specifics of LAX's (or any airport) ASP, this section of the report will suggest in a general sense how some of the regulations might apply to some of the SPAS proposals' elements. Again, none are SPAS-specific because none are beyond the conceptual planning stages yet.

During the research and review process, the SPAS assessment report authors were provided access to the June 2011 report of the Mayor's Commission[5]. The authors reviewed the entire Mayor's Commission report regarding LAX-specific security issues and concerns, and although the subjects ranged from truly security related issues to administrative, training, operational and political concerns, we found none of them to be relevant to the SPAS proposals except in a few very peripheral instances (e.g., concerns about resulting CTA congestion). We are confident those concerns are addressed where relevant throughout this SPAS security assessment.

The Mayor's Panel also cited RAND Corporation reports which determined that "many of the major terrorist scenarios at LAX involved attacks on the non-secure public areas of the airport." Regarding physical security measures at LAX, the Panel noted that "TSA's standards are the minimum requirements for all airports, and they are not sufficient for an airport as large as LAX in the middle of a large urban area." This does not mean that LAX meets only the minimum requirements; but rather, that the TSA requirements are the minimum threshold, above which LAX can and does considerably exceed.

From their statement, it is not clear that the Panel or the Commission ever read the ASP. TSA has no specific technical standards for airports; the regulations are generic and non-specific performance standards that outline the responsibilities of an airport to implement an airport security program (ASP) appropriate to its own physical and operational environment. They provide a performance goal that the airport may meet by any means it deems appropriate. There is additional secondary TSA and industry guidance available that helps the airport through the decision-making and design process, but ultimately it is the airport-written ASP that drives all security-related functions. There is no shortage of experience and best-practices guidance available inside LAWA and throughout the industry, but whatever avenues the airport chooses to travel in its ASP must first be approved by TSA.

TSA's minimum requirements are not related to the size of an airport, but to the extent and quality with which they address any perceived threats and vulnerabilities, and are operationally implemented throughout the airport's facilities. There are often instances where less may be the better choice, particularly where limited resources might then be deployed to areas of greater need. As outlined elsewhere in this report, 100% security at an airport cannot even be defined, much less attained.

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[5] Report of the Mayor's Blue Ribbon Panel on Airport Security, City of Los Angeles, by letter of June 20, 2011

Further, for purposes of economic planning, there is a need for a continuing review of all priorities - not just a one-time risk assessment of changing security and safety requirements, but all other operational, maintenance and other airport funding needs as well. Funding is always limited, and often favors certain non-security applications.   Indeed, advanced security planning should prepare for an airport shutdown from a variety of incidents and single points of failure of smaller dimensions than a VBIED attack, whether originating on or off the airport property. One example might be a cyber-attack from external sources that shuts down the airport IT system and/or power grid.

PART 1542—AIRPORT SECURITY - The regulations are not considered Sensitive Security Information (SSI) because they are generic and non-specific; they outline the responsibilities of an airport to implement an airport security program (ASP). They indicate the goals an airport must pursue in their security implementation e.g., protect the perimeter. The individual ASP must then be specific about how those goals are achieved at each individual location. The content of the ASP is considered SSI.

TSR §1542 Airport Security: no specific SPAS impact. Clearly, the selected brief explanations below are general in nature; they are intended simply to illustrate that every SPAS alternative inside the airport boundaries would be introduced into existing security related areas under existing security regulations and processes, governed by the existing TSA-approved ASP that is constantly monitored and tested by TSA. The regulations would have little-to-no substantive impact on the proposed alternatives, nor would any of the proposals cause meaningful changes in the LAX security policies and procedures, beyond some administrative costs and personnel requirements, and relatively common on-going adjustments to the ASP as any element reaches the operational stages. With a security perspective seated at the planning and design table, it becomes a relatively straightforward process to provide relevant security-related input at the outset, rather than expensive retrofits after the fact.

For SPAS projects outside the airport (dedicated transitway, parking, ITF, ConRAC, etc.), TSA has no regulatory jurisdiction, although there are likely to be some technology and operational impacts. For example, if video surveillance is to be included at the out-lying facilities, it should be integrated with the existing monitoring systems, law enforcement response may be required at various points along the route, and the transition from APM or busway arrival at the CTA curbside begins to touch upon TSA areas of concern.

TSA Regulations

The main parts of the TSA regulation are summarized as follow.[6]

Subpart A—General

§ 1542.3   Airport security coordinator.

- Each airport must have a designated person(s) responsible for security oversight

§ 1542.5 Inspection Authority

- TSA can inspect at any time

Subpart B—Airport Security Program - outlines the manner in which the ASP will be structured, what elements of security shall be addressed (the "how" is addressed within the ASP), and certain requirements for security oversight regarding airline and commercial tenants of the airport.

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[6] For the digital reader seeking full text of the TSA regulations, links to the full civil aviation security series can be found on the TSA web site at http://www.tsa.gov/research/laws/regs/editorial_multi_image_with_table_0203.shtm

§1542.103 Content of Airport Security Program

- Lists 21 elements which must be addressed in the ASP

§ 1542.105 Approval and Amendments

- Outlines the official process for changes in the ASP to occur

§ 1542.107   Changed conditions affecting security.

- When an airport makes changes *that affect security*, the ASP must reflect those changes.

§ 1542.111 Exclusive Area Agreements

- In some cases, an airline may accept certain security responsibilities within its own operational areas

§ 1542.113   Airport tenant security programs.

- Some non-regulated tenants may also implement their own security systems or procedures

Subpart C—Operations - provides guidance on what items must be spelled out in the ASP, such as the boundaries of security-related areas, the access control systems, identification media, law enforcement support and training. Again, the regulations state what goals must be achieved; the individual airport ASP spells out how that is accomplished locally. While none of these have direct SPAS relevance, most of the various SPAS plans proposed for inside the airport perimeter are located in areas that are already a part of the airport security program, and would not change substantively under any of the alternatives. Some of the measures such as expansions of existing infrastructure beyond the perimeter such as the busway, APM, ITF, parking, ConRAC, etc., may require additional cameras, access controls and other supporting IT systems, but those elements located outside the airport perimeter generally fall outside TSA jurisdiction.

The three principal security-related areas of any airport are:

§ 1542.201   Security of the secured area. Generally where the aircraft load and unload;

§ 1542.203   Security of the air operations area (AOA).- Runways, other areas away from the terminal;

§ 1542.205   Security of the security identification display area (SIDA). - Areas of the airport where only authorized persons are allowed, and security identification must be displayed at all times.

§ 1542.207   Access control systems. Requiring all security related doors to be locked;

§ 1542.209   Criminal history records checks (CHRC). Requiring background checks on all employees;

§ 1542.211   Identification systems. To be certain only authorized persons are in secured areas;

§ 1542.213   Training. So that all persons understand and exercise their security responsibilities;

§ 1542.215   Law enforcement support. To act as a deterrent and to provide adequate response to any security or safety related event

Subpart D—Contingency Measures – These deal with the airport's plans when irregular operational events (IROPS) occur; these might be security related, weather driven, systems failures, accidents, etc. There is also a universal process mandated by FAA that airports have a National Incident Management System (NIMS) plan in place; the ASP security processes support the NIMS approach and the Airport Emergency Plan (AEP).

There are regulatory requirements similar to §1542 in place for domestic and foreign aircraft operators and for freight forwarders; they are all coordinated with the airport security program. The security regulations do not address the specifics of each airport's ASP, how the airport carries out its operations, how to respond to emergencies, etc.; that guidance is provided in other airport-specific policy and procedures documents.

We also note that such security-related operational, procedural, and organizational issues are extensively treated in the Mayor's Blue Ribbon Panel Report; they are not an issue for the ASP, and are not SPAS related. Where the SPAS alternatives may add or modify new or existing facilities, only descriptive changes to the ASP are required, i.e., adding new buildings, new door controls, boundary descriptions, etc.

In summary, the TSA airport security regulatory requirements currently in place simply provide a common structure in which every airport must address its own local operational and threat/risk environment in its ASP. The oft-quoted security industry maxim is "when you've seen one airport, you've seen (only) one airport", because each is different in its user requirements. There is nothing in the LAX physical and operational environments or in the SPAS alternatives that cannot be fully accommodated under the current security regulations, and for the most part, current ASP status. The ever-present caveat is that some approaches may be relatively simple, straight-forward and cost-effective, while others may potentially involve extreme costs in labor, maintenance, training, infrastructure replacement or modifications, operational disruption, public customer inconvenience and dissatisfaction, and pressures from external stakeholders. Security may be "risk-based" or "threat-driven", but the criteria for those conditions, and the sources that drive them, can often change overnight.

b. The Airport Security Program (ASP)

As outlined above, the ASP is a TSA-mandated document that captures the intent of the general regulations in airport-specific policies, procedures, systems and design. The ASP describes in considerable detail the boundaries of each security-related area, how the airport will protect the perimeter, implement access controls, surveillance and ID media, maintain the security of various protected / restricted areas, and provide law enforcement services and response, among other issues. LAX has a fully implemented, TSA-approved ASP addressing the airport-specific security considerations in place throughout the LAX environment.

"Never tell people <u>how</u> to do things.

Tell them <u>what</u> to do and they will surprise you with their ingenuity."

Gen. George S. Patton

This maxim holds true at airports because it recognizes that local security personnel know their strengths, weaknesses and general vulnerabilities and capabilities better than any Federal bureaucrat. Although written by the airport, the ASP is still a regulatory document, approved by and enforceable by TSA. It addresses each element of the regulatory requirements in a standardized format. It is important to note that in general, most airports tend to keep the specifics of such self-imposed requirements to a minimum in the ASP. Those airports regularly provide additional, often broader security services and infrastructure, sometimes unique to the local environment.

The point is that if certain activities remain outside the regulatory requirements that are spelled out in the ASP, they remain a local option, not enforceable by TSA. An airport can always do more than the ASP requires, but never less. This is an important consideration, and there can be significant consequences where there are budgetary and personnel constraints, or where the threat environment exhibits significant changes.

Regarding the SPAS Alternatives, there do not appear to be any security-related elements that would require anything more than relatively straight-forward adjustments to the ASP; virtually all of the SPAS alternatives have little or no impact on existing TSA requirements, with only a few marginal exceptions that are already addressed in this report.

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Los Angeles World Airports

Specific Plan Amendment Study (SPAS):

A Security Assessment

SECTION 3

3. Threats, Risk, and the Operational Environment

The report will postulate various generic threat scenarios found in non-Sensitive Security Information (SSI) open sources, what actions might prevent or mitigate loss from those threats (decrease vulnerabilities) , and discuss the consequences of those theoretical vulnerabilities.

There are seven basic steps to a threat/risk assessment, and as suggested Figure 3.1 below, it is not a one-time event, but a continuing cyclical process designed to suggest an optimal outcome when numerous interactive variables are in play. We are not performing all these steps in reviewing the SPAS alternatives, but it is useful to understand the process. This report resides primarily in the 4th "impacts" box (for each of the nine alternatives), with some limited analysis of boxes #5, #6, and #7. No matter how good one's choice of paths in terms of operational requirements, safety and security considerations, and regulatory compliance, one must consider whether it is affordable, now and in the future, or in some cases, whether the choice at hand may actually limit how future security requirements can evolve without extensive retrofit and cost implications.
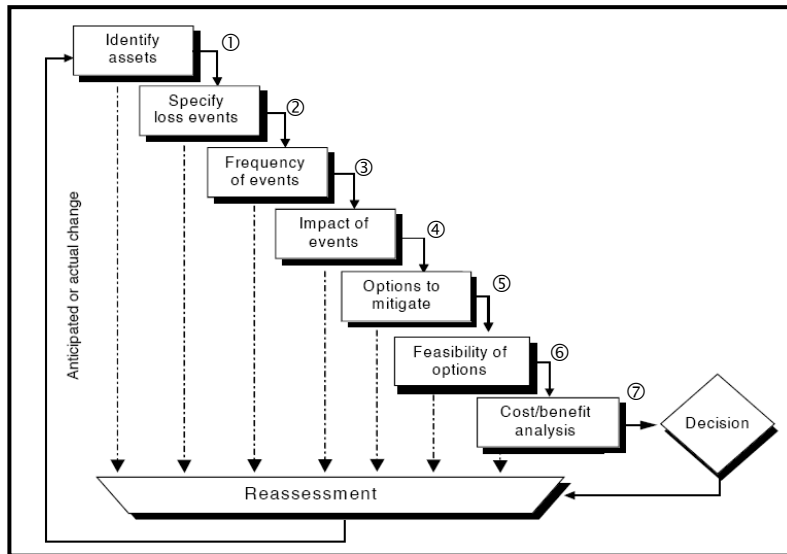
3.1 - Conceptual Security Assessment Process

Scenario Analyses

Scenario analysis requires an interpretive methodology that encourages role-playing by transportation personnel, emergency responders, security specialists, and intelligence sources to brainstorm ways to attack the system. By matching theoretical threats to critical assets, the process can identify the capabilities required to meet specific types of attacks. This activity promotes awareness and highlights those activities that can be performed to recognize, prevent, and mitigate the consequences of attacks. Figure 3.2 below list examples of potential threats to airports.

Assets	Selected Examples of Threats

Airfield Assets	o Explosives detonated in/near fuel facilities
	o General over/through the fence threats
	    • VBIED threats
	    • Hijack attempt by perimeter intrusion

Terminals	o High Yield vehicle bomb at terminal curbside o Low yield explosive device in terminals o Hijacking, hostage or barricade situation in/thru terminal o Chemical, biological or nuclear release in terminal o Secondary explosive directed at emergency responders
Ground Access	o Armed assault at passenger congestion points o Sabotage at passenger bus or rail facilities or pathways o LVIED detonation in parking garages adjacent to CTA
Security Operations Centers	o Physical or cyber-attack on dispatch system o Armed assault, hostage or barricade situation o Explosive device in/near Operations Control Center o Sabotage of vehicle or maintenance facility

Figure 3.2 - Selected Examples of Potential Threats to Airports

There are varieties of possible external and internal threat scenarios that affect the security assessments, drawn from various LAWA planning documents, and public sources. These include the previously noted VBIED external attacks in the CTA complex as well as against remote facilities and related transportation assets such as APMs and elevated roadways. MANPAD attacks against aircraft are also the subject of periodic TSA reviews, as noted in the Mayor's Commission Report; as are rocket-propelled grenades (RPGs) launched from outside the airport perimeter; active shooters; explosives in backpacks or other carry-on baggage; chemical and biological agents carried in baggage, or "dirty" radiological charges which could close the airport and surrounding area for a considerable period of time.

Another threat category, also addressed by the Mayor's Blue Ribbon Panel Report, is cyber security terrorism, a variation of the insider threat and one for which the Report assigns primary responsibility to the LAWA IT Management Group (ITMG).   Cyber security is not part of our assessments, but it is clearly an issue which any plan for improved airport security must address. For example, no matter which Alternative elements are ultimately selected, a cyber-shutdown, just like a well-positioned VBIED or other explosive device, could affect the entire airport power system, including access controls, surveillance capabilities, screening checkpoints, APM service, terminal lighting, parking lot egress, runway lights, etc. However, should any such major occurrence come to pass, the entire airport is likely to shut down for an undetermined recovery period, no matter what alternative precautions have been designed into the system.

The FBI recommends that transportation systems focus on the top 10 percent of identified critical assets at a minimum, although the identification and prioritization of those assets is in itself a highly complex local governmental issue. That can be made significantly more complicated if the threat information and the response directives are driven at the national level.   Transportation security personnel should explore the most likely threats, considering the range of attack objectives and methods that may be used (such as disruption of traffic, destruction of bridge or roadway, airborne contamination, hazardous materials accident,

and threat or attack with explosives intended to disrupt or destroy). For each scenario, airport planners should attempt to identify the costs and impacts using a standard risk level matrix, which supports the organization of consequences into categories of high, moderate, and low.

Consequences are assessed as much more than simply "damage/injury – yes/no"; they are assessed both in terms of probability of loss and extent of numerous operational and economic significances for a given threat scenario, as well as cost and time for operational recovery.

To what extent a threat might be realized is both a function of access to intelligence information and known countermeasures to mitigate the threat. Quantitative measures of the success of countermeasures can be obtained by test results, observations, and other means such as "Delphi" expert analyses. One example of estimating the vulnerability of a critical asset is represented by the Relative Risk (RR) formula:

$$RR = TA * Mlo * SV$$

- TA indicates the target's relative attractiveness (importance & consequences)
- Mlo includes response efforts and Likelihood of Occurrence (intelligence)
- SV is Overall Scenario Vulnerability

Each threat scenario assessment of an asset must be analyzed against the elements of the formula resulting in a ranked list of threats to be addressed in their order of highest probability and consequence of success, and must recognize that each element of the formula is a highly subjective value.

THREAT SCENARIOS

For the purpose of this public report, a detailed list of high probability threats and significant vulnerabilities is not provided. However, a compilation of threats and possible countermeasures is provided for each of the improvement categories described above.[7]

a. **Airfield Improvement Scenarios**

- Improvement: Runway relocations and extensions. Scenario: Target is aircraft on runway. Potential attack methods are high caliber sniper, RPG, MANPADS, and fence or access post breach with LVIED.

Security Assessment Compared to Existing Facilities	Potential Countermeasures	Change to Relative Risk
Target closer to public roads and highways	Rapid LEO response to suspect vehicles, "smart" video on fence line, sally port at gates nearest highway, Intrusion alarms on fence line	Due to the infrequency of such attacks, counter-measures would only slightly lessen the risk. MANPAD attack deterrence is a separate vulnerability analysis performed by appropriate agencies.
Reduced distance to target		

Summary of Changes in Relative Risk by proposed Airfield Improvements

- Relocating runways and taxiways closer to public areas provides shooter with easier target acquisition.
- Time-To-Target through fence or gate breach is reduced.

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[7] Elements of the LAX TSA-approved Airport Security Plan, such as employee background checks, access controls, and LEO response capabilities will not be discussed. Only those proposed changes described in the SPAS Alternatives are reviewed.

b.   Terminal Improvement Scenarios

Improvement: Construction of new terminals, with or without vehicle access in CTA.

Scenario: Assumes no passenger and baggage security measures applied prior to CTA arrival

Potential attack methods are:
- Non suicide IED in CTA
- Suicide IED in CTA
- Non suicide CBR device in CTA[8]
- Suicide CBR device in CTA
- Terminal Assault[9]

Security Assessment Compared to Existing Facilities	Potential Countermeasures	Change to Relative Risk
Removal of parking garages near the CTA will decrease possibility of LVIED affecting it.	Establish remote parking facilities	Decrease the vulnerability
Curtail vehicle access to CTA will decrease possibility of LVIED affecting it.	Remote parking with bus or APM access to CTA	Decrease vulnerability of curbside LVIED
IED or CBR device carried into CTA remains the same	None if no passenger screening or other security measures occur at remote passenger access points	No change

Summary of Changes in Relative Risk by proposed Redevelopment of Central Terminal (no upstream passenger and baggage screening)
- Remote processing of passengers and vehicles; will only reduce CTA congestion curbside, but will not provide additional security.
- Establishment of the Ground Transportation Center (GTC), Intermodal Transportation Facility/Center (ITF/ITC), and Consolidated Rent-A-Car facility (ConRAC) will provide increased target attractiveness to additional passenger congestion points.

c. Ground Access Improvement Scenarios

- Development of GTC, ITC, ITF, ConRAC, parking, dedicated transit system *with* vehicle inspection.

Potential attack methods are:
- Non-suicide LVIED curbside
- Suicide LVIED curbside

Security Assessment Compared to Existing Facilities	Potential Countermeasures	Change to Relative Risk
Limiting vehicular access to CTA will reduce vulnerability to LVIED curbside.	Screening (physical or driver/vehicle screening, either random or 100%)	Significant decrease

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[8] CBR Device – Chemical, Biological, Radiological dispersal mechanism
[9] Similar to Rome and Vienna Airport attacks on December 27, 1985, using automatic weapons and grenades.

<u>Summary of Changes in Relative Risk by proposed Ground Access Improvements *with* vehicular inspection prior to entering CTA</u>

- Performance of any appropriate security measures and procedures would reduce the relative risk of the above scenarios to a degree commensurate to the effectiveness of their performance.

d. Operational Environment

Airport Security Practices

- A recent TSA study by the Homeland Security Institute contains a wide range of best practices resulting from a nationwide survey of airports – on the order of 700 various best practices reported by over 100 airports. While the great majority would have little direct relevance to the SPAS alternatives under review, it is nonetheless a valuable resource for airports to discover how other airports have addressed a broad array of security concerns.[10]

- The table below, showing potential airport security measures, is derived from that HSI report, lists a number of possible threat reduction measures for various types of security concerns. It is by no means intended to be comprehensive; it simply provides a very basic and generic menu of measures that are common throughout the airport industry, some of which are mentioned elsewhere in this assessment, and many of which are already in place at LAX.

PERIMETER PROTECTION	TERMINAL FRONT AND PUBLIC AREA
Fence height (up to 10 feet)	Bollards (including benches, rails, planters)
Razor wire tops	Jersey barriers
Crash-rated fencing	Road design
Cable safety system	Vehicle inspection plaza
Bollards	Blast setback
K-12 rated barriers	Blast barriers or landscape berms
Increased patrols	Increased LEO patrols
	Pax/baggage screening pre-terminal entry
INTRUSION DETECTION	Curbside restrictions
CCTV	Random vehicle inspection
Motion, vibration, thermal sensors	
Intelligent video	SUSPICIOUS ACTIVITY DETECTION
Buried cable sensors	Monitoring, suspicious object detection
Microwave fence sensor	Video analytics
Fiber optic cable	
Airport Surface Detection Equipment (ASDE)	VEHICLE INTRUSION
Thermal imaging camera	Permit-only vehicle at curbside
	Vehicle inspection plaza
ACCESS CONTROL	Under vehicle video
Card readers	Anti-piggybacking alarm (personnel and vehicle)
Electronic locks (fixed and mobile)	GPS tracking of vehicles on AOA
Automatic suspension of in active card	Suspicious activity training/reporting
Biometrics (fingerprint, hand geometry, Iris)	Behavioral pattern recognition
Sally ports (vehicle and personnel)	

[10] The report is available on the TSA secure web site: "Commercial Airport Innovative Security Measures," [SSI] -TSA, March 2011, by the Homeland Security Institute, HSI Publication No. RP09-11-05

Note that the selection of any combination of these procedures and/or technologies as a proposed solution to a given threat is, at this juncture, generic and conceptual at best; they are merely a menu of ideas from which to proceed with the risk reduction planning process.

- Airport guidance for security practices should include a thorough consideration of TSA's "Recommended Security Guidelines for Airport Planning, Design and Construction," ICAO Annex 17 and Document 8973, "Security Manual for Safeguarding Civil Aviation," and others. While not SPAS-related, they represent the cumulative experience of government and industry over several decades, and provide concepts for long range planning in the LAX international aviation environment.

e.   Intermodality

The various SPAS alternatives also have a series of intermodal implications, beginning at the facilities that connect to regional rail, local buses and airport transportation lines, as well as surface transportation to the CTA and parking facilities, a public roadway tunnel that passes beneath active taxiways, and trucking and other cargo acceptance facilities which, though not SPAS-specific, can nonetheless affect the positioning, design, and access to other facilities.

Further, intermodality in many cases may include such things as remote check-in transfers from hotels or cruise ships. While this also falls outside the SPAS parameters, it is worth mentioning in the context of how remote screening might apply in the future at LAX for the dedicated transit system, ConRAC, off-site parking, GTC, the ITC or ITF.

f.   Other Facilities

1) Ground Transportation Staging Area (GTSA)

GTSAs may present some unique security and safety concerns, and should be addressed in the planning and design phases. The U.S. Department of Transportation has developed security design guidelines for rail, bus, and other types of ground transportation systems that parallel the contents of the TSA Design Guidelines document. Various DOT transportation design documents are also available[11] with much useful information for airport planners and designers.

2) Intermodal Transportation Area

As cities and airports expand, mass transit systems are increasingly being integrated into the airport access scheme. The dedicated transit system will act as a circulator to and from the ConRAC, ITF/ITC, the regional rail station, CTA, and possible other locations, using elevated infrastructure with intermittent airside sight lines. Alternative modes for moving people in and out still must be retained, since even under the best of circumstances there will still be maintenance downtime, power anomalies, and general operational and/or security events that will interrupt service often for significant periods, often during peak hour rushes. Even with appropriate screening or other appropriate measures in place, there remains a need to provide adequate standoff distance between the transit station and the airport airside to mitigate against use of the transit vehicle as a delivery device for explosives or other weapons.

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[11] "Transit Security Design Considerations" published by the Volpe National Transportation Systems Center, U.S. DOT, November 2004

3) Rental Car and Vehicle Storage Areas

Rental car storage areas are normally landside. Under some of the SPAS Alternatives, a ConRAC is proposed to be well removed from the CTA complex. However, as these areas still require standard security features such as fences and gates, access control and CCTV systems, the design considerations for equipment, infrastructure and/or alarm response comparable with those of the airport should be made. Where these areas are located adjacent to security areas or fencing, then bollards, curbing or other structures should be planned to prevent vehicles from being parked in locations that would violate security clear zones. The requirement to maintain this security perimeter may also need to be incorporated into the respective tenants' lease agreements.

Los Angeles World Airports

Specific Plan Amendment Study (SPAS):

A Security Assessment

SECTION 4

4. Security Assessments

Analysis of SPAS Alternatives

For the purpose of this analysis, the proposed facility security changes to LAX are grouped into three major categories:

- Airfield Improvements
- Terminal Improvements, and
- Ground Access Improvements

A synopsis of changes for each category, compared to existing LAX facilities, is summarized below. Additional details and graphic exhibits of each Alternative are contained in Appendix 4.

a. **Airfield Improvements, in various configurations depending on the Alternatives:**

Changes to the runways, taxiways, navigational aids, and service roads associated with the North Airfield.

- Center taxiways between both the North and South pairs of runways provide additional protection against runway incursions and improves operational effectiveness.

- New airfield facilities designed to better meet FAA's airfield design standards and safety area requirements.

- Group 5 + 6 (new large aircraft) are accommodated on the North runways and on taxiways leading to Group 5 + 6 designed gates.

- North and South airfield usage is better balanced by lengthening the North departure runway.

- Full-length parallel taxiways provided for improved aircraft maneuvering and reduced taxi times.

None of these SPAS-related airfield changes have significant security implications beyond perhaps changing proximity to public roads and airport perimeters. They are nonetheless listed here to note their safety and operational characteristics, and to better identify the key elements of the various alternatives, one-by-one, to be certain each is considered on its own security merits. As detailed elsewhere in this report, most airport-related threats and vulnerabilities are typically focused in/near the terminals and other "people-processing" facilities, where we shall maintain a primary focus.

b. **Terminal Improvements, in various configurations depending on the Alternative:**

Changes are proposed to concourses/gates at/near Terminals (T) 1-3, with potential extensions at the Tom Bradley International Terminal (TBIT), and the planned Midfield Satellite Concourse (MSC). This is also known as the Redeveloped Central Terminal Area (CTA).

- Provides security at the processing areas, the FAA air traffic control tower, aircraft parking, the Central Utility Plant and some isolation throughout the core of the airport from the effects of an explosive-laden vehicle.

- Off-airport facilities encourage use of transit alternatives and reduce the number of private vehicles traveling to the airport or in the CTA.

c. **Ground Access Improvements, in various configurations depending on the Alternative:**

The following discusses changes to airport and off-airport roads, addition of specific transportation facilities, development of dedicated access (i.e., busway or Automated People Mover [APM]) into Central Terminal Area (CTA), and changes in parking.

- Ground Transportation Centers

  o (GTC) Primary access center for most private and commercial vehicles, with provisions for passenger drop-off and pickup and private vehicle parking, may access an Automated People Mover (APM) service to the CTA and may provide for screening passengers and baggage.

  o Intermodal Transportation Facility/Center (ITF/ITC) , connecting points between the airport and remote facilities which may include the Green Line, regional bus service, provisions for public parking and curbside for charter, regional, and other buses, etc.

  o Consolidated Rental Car Facility (ConRAC) to consolidate all on-airport rental car functions in one area and provide dedicated conveyance to the Central Terminal Area.

- Airport Roadways

  o Access to airport passenger and parking facilities from multiple locations including access to I-105 and I-405 freeways.

  o Airport roadways are grade separated to allow free flow to curb frontages and parking structures

- Automated People Mover (APM)/Consolidated Bus System

  o Provides dedicated access to the CTA, trains and buses to accommodate rolling luggage and baggage carts and travel on elevated structures.

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Los Angeles World Airports

Specific Plan Amendment Study (SPAS):

A Security Assessment

SECTION 5

5. SPAS Alternatives

The key security features of the SPAS Alternatives are:

- Dispersing vehicles and people to remote sites,
- Reducing vehicle traffic entering the CTA,
- Enhanced security measures applied to air travelers and their baggage at remote ground transportation sites.

Screening travelers by various appropriate measures at remote ground transportation sites can also further improve security. The extent to which it is needed depends on the perceived threats that exist from day to day, and new or expanded threats that might exist through 2025.

Passenger screening or other appropriate measures at remote sites is intended to decrease the vulnerability of the proposed remote facilities and the people who use them, as well as the means of transporting them to the terminal, such as an APM. It will not replace TSA screening of passengers and their baggage at CTA terminals. TSA screening includes Explosives Detection Systems (EDS) and whole-body imaging, Explosives Trace Detection and other types of advanced technology-based inspections necessary to assess any anomalies. It is costly, labor intensive, requires staff to operate and maintain the screening facilities, and introduces a large component of legal liability.

The extent of screening for explosives and weapons to be employed in any of the SPAS alternatives depends on the status of the technology at that time, the practicality of the technology and especially its passenger throughput statistics, security equipment, infrastructure, cost and maintenance, as well as passenger acceptance.

For purposes of assessing the implications of SPAS alternatives, remote screening is an operational function, not dependent on design of the facility, and as used herein is equivalent to using the term "appropriate screening or other security measures". These can encompass a variety of procedural measures that can change from day to day according to the perceived threat and operational conditions. The security technology to be employed at remote facilities under the SPAS Alternatives is generally anticipated to be less intrusive and detailed than the screening of departing passengers and baggage performed by the TSA.

From this programmatic description, it may be that in today's environment, advanced technology x-ray inspection and walk-thru magnetometers will suffice for measures appropriate to remote facilities, along with behavioral observation, closed-circuit television (CCTV) and security patrols. However, any new remote facilities should anticipate accommodating higher levels of security measures in future years to meet new and/or expanded threats, and the possibility of using contractors that meet TSA standards for checkpoint screening, as is now performed at 17 U.S. airports.

a. **Alternative 1 – Move Runway 6L-24R 260 feet North, Add Terminal Zero, Elevated Busway Serving an ITF and Parking**

This alternative relocates Runway 6L/24R 260 feet north, adds a centerfield taxiway, extends Runway 6R-24L, improves Taxilane D and Taxiway E, and relocates the service road. Terminal improvements include addition of new Terminal 0, loss or modifications to concourse areas and/or gates at T1, T2, and T3, and the modification and northern extension of concourse area and gates at TBIT and the future Midfield Satellite Concourse. Ground access improvements include modification of SkyWay (the primary access road connecting the CTA to southbound Sepulveda and the 96th Street bridge); an ITF at 98th Street and Aviation Boulevard; a dedicated transitway, in the form of an elevated busway along 98th Street with a bridge over Sepulveda Boulevard and stops at Manchester Square (future surface parking); a future Metro LAX/Crenshaw Light Rail Transit Station at/near Century and Aviation Boulevards, the ITF, the CTA, and the relocation of Lincoln Boulevard, a portion of which would be below grade. [12]

Security Assessment Compared to Existing Facilities	SPAS Alternative 1	Potential Security Measures
Airfield Improvements		
• Increases airport security.	• Northern perimeter road grading and below-grade road sections.	• Potential for reducing fields of fire depending on construction details.
• Decreases airport security.	• Relocates Runway 6L-24R and taxiways extensions closer to perimeter fences and to adjoining public roads, decreasing setback distances.	• Additional video surveillance with video analytics and object tracking. • Intrusion detection measures including ground surveillance radar and fence sensors (fiber optic, buried magnetic cable, microwave beams). • Increased perimeter patrols.
• Neutral compared to existing facilities.	• Taxiways, service roads and navigational aids.	• Additional video surveillance with video analytics and object tracking.
Terminal Improvements		
• Increases airport security.	• None	• For new Terminal Zero, security bollards and increased separation of terminal from roadway.
• Decreases airport security.	• A new terminal facility is closer to an entry roadway.	• Curbside inspection of passengers and baggage arriving on shuttles and buses from remote sites that do not have screening capabilities. • Additional video surveillance with video analytics and object tracking.
• Neutral compared to existing facilities.	• Re-configured concourses.	• Additional video surveillance with analytics and object tracking.

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[12] The existence of the new Metro station at Century/Aviation is part of L.A. Metro's "Crenshaw/LAX Corridor" light rail project and is not a feature of SPAS.

Alternative 1 – Move Runway 6L-24R 260 feet North, Add Terminal Zero, Elevated Busway Serving an ITF and Parking [CONTINUED]

Ground Access Improvements		
• Increases airport security.	• New ITF and remote parking with dedicated transitway reduce vehicle traffic into the CTA.	• Appropriate screening measures for passengers and their baggage. • Vehicle inspection measures at the ITF including under vehicle inspection. • Physical protection of the ITF including vehicle barriers and bollards, and blast suppression films on exposed glass surfaces. • Additional video surveillance with video analytics and object tracking. • Increased patrolling of the CTA and the new facilities.
• Decreases airport security.	• None	• None
• Neutral compared to existing facilities.	• Re-designed entry roadways. • Parking facilities.	• In-road traffic calming measures to control traffic entering the CTA. • Additional video surveillance with video analytics and object tracking.

b. Alternative 2 – No Increase in Runway Separation, Add Terminal Zero, and Elevated Busway Serving an ITF and Parking

This Alternative involves no lateral movement of existing runways and no addition of a centerfield taxiway, but adds/modifies high-speed exits from Runway 6L/24R. All other aspects of this alternative would be essentially the same as those of Alternative 1, described above, with the exception of Lincoln Boulevard, which would not be relocated.

Security Assessment Compared to Existing Facilities	SPAS Alternative 2	Potential Security Measures
Airfield Improvements		
• Increases airport security.	• None	• None
• Decreases airport security.	• Runway extensions decrease setback distance from the perimeter roads.	• Additional video surveillance with video analytics and object tracking. • Intrusion detection measures including ground surveillance radar and fence sensors (fiber optic, buried magnetic cable, microwave beams). • Increased perimeter patrols.
• Neutral compared to existing facilities.	• Taxiways, service roads, nav-aids.	• Additional video surveillance with video analytics and object tracking.
Terminal Improvements		
• Increases airport security.	• None	• For new Terminal Zero, security bollards and increased terminal /roadway separation
• Decreases airport security.	• A new terminal facility is closer to an entry roadway.	• Curbside inspection of passengers and baggage arriving on remote shuttle buses • Additional video surveillance with video analytics and object tracking.
• Neutral compared to existing facilities.	• Re-configured concourses.	• Additional video surveillance with video analytics and object tracking.
Ground Access Improvements		
• Increases airport security.	• New ITF and remote parking with dedicated transitway reduce vehicle traffic into the CTA.	• Appropriate screening measures for passengers and their baggage. • Vehicle inspection measures at the ITF including under vehicle inspection. • Physical protection of ITF: vehicle barriers, bollards, blast suppression films on glass. • Additional video surveillance with video analytics and object tracking. • Increased patrolling of the CTA and the new facilities.
• Decreases airport security.	• None	• None
• Neutral compared to existing facilities.	• Re-designed entry roadways. • Parking facilities.	• In-road traffic calming measures to control traffic into the CTA. • Additional video surveillance with video analytics and object tracking.

c. Alternative 3 – Existing Master Plan, including Moving Runway 6R-24L 340 feet South

This alternative is the CEQA "No Project" Alternative, and contains all components of the Master Plan, including the "Yellow Light Projects" and associated improvements. Airfield improvements include extending Runway 6L-24R, relocating Runway 6R-24L 340 feet south, and other runway and taxiway changes. Terminal improvements include demolition of the concourses/gates at T1, T2, and T3 and replacement with a new linear concourse, elimination of the northernmost gates at TBIT, and replacement of the existing CTA parking structures with new passenger processing terminals. Ground access improvements include closure of the CTA to private vehicles; development of a Ground Transportation Center (GTC) at Manchester Square, an Intermodal Transportation Center (ITC) at Continental City with a pedestrian bridge to the existing Metro Green Line Station, a Consolidated Rent-A-Car (ConRAC) facility at Lot C; Automated People Mover (APM) systems to link the ITC, ConRAC, and CTA and link the GTC and CTA; construction of new on-airport roads east of and parallel to Aviation Blvd; and construction of a West Employee Parking facility. There would be no modifications to Lincoln Boulevard under this alternative.

Security Assessment Compared to Existing Facilities	SPAS Alternative 3	Potential Security Measures
Airfield Improvements		
• Increases airport security.	• None	• None
• Decreases airport security.	• Runway extensions decrease setback distance from the perimeter roads.	• Additional video surveillance with video analytics and object tracking. • Intrusion detection measures including ground surveillance radar and fence sensors (fiber optic, buried magnetic cable, microwave beams). • Increased perimeter patrols.
• Neutral compared to existing facilities.	• Taxiway service roads and navigational aids.	• Additional video surveillance with video analytics and object tracking.
Terminal Improvements		
• Increases airport security.	• New terminals. • New passenger processing facilities in the CTA.	• Curbside inspection of passengers and baggage arriving on shuttles and buses from remote sites without screening capabilities. • Passenger and baggage screening facilities in the new terminals. • Multi-lane Vehicle Inspection Center (VIC) to screen all incoming vehicles. • Radiation and chem-bio detection capabilities at the VIC. • At a site remote from the CTA and the Security Identification Display Area (SIDA), a Remote Delivery System for inspecting vendor deliveries. • Additional video surveillance with video analytics and object tracking.
• Decreases airport security.	• None	• None
• Neutral compared to facilities.	• FlyAway curbside access for passengers and their baggage.	• Curbside inspection of passengers and baggage arriving on shuttles and buses from remote sites without screening capabilities. • Additional video surveillance with video analytics and object tracking.

Alternative 3 – Existing Master Plan, including Moving Runway 6R-24L 340 feet South [CONTINUED]

Ground Access Improvements		
• Increases airport security.	• Remote GTC, ITC, and ConRAC with APM dedicated transitway access reduce vehicle traffic into the CTA.	• Passenger and baggage screening facilities in the new GTC and ConRAC. • Vehicle inspection measures at the GTC, ITC and ConRAC including under vehicle inspection. • Physical protection of the GTC, ITC and ConRAC including vehicle barriers and bollards, and blast suppression films on exposed glass surfaces. • Additional video surveillance with video analytics and object tracking. • Increased patrolling of the CTA and the new facilities.
• Decreases airport security.	• None	• None
• Neutral compared to facilities.	• New parking facilities.	• Additional video surveillance with video analytics and object tracking.

d.   Alternative 4 – Extend 6R-24L Plus Add ConRAC and Parking

Under this Alternative, none of the Yellow Light Projects or alternatives would be constructed. Only ongoing or reasonably foreseeable non-Yellow Light Projects would be developed, such as an extension to Runway 6R-24L east. In addition, a ConRAC at Lot C would be constructed and a new parking structure would be developed at the Continental City site.

Security Assessment Compared to Existing Facilities	SPAS Alternative 4	Potential Security Measures
Airfield Improvements		
• Increases airport security.	• None	• None
• Decreases airport security.	• Runway extension decreases setback from perimeter roads.	• Additional video analytics, object tracking. • Intrusion detection measures including ground surveillance radar, fence sensors (fiber optic, buried cable, microwave). • Increased perimeter patrols.
• Neutral compared to existing facilities.	• None	• None
Terminal Improvements		
• Increases airport security.	• None	• None
• Decreases airport security.	• None	• None
• Neutral compared to existing facilities.	• None	• None
Ground Access Improvements		
• Increases airport security.	• ConRAC reduces vehicle traffic into the CTA.	• Appropriate screening measures for passengers and their baggage. • Vehicle inspection measures at the ConRAC including under vehicle inspection. • Physical protection of the ConRAC including vehicle barriers and bollards, and blast suppression films on exposed glass surfaces. • Additional video analytics, object tracking.
• Decreases airport security.	• None	• None
• Neutral compared to facilities.	• Remote parking facility reduces vehicles into CTA.	• Additional video surveillance with video analytics and object tracking.

e. Alternative 5 - Move Runway 6L-24R 350 feet North and Add Terminal Zero

This alternative relocates Runway 6L-24R 350 feet north, extends Runway 6R-24L east, provides for other runway and taxiway changes, and provides for concourse modifications. Under this alternative, a greater portion of Lincoln Boulevard would be below grade than under Alternative 1.

Security Assessment Compared to Existing Facilities	SPAS Alternative 5	Potential Security Measures
Airfield Improvements		
• Increases airport security.	• Northern perimeter road grading and below-grade road sections.	• Potential for reducing fields of fire depending on construction details.
• Decreases airport security.	• Relocated northern runway and extended southern runway decrease setback distance to roads.	• Additional video surveillance with video analytics and object tracking. • Intrusion detection measures including ground surveillance radar and fence sensors (fiber optic, buried magnetic cable, microwave beams). • Increased perimeter patrolling.
• Neutral compared to facilities.	• Taxiway, service roads and navigational aids.	• Additional video surveillance with video analytics and object tracking.
Terminal Improvements		
• Increases airport security.	• None	• For new Terminal Zero, security bollards and increased separation of the terminal from the roadway.
• Decreases airport security.	• A new terminal facility is closer to an entry roadway.	• Curbside inspection of passengers and baggage arriving on shuttles and buses from remote sites without screening capabilities. • Additional video surveillance with analytics and object tracking.
• Neutral compared to facilities.	• Re-configured concourses.	• Additional video surveillance with video analytics and object tracking.
Ground Access Improvements	Does not apply to this alternative.	

f.   Alternative 6 – Move Runway 6L-24R 100 feet North and Add Terminal Zero

This alternative relocates Runway 6L-24R 100 feet north, extends Runway 6R-24L east, extends taxiways D and E west, and adds a centerfield taxiway. Terminal improvements include a new Terminal Zero and concourse modifications. This alternative is essentially the same as Alternative 1, with a lesser portion of Lincoln Boulevard requiring tunneling.

Security Assessment Compared to Existing Facilities	SPAS Alternative 6	Potential Security Measures
Airfield Improvements		
• Increases airport security.	• Northern perimeter road grading and below-grade road sections.	• Potential for reducing fields of fire depending on construction details.
• Decreases airport security.	• Relocated northern runway and runway and taxiway extensions decrease setback distances from the perimeter road and from adjoining public roads.	• Additional video surveillance with video analytics and object tracking. • Intrusion detection measures including ground surveillance radar and fence sensors (fiber optic, buried magnetic cable, microwave beams). • Increased perimeter patrolling.
• Neutral compared to facilities.	• Taxiway, service road and navigational aids.	• Additional video surveillance with video analytics and object tracking.
Terminal Improvements		
• Increases airport security.	• None	• For new Terminal Zero, security bollards and increased separation of the terminal from the roadway.
• Decreases airport security.	• A new terminal facility is closer to an entry roadway.	• Curbside inspection of passengers and baggage arriving on shuttles and buses from remote sites without screening capabilities. • Additional video surveillance with analytics and object tracking.
• Neutral re existing facilities.	• Re-configured concourses	• Additional video surveillance with video analytics and object tracking.

g. Alternative 7 – Move Runway 6R-24L 100 feet South and Add Terminal Zero

This alternative relocates Runway 6R-24L 100 feet south and extends it east, extends taxiways D and E west, builds a new centerfield taxiway, and provides for other changes. Terminal improvements include a new Terminal Zero and concourse reconfigurations. There would be no modifications to Lincoln Boulevard under this alternative.

Security Assessment Compared to Existing Facilities	SPAS Alternative 7	Potential Security Measures
Airfield Improvements		
• Increases airport security.	• None	• None
• Decreases airport security.	• Extending Runway 6R-24L east and D and E taxiways moves them closer to perimeter and adjoining public roads	• Additional video surveillance with video analytics and object tracking. • Intrusion detection measures including ground surveillance radar and fence sensors (fiber optic, buried magnetic cable, microwave beams). • Increased perimeter patrols.
• Neutral compared to facilities.	• Taxiway, service road, and navigational aids	• Additional video surveillance with video analytics and object tracking.
Terminal Improvements		
• Increases airport security.	• None	• For new Terminal Zero, security bollards and increased separation of the terminal from the roadway.
• Decreases airport security.	• A new terminal facility is closer to an entry roadway.	• Curbside inspection of unscreened passengers and baggage arriving on shuttles and buses from remote sites • Additional video surveillance with analytics and object tracking.
• Neutral compared to facilities.	• Re-configured concourses.	• Additional video surveillance with video analytics and object tracking.
Ground Access Improvements	Does not apply to this alternative.	

h.　**Alternative 8 – Add ConRAC, ITF, and Parking**

This alternative is limited to ground access improvements. It includes a remote ConRAC, an Intermodal Transportation Facility (ITF), and new remote parking areas. A dedicated transitway, in the form of a busway, connects the ConRAC and ITF to the CTA. Provision is included for a future remote Metro light rail station.

Security Assessment Compared to Existing Facilities	SPAS Alternative 8	Potential Security Measures
Airfield Improvements	Does not apply to this alternative.	
Terminal Improvements	Does not apply to this alternative.	
Ground Access Improvements		
• Increases airport security.	♣ New ITF and ConRAC, with a dedicated transitway reduces vehicle traffic into the CTA.	• Appropriate screening measures for passengers and baggage at ITF and ConRAC. • Vehicle inspection measures at the ITF and ConRAC including under vehicle inspection. • Physical protection of the ITF and ConRAC including vehicle barriers and bollards, and blast suppresion films on exposed glass surfaces. • Additional video surveillance with video analytics and object tracking. • Increased patrolling of the CTA and the new facilities.
• Decreases airport security.	• None	• None
• Neutral compared to facilities.	• Re-configured entry roadways.	• In-road traffic calming measures to control traffic into the CTA. • Additional video surveillance with video analytics and object tracking.

j. Alternative 9 – Add APM System Serving an ITF and ConRAC, Parking, and CTA

This alternative is limited to ground access improvements. It includes a remote ConRAC, an Intermodal Transportation Facility (ITF), and new remote parking areas. A dedicated transitway, in the form of an Automated People Mover System (APM), connects the ConRAC and ITF to the CTA. Provision is included for a future remote Metro light rail station.

Security Assessment Compared to Existing Facilities	SPAS Alternative 9	Potential Security Measures
Airfield Improvements	Does not apply to this Alternative.	
Terminal Improvements	Does not apply to this Alternative.	
Ground Access Improvements		
• Increases airport security.	• Remote ITF and ConRAC, with a dedicated transit-way reduces vehicle traffic into the CTA roadway.	• Appropriate screening measures for passengers and their baggage at the ITF and ConRAC. • Vehicle inspection measures at the ITF and ConRAC including under vehicle inspection. • Physical protection of the ITF and ConRAC including vehicle barriers and bollards, and blast suppression films on exposed glass surfaces. • Additional video surveillance with video analytics and object tracking. • Increased patrolling of the CTA and the new facilities.
• Decreases airport security.	• None	• None
• Neutral compared to facilities.	• Re-configured entry roadways.	• In-road traffic calming measures to control traffic into the CTA. • Additional video surveillance with video analytics and object tracking.

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SECTION 6

6. Future Security Implications

"We always overestimate the change that will occur in the next two years

and underestimate the change that will occur in the next 10."

Bill Gates

As the co-authors of the original post-9/11 regulatory language during our tenure at TSA, it is our opinion that none of the SPAS alternatives will significantly affect, or be affected by, the current regulations.   Because security compliance by any SPAS alternative is virtually assured by judicious design features and modifications, "security" should not be the sole criterion for selecting among the SPAS alternatives; indeed, reasonable facility security for all the Alternatives can be accommodated. Although we cannot address potential future regulatory changes, particularly those initiated by future security related events at this or other U.S. airports, or at international airports with last points of departure to LAX, we are confident that any of the SPAS alternatives that are ultimately undertaken can be made fully compliant with TSA regulations. This will require careful attention to the performance requirements, developing design details from these requirements, and validating the results by operational testing. As to the ASP, it should be possible to achieve TSA compliance by straightforward and relatively minor adjustments, but this, too, can be assessed only when the specific design and operational requirements are developed.

In some instances, there may be considerable future consequences in terms of new and/or expanded requirements for additional physical and IT infrastructure, new and/or expanded technology and its integration into legacy systems, maintenance, personnel, training, and periodic modifications of operational, regulatory and administrative requirements driven by the constantly evolving threat environment, all of which can inflict significant operational and cost elements into the decision making process.

We again emphasize that selection among the SPAS alternatives at this programmatic stage does not invoke security concerns that would substantively alter or affect SPAS selection or implementation. Indeed, the opposite is the case: this document puts forth the pros and cons of each alternative from a security perspective, but only after the SPAS selections are made can the elements of security be thoroughly evaluated in their operational context. These will typically require only modest adjustments to the ASP, which, in turn, is only an operational guidepost of what *should* be done, and is highly dependent on appropriate personnel, training, motivation, effective implementation of technology and enforcement of operational and regulatory requirements.

Improved Technology

One of the more significant trends in physical access control systems is the increased use of a biometric means of identifying persons. The biometric may be a fingerprint, iris scan, facial recognition, hand geometry, or some other bio-identifier, but the objectives are the same in all cases: to positively identify a credential holder and to eliminate impersonators and fraudulent use of access credentials. TSA has been considering the use of biometrics for access control for several years, and could conceivably impose biometric requirements in the future to address increased threat levels. However, as recently as February of 2012, TSA has stated at industry conferences that there are no such *requirements* under consideration at this time, in part because there are no universally accepted standards. Such standards are currently under development by the RTCA Committee 224 in a document titled *"Integrated Security System Standard for Airport Access Control"*. Like the TSA regulations, these

are performance standards, not technical specifications, and are being developed specifically for voluntary airport applications.

On its own, LAWA has already begun the conversion to HID readers to upgrade its access control systems to incorporate biometrics, in a contract awarded to UNISYS Corporation.   In November 2011, LAWA announced that beginning in 2012 the existing magnetic stripe card reader system at its airports, including LAX, would be replaced by one that is enabled to use iris scanners or other biometric identification technology. Mr. Dominic Nessi, the deputy executive director and CIO of LAWA, is reported to have stated: "We are … putting the wiring in place so we can add biometric readers, irrespective of the technology. By December of next year, we'll either reaffirm our decision to utilize iris scan technology or we'll review other technologies that may have entered the market by that time."

While biometric credentialing represents a significant overall improvement in physical access control for the LAWA airport, regardless of the specific technology selected, it has virtually no relevance to the SPAS alternatives. For portals where access controls are considered an appropriate threat mitigation, any improvement in security will be commensurate with that of every other area of the airport receiving a similar upgrade. They will depend as much on the manner of operational implementation as on the technology itself, as well as any related transitional training and employee/tenant levels of acceptance. Each candidate technology has both positive and negative elements; some may be more appropriate than others to a particular operational environment, and there may be some conditions where an alternate biometric would be implemented.

A strong Concept of Operations will help to make those decisions, and should precede any system design. Where the performance of candidate techniques and equipment is uncertain, as with still maturing technologies such as video analytics (i.e., false alarm rates) and license plate recognition (i.e., in congested areas and at night in the presence of intense illumination), the equipment should be tested under real operational conditions and with operational stakeholder inputs to assess the extent to which the stated user requirements are likely to be met. Any other form of testing will not reduce operational performance uncertainties. Making selections from manufacturer datasheets is not even a partial solution.

Numerous examples can be cited where "enhanced" motion sensors are installed on fences, gates and doors, but they experience so many wind, weather, and/or animal-induced false alarms that they are eventually either ignored or turned off. Some waterside airports consistently experience early morning fog that can obliterate certain perimeter sightlines. In the case of the proposed LAWA dedicated transit access, elevated roadways along public streets may present different security challenges along each city block. Those public streets are currently not within LAWA jurisdiction.

 As we continue to stress throughout this report, the implementation of any given new or upgraded technology does not offer an automatic answer about providing "enhanced security" for LAWA facilities or for development of any of the SPAS alternatives. There is a wide range of other influences affecting performance, each of which has its own internal scale of variables.

For example, for <u>any</u> airport project, including any combination of SPAS alternatives, the "enhanced security" delta between existing cameras and more cameras, no matter how many or where they are situated, is a matter of degree of effectiveness, efficiency, design and operational implementation. Five hundred (500) unwatched, poorly oriented, or improperly lensed cameras are useless (especially without proper night lighting); an inappropriately programmed video management system can jam up the entire airport IT network and adversely affect all other security and administrative functions.

Similarly, an upgrade from analog to digital CCTV will serve up the same pictures, just faster, not necessarily "better" (although color may provide added decision-making data); a mis-coded video analytics algorithm gives continual false alarms requiring added LEO manpower to resolve; poor

biometrics capture (an administrative function) gives numerous false rejects (an operational impediment) and false accepts (a security vulnerability).

These are all planning and design issues, well beyond the scope of this programmatic assessment. One can hope for a perfect world of properly designed and functioning systems run by fully trained and motivated operators in an error free environment, but even then, any evaluation of "enhanced security" for any given scenario is not quantifiable, as all the elements of an integrated system are inter-dependent to varying degrees – the full or partial inefficiency or failure of any one element, be it technology or personnel, can significantly affect the operational security effectiveness of the others.

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APPENDICES

APPENDIX 1 – Scope of Work

Proposed SPAS Security Evaluation Scope

05 January 2012

Contracted by CDM Smith Inc. under LAX Specific Plan Amendment Study (DA-4253)

Part 10-1.01 – ES Security, Task Order 1

Scope of Analysis

TranSecure will complete a security evaluation for the LAX Specific Plan Amendment Study (SPAS) to respond to the following:

• Security Implications - The focus of the evaluation will be on security, particularly as related to the security implications introduced by the SPAS Alternatives. The evaluation will focus on aspects generally within the jurisdiction of LAWA, although it may consider requirements of other agencies having security-related responsibilities. An analysis of safety considerations (i.e., runway incursions) associated with airport operations is not within the scope of the security evaluation, given that such safety issues have been evaluated in other studies.

• The Security Evaluation for SPAS will be at the Programmatic Level - The SPAS Team will provide general project descriptions for each element to be studied, but specific facility details affecting security considerations are not available at this conceptual level of planning. Depending on the results of the evaluation, TranSecure may provide programmatic-level recommendations to consider in the future more detailed design of the project.

• Differences in Future Alternatives - The evaluation will consider key differences in proposed airport facilities, infrastructure, and operational profiles (i.e., private vehicle access to the CTA, transit access into the CTA via dedicated bus or APM, etc.) of the SPAS Alternatives when fully implemented by the 2025 planning horizon for SPAS.

• Transparency and Confidentiality - A summary of the evaluation will be included in the SPAS Report, and the full evaluation will be provided as an appendix to the SPAS Report, if/as appropriate. In conjunction with LAWA's review of all work products, any content considered by LAWA to be Security Sensitive Information (SSI) will be redacted and/or submitted in a separate confidential report to LAWA management.

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Appendix 2 - Abbreviations and Acronyms

AOA	Airport Operations Area	**ITMG**	IT Management Group
APM	Automated People Mover System	**LAAPD**	Los Angeles Airport Police Department
ASP	Airport Security Program	**LASD**	Los Angeles County Sheriff's Department
CBR	Chemical, Biological, Radiological	**LAWA**	Los Angeles World Airports
CCTV	Closed Circuit Television	**LAX**	Los Angeles International Airport
CDM	CDM Smith Inc .	**LEO**	Law Enforcement Officer
ConRAC	Consolidated Rental Car Facility	**MANPADS**	Man-Portable Air Defense System
CRS	Concentric Rings of Security	**MAP**	Million Annual Passengers
CTA	Central Terminal Area	**MSC**	Midfield Satellite Concourse
DFW	Dallas Fort Worth Airport	**MTA**	Metropolitan Transit Authority (Los Angeles)
DHS	Department of Homeland Security	**NA/NP**	No Action/No Project Alternative
DoD	Department of Defense	**PDAR**	Protecting, detecting, assessing, and responding
DoJ	Department of Justice (U.S.)	**RDF**	Remote Delivery Facility
FAA	Federal Aviation Administration	**RF**	Radio Frequency
FBI	Federal Bureau of Investigation	**RPG**	Rocket-Propelled Grenade
GAO	General Accounting Office	**SIDA**	Security Identification Display Area
GTC	Ground Transportation Center	**TBIT**	Tom Bradley International Terminal
IED	Improvised Explosive Device	**TSA**	Transportation Security Administration
IID	Improvised Incendiary Device	**VBIED**	Vehicle-Borne Improvised Explosive Device, aka a car bomb
ITC	Intermodal Transportation Center	**VIC**	Vehicle Inspection Center
ITF	Intermodal Transportation Facility		

Appendix 3 - References and Resources

Report of the Mayor's Blue Ribbon Panel on Airport Security, City of Los Angeles, by letter of June 20, 2011

"Recommended Security Guidelines for Airport Planning, Design, and Construction," TSA, May 2011

"Commercial Airport Innovative Security Measures," [SSI] -TSA, March 2011, by the Homeland Security Institute, HSI Publication No. RP09-11-05

"Integrated Security System Standard for Airport Access Control," RTCA Publication DO230, June 2011

"Transit Security Design Considerations, Final Report," John A. Volpe National Transportation Systems Center, U.S. Department of Transportation, November 2004

"DoD Minimum Antiterrorism Standards for Buildings, Unified Facilities Criteria (UFC)" 4-010-01, U.S. Department of Defense, January 2007

"Reference Manual to Mitigate Potential Terrorist Attacks Against Buildings," DHS FEMA Risk Management Series Publication 426, December 2003

"Transportation Security - Comprehensive Risk Assessments and Stronger Internal Controls Needed to Help Inform TSA Resource Allocation," GAO-09-492, U.S. Government Accountability Office, October 2009

"Aviation Security: Further Steps Needed to Strengthen the Security of Commercial Airport Perimeters and Access Controls," GAO-04-728, U.S. Government Accountability Office, September 2009

"Aviation Security - A National Strategy and Other Actions Would Strengthen TSA's Efforts to Secure Commercial Airport Perimeters and Access Control," GAO-09-399, U.S. Government Accountability Office, September 2009

"Intermodal Transportation - Potential Strategies Which Would Redefine Federal Role on Developing Airport Intermodal Capabilities," GAO-05-727, U.S. Government Accountability Office, July 2005

"Risk Management: Strengthening the Use of Risk Management Principles in Homeland Security," GAO-08-904T, U.S. Government Accountability Office, October 2008

"Aviation Security - DHS Has Made Progress in Securing the Commercial Aviation System, but Key Challenges Remain," GAO-08-139T, U.S. Government Accountability Office, October 2007

"Intermodal Transportation - Potential Strategies Would Redefine Federal Role in Developing Airport Intermodal Capabilities," GAO-05-727, U.S. Government Accountability Office, July 2005

"Additional Actions Could Strengthen the Security of Intermodal Transportation Facilities," GAO-10-435R, U.S. Government Accountability Office, Jun 21, 2010

"Jihadism in 2012: A Persistent, Low-Level Threat," STRATFOR Global Intelligence, January 16, 2012. (Stratfor.com)

Appendix 4 – Diagrams of Alternatives 1 through 9

Diagrams of each of the nine Alternatives under consideration are found in the
LAX Specific Plan Amendment Study Draft EIR as follows:

Alternative 1   .... Figure 2-1

Alternative 2   .... Figure 2-2

Alternative 3   .... Figure 2-3

Alternative 4   .... Figure 2-4

Alternative 5   .... Figure 2-5

Alternative 6   .... Figure 2-6

Alternative 7   .... Figure 2-7

Alternative 8   .... Figure 2-8

Alternative 9   .... Figure 2-9