Lessons Learned: A Symposium on School Design
LAUSD / USC School of Architecture / J . PAUL GETTY Trust

Session: 1D - Parking

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Attendees:
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Key Issues:
Incorporating parking requirements on small urban sites through the use of subterranean or stacked parking.

Maximizing efficiency and economy in parking design.

Dimensions and sizes of parking spaces, aisles, etc.

Structural grid dimensions and the subsequent effect of upper floor layouts, and the possible conflict with classroom and corridor layouts.

Natural ventilation, daylight, and life-cycle energy costs as they relate to subterranean parking.

Circulation and security from subterranean parking to upper levels or entrances - as a design opportunity.

Constraints, Problems, and Design Opportunities:
The given topography and soil conditions of a specific site, combined with the small size of most urban sites, can pose design challenges to parking design. Vehicular and bus drop-off areas, and the specific traffic flow of surrounding streets are also an important factor.

The current state allocated funds for subterranean parking of approximately $14,000.00 per space pose a design challenge. At times the parking needs of a specific project cannot be fully defined until some schematic design has been completed. This causes some difficulties in allocating funds for some of these projects if it is found that additional costs are required for subterranean parking during the schematic design stage.

Life-cycle costs vs. up-front costs are an important issue which is presently difficult to explore. Obtaining additional budget amounts for more expensive HVAC and electrical systems which may produce life-cycle cost savings is not presently encouraged.

Security and related card reading machines to parking areas are currently vague in definition as to what the needs are for the schools. Some projects have card readers, swing down gates, and chain link fencing for security and control. The use of roll down gates and their maintenance is an issue.

Solution Types:
One project placed the parking area one-half level below grade, allowing natural ventilation on one side, and positioning the parking area open to the front, thereby integrating the parking area with the entry.

Increased ventilation has been achieved by placing open ventilated areas towards the prevailing winds of the site. LAX has excellent data available for wind information.

Many architects are using parking layouts which involve single aisle systems with tandem parking on one side to increase efficiency.

So called "smart" ventilation systems which modulate the air exchange based on time or actual use of the

parking area can save energy costs. These systems can be integrated into the card reader controls at the parking entrance and exits.

One project utilized an existing parking structure and placed a new gymnasium above it. The architects had difficulty trying to place tennis courts on the roof because of the large amount of exit stairs required. Some projects were able to incorporate rooftop playground space above parking, and achieve both ADA access and exiting. One such project is anticipating a cost of $60.00 / sf for this type of structure.

The number of parking spaces required can vary from project to project. Some inner city high schools, for example, do not have nor need student parking spaces.

New lighting systems can achieve better efficiency and lower maintenance costs, for example; T5 flourescent, some fixtures from Seimans, and using reflective surfaces on ceilings to increase light output. Currently LAUSD guidelines and budget constraints do not allow for painted surfaces for subterranean parking.

The use of long span structures for stacked parking areas can create a more efficient use of space, but care must be given to the design implications of how this kind of structure effects upper floors of adjoining uses.

Type I parking areas below Type III or Type V construction have been used as a common building type combination. Drop-cap type concrete systems have enabled better floor to floor efficiency for parking structures.

Examples:
East LA H.S. #2
68th St. Elementary
Belmont Elementary #6 & #9
East Valley H.S. #3
Fremont Primary Center #2
Central H.S. # 9

Recommendations:
Most of the discussion involved the technical aspects of providing parking economically and efficiently on small urban school sites where space is at a premium. The use of subterranean or partially excavated parking areas were a common solution to most projects, with various projects stacking either building area or playground space above parking. The use of tandem spaces is another helpful solution to making parking more efficient. Particular discussion topics covered the need to design parking areas in a manner which improves the experience of the users through the use of natural ventilation, natural light, open and clear circulation paths, while maintaining secure environments.

A common problem of most projects is the difficulty in planning at the pre-design stage the given space parameters of a particular site, and thereby better defining the type of parking solution required and the subsequent cost implications. Since every site is by its nature different than another, many times the costs for parking (i.e. subterranean parking, vs. surface) are not determined until schematic design has begun. One solution to this problem may be to involve architects at the planning stages of project development to help define the specific design constraints of a project, particularly regarding parking needs.

The architect's role as a coordinator of all the structural, mechanical, and electrical disciplines was discussed as a starting point for a comprehensive exploration of more sustainable, efficient, and energy conscious buildings. Exploring these possibilities without funding support, however, is difficult if not impossible. Changes in how projects are funded and analyzed will have to occur before most of these systems can be investigated and implemented.

LAUSD Comments and Clarifications:
Present school design guidelines do not specify parking stall or aisle sizes. This is intentional, since most LAUSD schools do not fall under local code requirements for parking. This is an opportunity for architects to be inventive in parking solutions and to come up with other ideas, i.e. instead of full and compact sizes, the ability to make all parking spaces an average size. Example: standard parking length sizes of 18' & 15' can become 16' for all spaces and can create more efficiency.