Test Case 1

Building Renovation/Urban Location: Single Building

INTRODUCTION

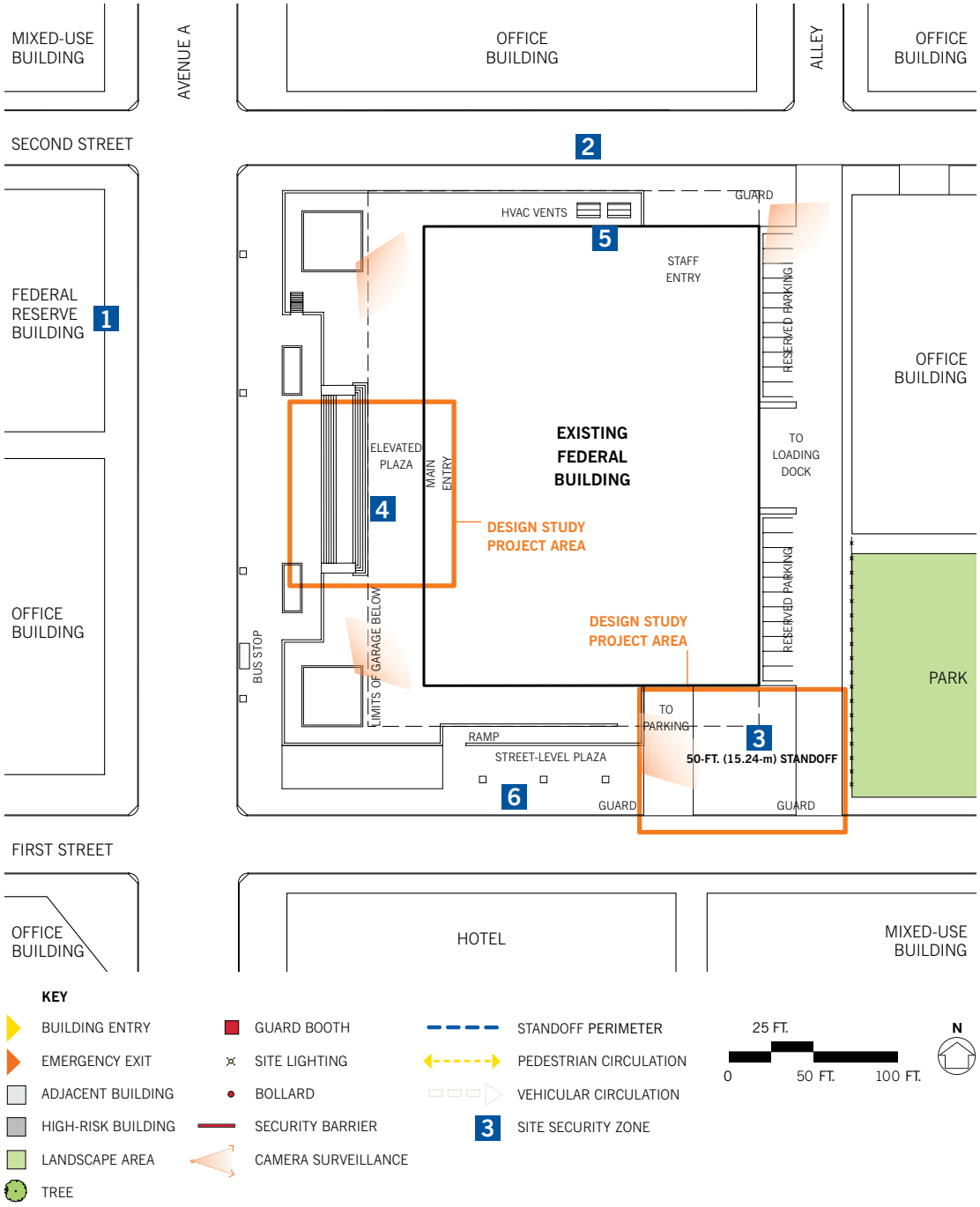
This test case, used to illustrate the site security design process in Chapter 3, appears here in abbreviated form.

It depicts a sole federal building occupying a block in an urban business district, located near the cultural core of a major metropolitan area. The high-rise building, built in the mid-20th century, sits on a plinth housing underground parking that is accessed from First Street and guarded by a staffed kiosk. The main building entry is not clearly delineated, thus creating confusion and crowding, as numerous visitors queue and wait in the plaza prior to security screening inside the building. HVAC vents/air intakes are located in an exposed location in an isolated corner of the elevated plaza. Temporary barriers, hastily installed throughout the site, have remained in place for years.

A loading dock and reserved surface parking area are located to the east side (rear) of the building, and staffed guard booths are positioned at both the First and Second Street entries. On the north side, an alley with one-way circulation aligns with access to the loading dock across Second Street.

The building received a medium ISC security rating, and the building's three tenant agencies have similar risk profiles. Although the Federal Reserve building across Avenue A is designated high risk, the surrounding buildings contain low-risk office space. The bus stop on Avenue A is the nearest public transportation stop to the building.

Test Case 1: Existing Conditions/Site Context Plan



Test Case Assumptions

1. The Federal Reserve building on Avenue A desires enhanced security because of the vulnerability of its lobby area.

2. Temporary barriers have been placed at the curb line along the north side of the site, where there is insufficient standoff, and an alley allows direct approach into the loading dock.

3. The loading dock and the underground parking garage servicing the building both have access from First Street.

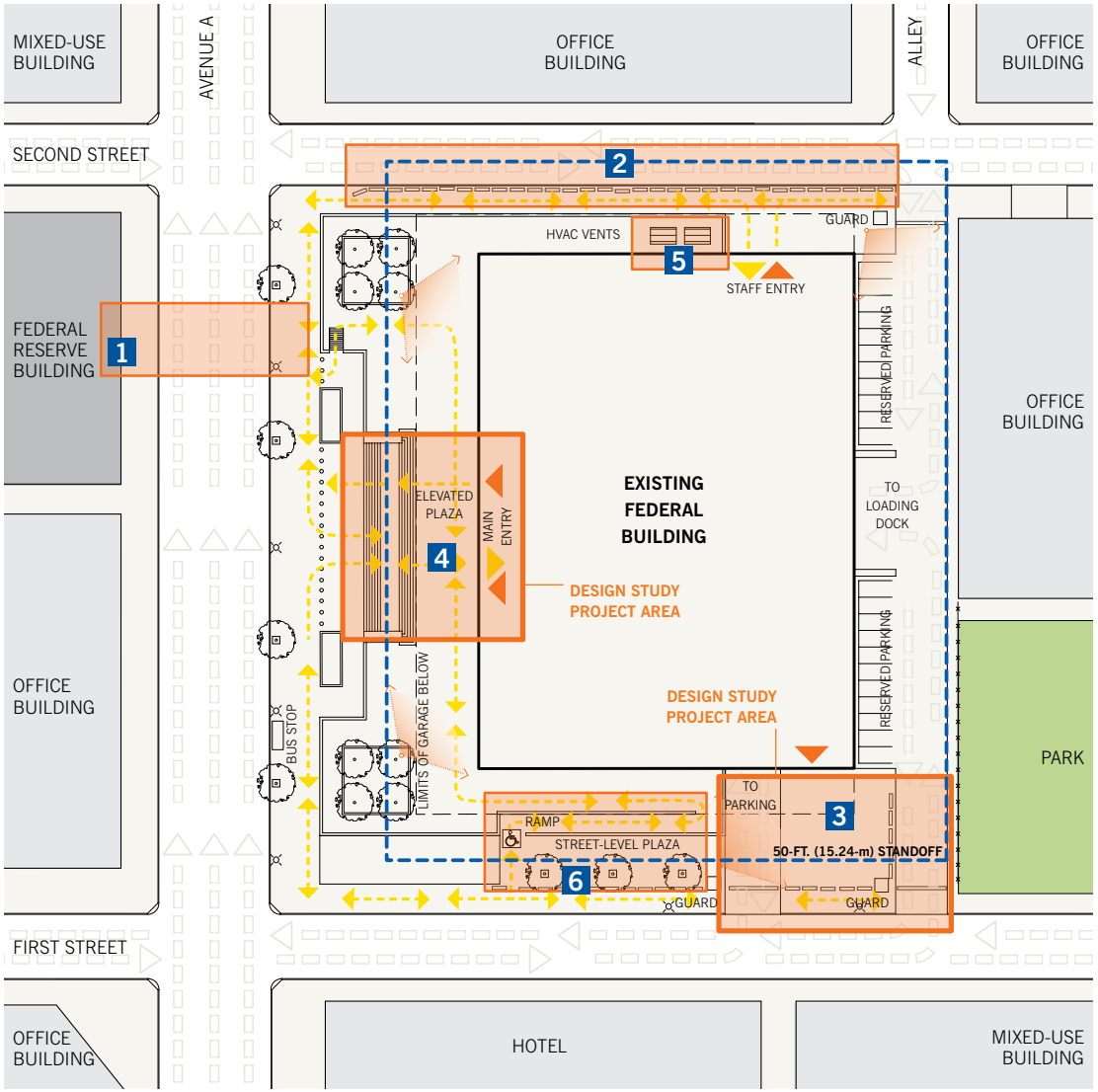
4. The main entry to the building is not clearly delineated, and crowding occurs at the elevated plaza, as visitors wait to pass through security screening.

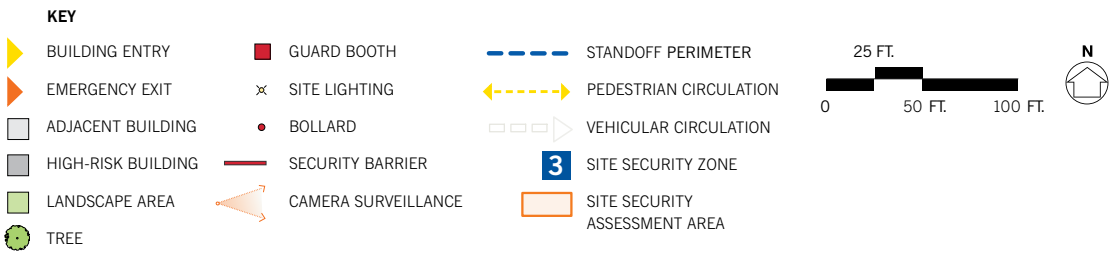
5. There are exposed HVAC vents/air intakes accessible from the elevated plaza.

6. During a heightened security alert, temporary barriers were placed on the street-level plaza and have not been removed or replaced with permanent security fixtures.

Typical conditions seen in buildings of this type include a plinth that separates the main entry from the sidewalk, a main entry plaza, and curtain wall façade construction.

Test Case 1: Site Security Assessment Plan





Security and Site Design Topics

1 A neighboring building with similar security concerns offers an opportunity for partnership and sharing of security resources.

2 Vector analysis of the northern site edge suggests that the northwest corner of the site warrants the most robust perimeter hardening. The middle of the block cannot easily be approached at high speed, and the alley that dead-ends into the loading dock presents only negligible risk of vehicular approach.

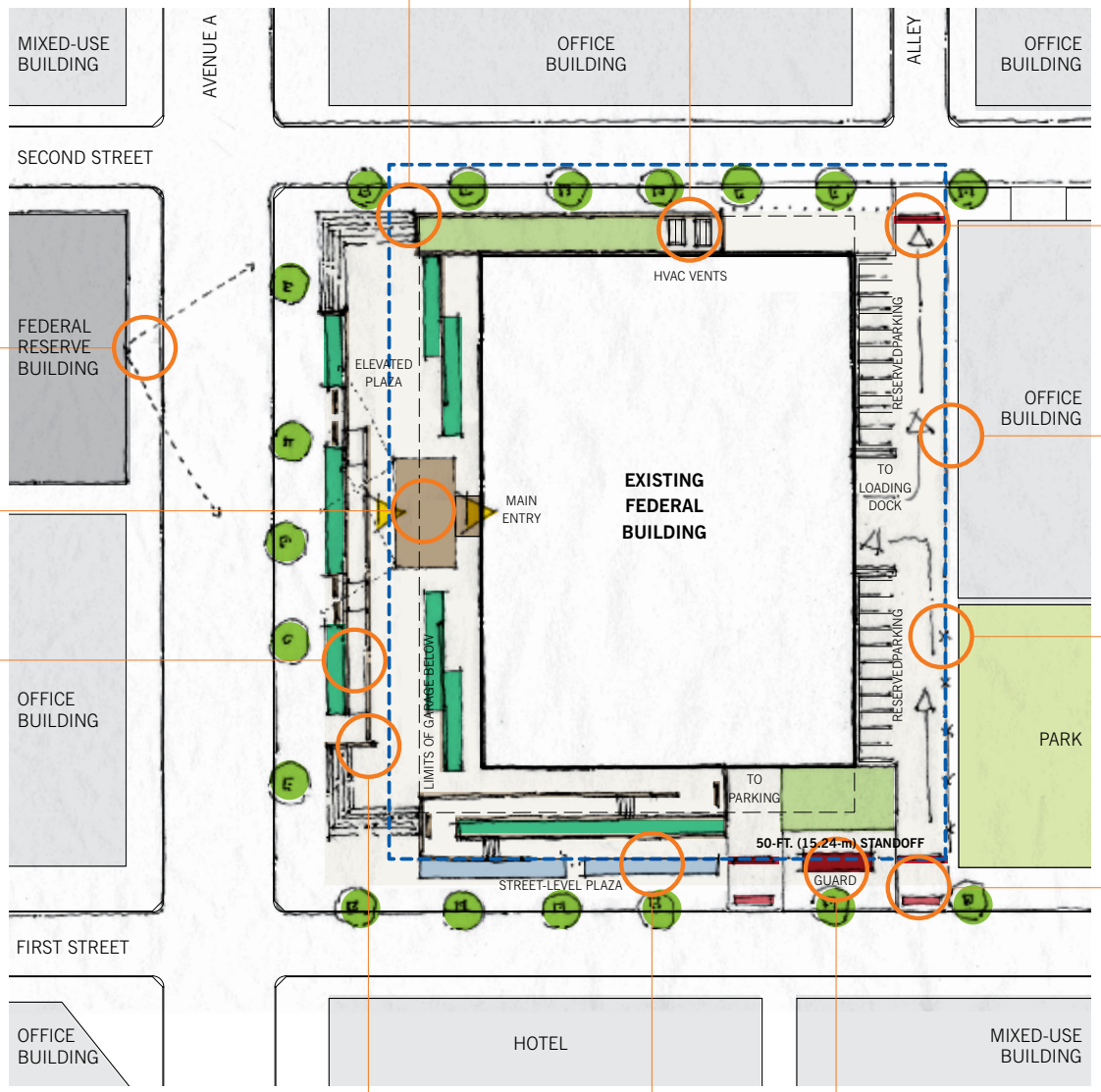
3 When parking is located under a building, that entry point is vulnerable.

4 Unmanaged queuing causes congestion and confusion that can make security monitoring difficult and public space less safe.

5 Exposed HVAC vents/air intakes are vulnerable to airborne chemical, biological, or radiological attack.

6 The temporary barriers at the street-level plaza are not rated to prohibit vehicular approach and have negative off-site impacts on the streetscape and adjacent local businesses.

Test Case 1: Conceptual Strategy Plan



ZONE 2
HARDENED PLANTER WALL

ZONE 5
HVAC VENTS/AIR INTAKES SCREENED BEHIND PLANTING

ZONE 3
AUTOMATIC EXIT BARRIER GATE

ZONE 1
SHARED CAMERA SURVEILLANCE

ZONE 2
ADJACENT BUILDING PROVIDES STANDOFF PROTECTION

ZONE 4
NEW SECURITY PAVILION TO REGULATE ENTRY POINT

ZONE 2
EXISTING FENCE TO BE HARDENED

ZONE 4
RAMP SYSTEM HELPS MANAGE QUEUING

ZONE 3
VEHICLE INSPECTION POINT

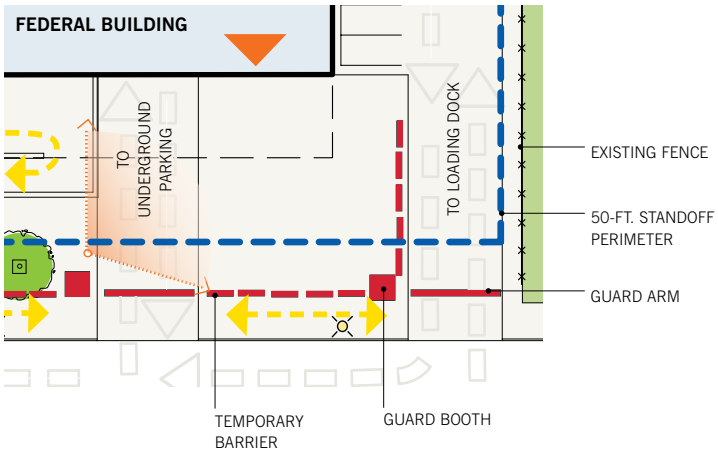
ZONE 2
HARDENED SITE WALL AT NEW ACCESSIBLE RAMP

ZONE 6
DEPRESSED WATER BASIN

ZONE 3
COMBINED GUARD BOOTH FACILITY

Project Area: Zone 3

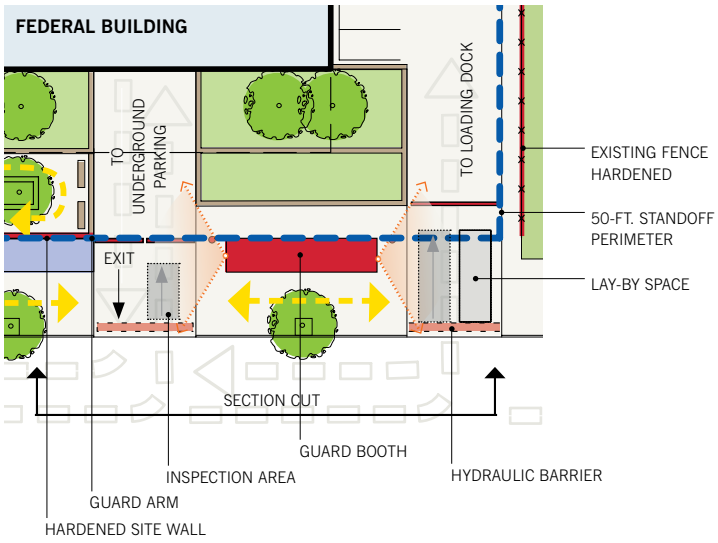
Existing Conditions Plan



Security Design Problem

Regulation of vehicular access to the site requires a combination of security elements to stop and screen cars and trucks prior to passing inside the perimeter. Ideally, access to on-site parking should be separated from service access because the screening process is different for each. A tenant with daily access requires a lower level of screening than a delivery truck. Multiple entry points require high operational overhead in terms of facilities and staffing. When parking is located underneath the building, that entry point is particularly vulnerable. An explosive-laden vehicle could penetrate the standoff perimeter and gain access to areas beneath the building.

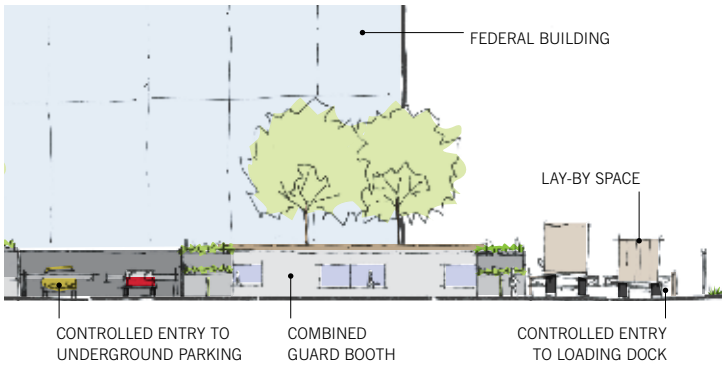
Design Solution Plan



Proposed Security Design Solution

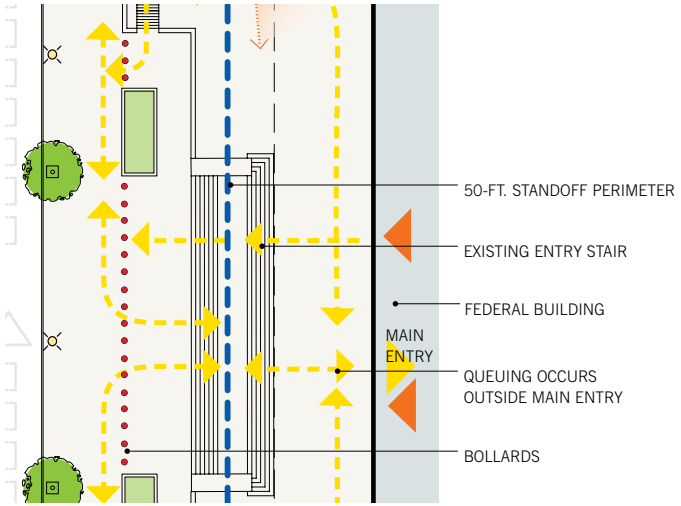
To reduce operational costs and consolidate security oversight, a shared guard booth regulates access to both the underground parking garage and the loading dock. Guard arms designed as vehicular barriers control entry prior to security screening. Hydraulic barriers prevent a vehicle from backing into the street in the event that it needs to be detained. If possible, vehicles should be stopped outside the 50-foot standoff perimeter for inspection. Due to the constraints of this site and the space required for a truck to pull off the street completely to avoid stopping traffic, the guard arm at the loading dock is located slightly within the standoff perimeter. A lay-by space enables trucks that are waiting for security clearance to pull to the side, allowing other vehicles to pass.

Elevation View

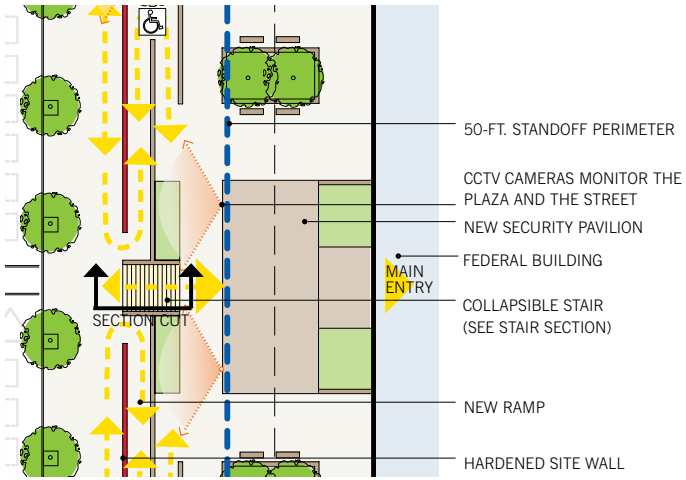


Project Area: Zone 4

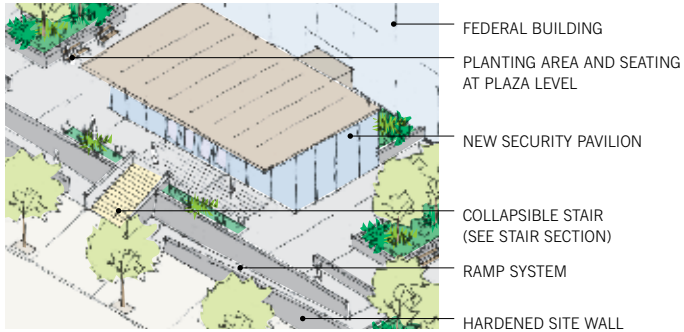
Existing Conditions Plan



Design Solution Plan



Bird's-Eye View



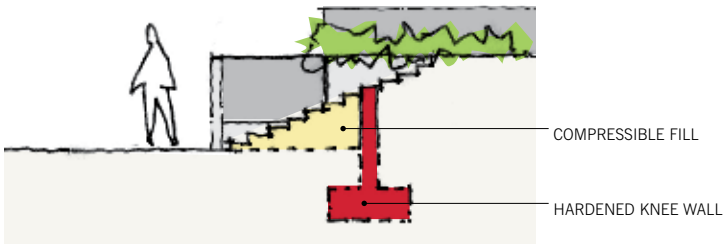
Security Design Problem

Existing buildings often have main building entries and lobbies that were not designed for current security processes and equipment and are difficult to reconfigure. A typical modernist building with a curtain wall façade may have multiple main doors and few visual cues to direct visitors to the appropriate entry for screening. This can cause confusion, especially if the building has a high degree of public use. Crowding may occur as visitors wait to be processed through the security checkpoint. If not properly controlled, queuing can create disorder and make security oversight more difficult.

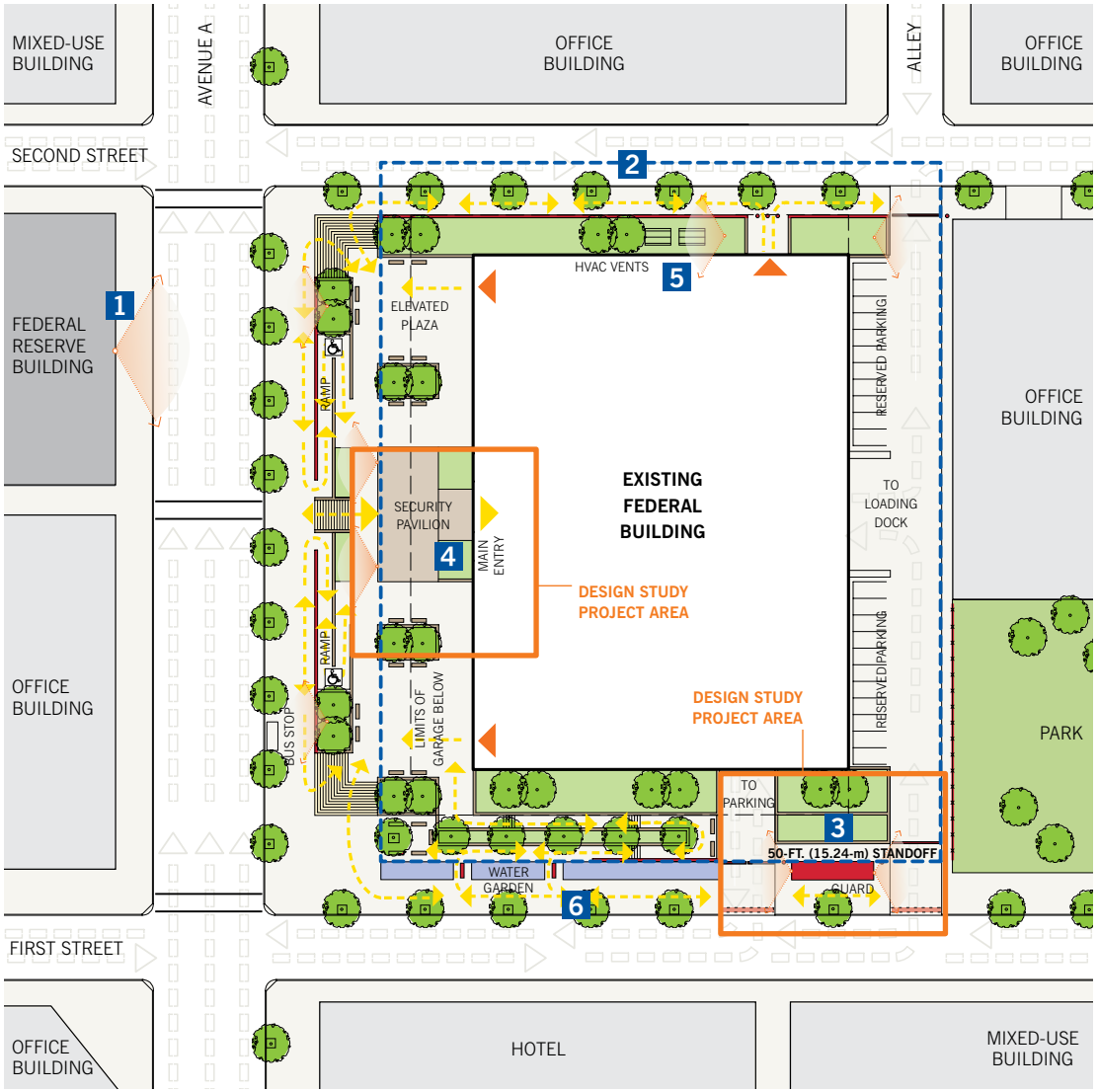
Proposed Security Design Solution

A security pavilion outside the main building provides the additional space required to accommodate the security equipment and guards needed to screen visitors prior to entry. The pavilion clearly delineates the "front door" to the building and provides cover for visitors waiting for entry. Due to the size of the pavilion, the elevated plaza is reconfigured. The main entry is rebuilt to incorporate a new collapsible stair and accessible ramps. The collapsible stair incorporates a compressible fill that supports pedestrian traffic, but will fail under the weight of a vehicle. A reinforced knee wall built into the stair prevents further approach. The ramps, which provide universal access, also offer additional area for queuing overflow. The walls alongside the ramps guide queues and offer room to sit and wait. The elevated plaza provides open space for casual seating and a large area for public programs or demonstrations.

Stair Section



Test Case 1: Final Concept Plan



KEY

- BUILDING ENTRY
- EMERGENCY EXIT
- ADJACENT BUILDING
- HIGH-RISK BUILDING
- LANDSCAPE AREA
- TREE
- GUARD BOOTH
- SITE LIGHTING
- BOLLARD
- SECURITY BARRIER
- CAMERA SURVEILLANCE
- STANDOFF PERIMETER
- PEDESTRIAN CIRCULATION
- VEHICULAR CIRCULATION
- 3 SITE SECURITY ZONE

25 FT. 0 50 FT. 100 FT. N

Security and Site Design Solutions

1 Cameras mounted on the façade of the Federal Reserve building monitor activity in front of the existing federal building, while cameras placed at key locations on the elevated plaza monitor activity along Avenue A to create shared surveillance of the street.

2 Based on vector analysis, a hardened site wall provides protection from vehicles. The site wall varies in height according to risk; at mid-block, where high-speed approach is less possible, the wall is seat height. Traffic into the loading dock is limited to entry from First Street, and an automatic security gate regulates egress onto Second Street.

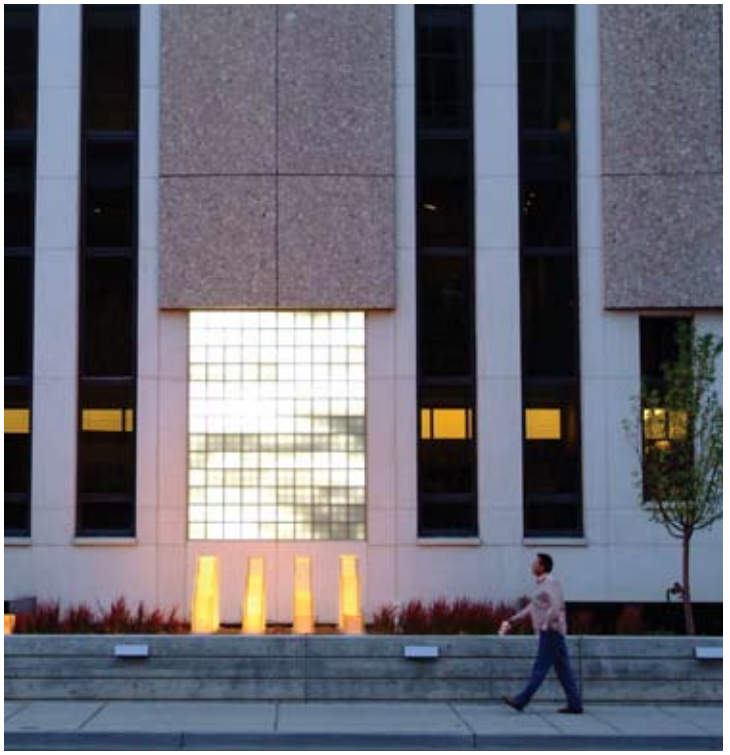
3 A vehicle checkpoint with shared guard facilities provides the room and equipment to adequately screen vehicles before they enter the site.

4 A security pavilion at the plaza level creates space outside the existing federal building to screen visitors and manage queuing.

5 Planting areas, grates, and filters protect the HVAC vents/air intakes from unregulated access.

6 The temporary barriers are removed and replaced by security elements, such as site walls and a moat that is also a water garden at the street-level plaza. Multipurpose features minimize risk and improve the quality of public space.

A new security entry pavilion can help organize queuing, while a new water feature improves both security and public space.



In improving security at existing buildings, Project Teams should envision potential improvements in terms of the entire site, the community, and broader neighborhood development efforts. The introduction of a security pavilion provides occasion to revisit the usability of adjacent public spaces, while new security walls present an opportunity to improve the landscape or commission a public artwork. Such comprehensiveness enhances the safety and quality of the workplace, while ensuring that the federal government is a good neighbor.