



LANCASTER COUNTY ADULT DETENTION FACILITY  
Garage Level Vehicle Maneuvering and Parking Study

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VOSS & ASSOCIATES Inc.  
STRUCTURAL ENGINEERS

## A. PROJECT DESIGN TEAM

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## B. BACKGROUND

A space planning study for the reuse of the existing Lancaster County Adult Detention Facility was conducted by the BVH Architects / Sinclair Hille Architects design team in the spring of 2012 that demonstrated how various Lancaster County agencies currently located throughout Lincoln could be consolidated to the central City/County governmental campus. The reuse study also addressed the anticipated growth of the County, District and Juvenile court systems well into the future.

In order to maximize the potential occupancy of this building, the space planning study was based on the premise that the open floor areas in the upper volumes of the day rooms and exercise rooms and the interior roof well on the Third Level would be filled in with new floor structures. A follow up study to verify the structural feasibility of these new floor infills was completed in June 2012. The structural system that resulted required that the new floor infills be supported on new steel columns that would extend down through the Second, First and Ground Levels to either new spread footings or existing pile cap foundations. At the Ground Level each new steel column would be encased in a 16" diameter poured concrete cylinder to provide fireproofing and impact resistance.

While these new columns could be incorporated into the future office, meeting room and courtroom floor plans on the upper levels with relative ease, they would present additional obstacles to Sheriff, Police and Corrections vehicle maneuvering and parking in an already challenging layout. The project design team was directed to review the impact that the proposed new columns would have on the Ground Level parking layout.



## C. INITIAL SITE VISIT

An initial site visit was conducted to observe the vehicle maneuvering concerns that had been noted by the Sheriff, Police and Corrections departments. The two issues of biggest concern are the ability of law enforcement vehicles to park between the existing square concrete columns in the designated diagonal parking spaces and the maneuvering and parking requirements of Corrections' 15-passenger prisoner transport vans along with the floor space needed to safely and securely load and unload prisoners in the proposed new Sally Port.

The existing diagonal parking layout is based on three (3) parking stalls between the existing 18" square concrete columns which are typically 32' on center. While the parking spaces are stripped to the center lines of these existing columns, the actual clear space diagonally between the inside corners of the columns is approximately 24'-6" or 8'-2" per parking stall. This makes parking the relatively large law enforcement vehicles (Ford Crown Victorias, Ford Explorers and Dodge Chargers) which are approximately 7'-0" wide at the side-view mirrors very difficult. In fact, we did not observe any place in the garage where three (3) vehicles were actually parked side-by-side in the designated stalls between columns. Rather, we observed a more "relaxed" approach to parking where vehicles tended to overlap the designated parking stalls to gain additional clearance which resulted in reduced parking capacity. In addition, it was observed that virtually all of the corners and faces of the existing columns adjacent a parking stall showed evidence of vehicle contact while the other corners appeared untouched.

It was recognized at the site visit that adding more columns to the Garage Level would exacerbate an already difficult situation and that a re-evaluation of the parking layout in relation to the new columns was required.

Another issue that was noted during the course of the initial site visit was the conflict between the location of the existing service delivery doors to LPD Evidence and the proposed location of the Sally Port due the delivery doors being located inside of the Sally Port. Large evidence transfers, some office supply deliveries and the intake and release of weapons to LPD Evidence all occur through these doors. It was suggested that the proposed entrance overhead door to the Sally Port could be relocated to the north in order to maintain access to the service entrance, however this would not provide the vehicle maneuvering room that is necessary within the Sally Port to back up a transport van from its parked location into the drive aisle. It was decided that the layout of the link between the JLEC and the LCADF would be reviewed to see if some remodeling of this link could achieve a workable solution. This link houses the entrance vestibule to law enforcement, a stairway to the First Level and the LPD Evidence drying rooms and service access.

## D. LAYOUT REVISIONS

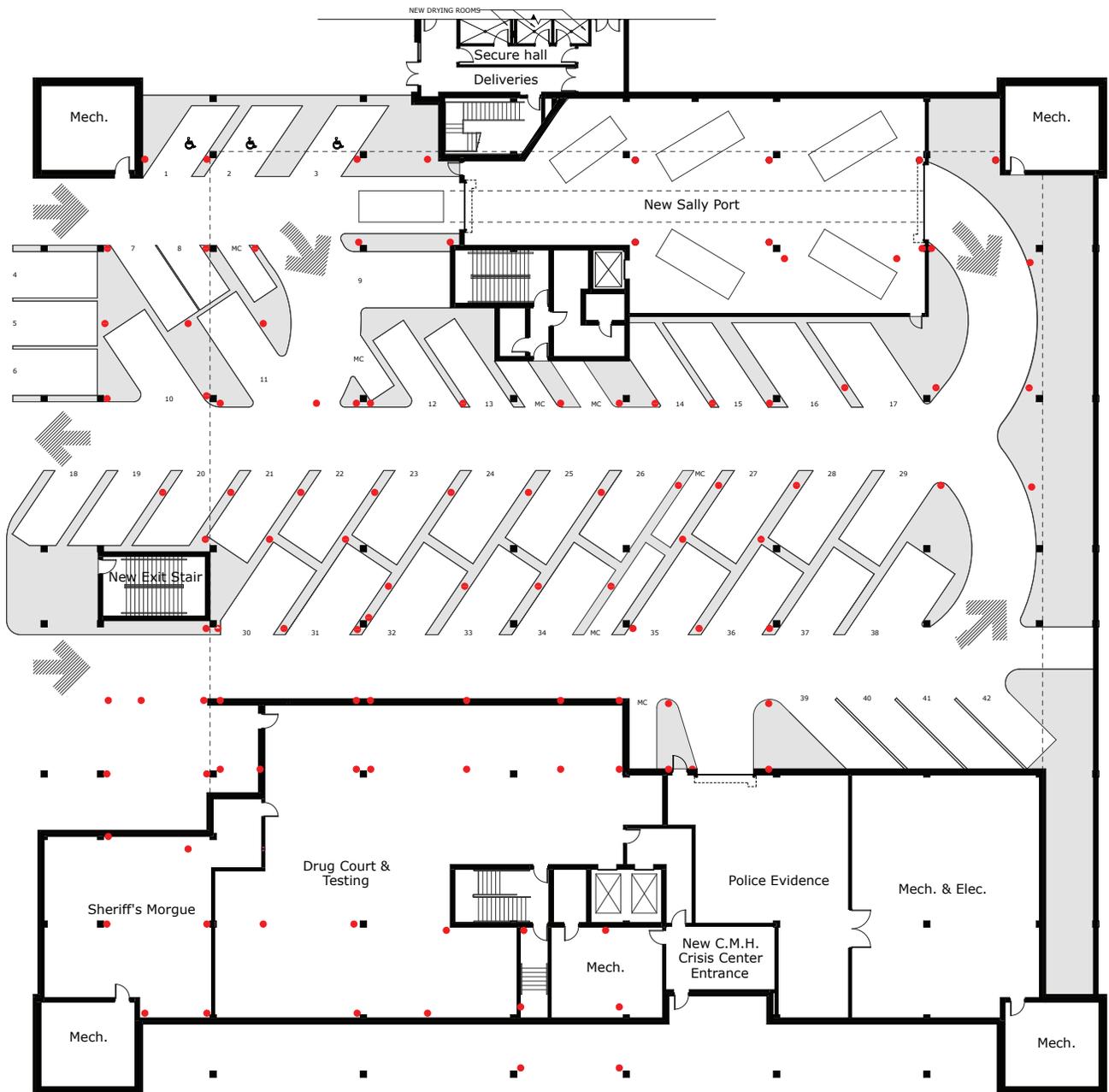
The layout of the LCADF Ground Level plan was revised to show the preliminary locations of the new columns in relation to a parking layout that improves the maneuvering and parking space for law enforcement vehicles. The fundamental change to the layout was to reduce the number of parking stalls between existing columns from three (3) to two (2). This allows the new 16" diameter to be located adjacent existing columns where they bear on the existing foundation pile caps and mid-span between existing columns.

While this revision reduces the overall total number of parking stalls, it greatly improves the maneuvering space for law enforcement vehicles into and out of the parking stalls. The total number of 49 parking stalls on the conceptual space study plan is reduced to 43 parking stalls on the revised plan, however, because law enforcement will be able to take over approximately 11 parking stalls now dedicated to Corrections, the overall net loss of parking spaces from the current layout is minimized.

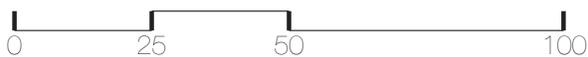
The layout of the LPD Evidence service access and drying rooms is also revised to illustrate a remodeling solution to the conflict with the Sally Port.

The revised plan layout is found on the following page.

### Lancaster County Adult Detention Facility Reuse Study Lower Level - Column & Vehicle Parking Plan



- New Columns
- Existing Columns



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## E. FIELD TEST

A field test was conducted with the Sheriff, Police and Corrections departments to confirm the workability of the plan layout revision. The Sally Port layout was taped to the garage floor and two (2) 16" diameter X 6' tall cardboard cylinders representing the new concrete encased columns were placed in locations on either side of where vehicles would be required to maneuver between them. The cylinders were relocated to reflect the variety of new column locations and the field test conducted accordingly. A Sheriff's department Ford Crown Victoria cruiser, LPD Ford Explorer and two Corrections' 15-passenger vans were successfully driven through all of the required maneuvers.

Refer to the images on the following page.



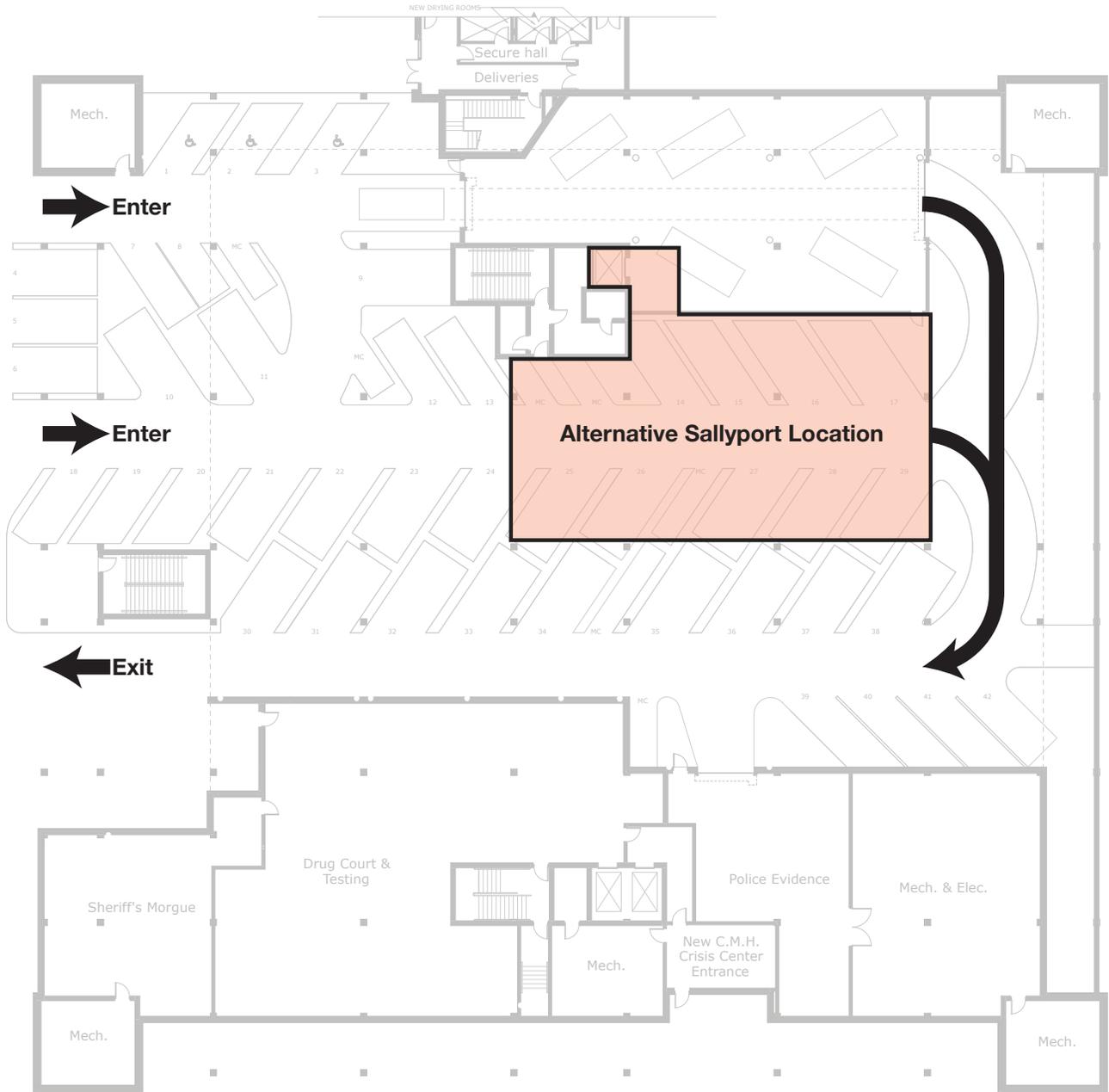
## F. ALTERNATIVE SALLY PORT LOCATION

Through the course of this study several alternative Sally Port locations were considered. The one alternative that has merit is to locate the Sally Port in the center of the three (3) parking bays as depicted in the following plan diagram. In this scenario, the north and center drive aisles would enter the Ground Level and the south drive aisle would exit. Access to the secure elevator to the prisoner holding area on the Second Level would be easily achieved. The two benefits to this alternative are:

- The open perimeter light and ventilation well would no longer be above a portion of the Sally Port, thereby eliminating the need to construct a secure "cap" over this area.
- The secure service access issues to LPD Evidence would not be affected by the location of the Sally Port, therefore the need to remodel this area is eliminated.

The same design principles that guided the location of the new columns and vehicle maneuvering and parking layout would be applied to this alternative if it is pursued as part of the future project.

### Lancaster County Adult Detention Facility Reuse Study Lower Level - Alternative Sallyport Location



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## G. SUMMARY

This study successfully verifies the functional workability of the parking garage and proposed Sally Port configuration by Police, Sheriff and Corrections with the addition of the new columns that would be required to support the Third Level floor infills of a repurposed LCADF building. In thoroughly testing the feasibility of the Third Level floor infills, the Lancaster County Board will now be able to move forward in confidence with their decisions on how to best utilize this building.

