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Draft Executive Summary

Conditions Assessment and Recommendations
Chavis Park Carousel House

This assessment and recommendations is provided for Raleigh Parks and Recreation at the request of Little & Little, Landscape Architects. A field inspection was carried out on August 27, 2009 by James W.M. Smith, AIA and David R. Black, AIA of HagerSmith Design, by Mike McMahon, PE of Crenshaw Consulting Engineers, and by John Hays, PE of Lysaght and Associates, Consulting Structural Engineers.

Building Structure

The existing Chavis Park Carousel house was constructed some time between the late 1930s and the late 1940s, according to various accounts. The lower perimeter wall is constructed of 16 concrete piers with brick infill topped by a poured-in-place concrete coping. A section of the perimeter enclosure extends to the south to create an entry/exit space that contains a small wooden ticket booth. The upper portion of the roof is an eight-sided structure with a curved, domed roof. The roof structure is built up of multiple 2x wood members bolted together. The lower roof has sixteen sides and extends beyond the building walls to create a deep overhang. Between the eight extended arches of the main roof structure are an additional eight outriggers that are cantilevered from the legs of the arches. None of the overhang has any vertical support.

In general, the structure of the building appears to be in reasonably good condition and adequate to carry anticipated loads. The greatest visible problem is sagging of the lower roof caused by deflection of the cantilevered beams. These beams should be jacked horizontal and supported either by new perimeter walls or by diagonal braces. There are also minor carpentry repairs needed to the arches and beams, and some minor masonry repairs to the base.

Building Envelope

The outer walls above the brick base have horizontal openings that are now filled with roll-up steel doors. Above the steel doors, the wall infill is 2x framing with lapped siding. The entry area, once largely open, is now infilled with lapped siding. The wall framing does not meet the overhead structure, and there are several large cracks in the building envelope. On the upper level, a clearstory band has multi-pane hopper windows that are now fixed shut.

The existing carousel house has no heating or air conditioning system. Accordingly, there is no insulation in the building's walls or roof, and there are numerous cracks through which air and insects can pass. If the building is to be conditioned to provide a stable environment to preserve the carousel machine, as well as to allow the ride to operate year-round, then minor carpentry repairs will be needed to tighten up the building. A limited amount of rigid insulation may be added above the roof deck, the vertical walls may be insulated in the lower area of the house, and storm sash may be added to the clearstory windows.

The existing lower wall openings are neither attractive, nor do they provide much of a view of the carousel from the outside. We recommend that the existing steel shutters be replaced with insulated laminated glass windows that are slightly larger than the current openings. If sound movement between the inside and outside is desired, small operable transom windows may be added.

Inside, the existing house has only about seven feet of circulation space around the carousel. This means that there is not sufficient clearance for both circulation around the carousel protected by a guardrail, and a circulation/observation space outside the guardrail. Without adding to the perimeter of the house, entrance to the carousel building will need to continue to be restricted to carousel riders. The existing carousel house has only one effective means of egress--the entrance/exit at the south end of the building. As an Assembly Three occupancy with fewer than 500 occupants, but with an exit path longer than 75 feet, an additional means of egress is required. The existing entrance/exit is also very constricted and dim.

To improve the movement of riders in and out of the house, the current entry area should be rebuilt, preferably by enlarging this section and by providing an expanded ticket booth that is directly accessed from the exterior. The existing clapboard walls should be replaced by glazed walls or new windows.

Handicapped accessibility to the carousel is currently quite limited. The floor level is about six inches below the outside sidewalk level, the floor is of chipped wood munch that would be difficult for a wheelchair to navigate, and there is about a six inch step-up to the carousel platform. We recommend that a new concrete floor slab be poured inside the carousel house, approximately six inches above the level of the existing floor. This would allow for better humidity control, and would provide a floor surface that is handicapped-accessible and resistant to moisture penetration. A new interior ramp is needed to provide access to the carousel itself. For safety, the new concrete floor should be covered with a cushioned rubber membrane.

There are a variety of ways to approach adding square footage to the carousel house to accommodate observation space, restrooms, and a mechanical room. A partial addition could be constructed in two or more bays at the west side of the existing building by enclosing the area under the outer roof overhang (see Option A). This would provide as much as ten feet of additional perimeter to the building without a radical change in appearance from most viewing points. The small addition would be enough to provide a limited viewing area, small restrooms, and a small mechanical room. Another option (see Option B) would be to build a new exterior wall for the carousel house about halfway between the existing outer wall and the roof overhang. This enclosure would provide about five feet of additional observation and circulation space around the entire carousel. While the appearance of the house would be changed somewhat, the roof structure and overhang would remain in place.

Accommodating larger events or functions at the carousel house would require an addition outside the perimeter of the current roof overhang. This would necessarily have a more dramatic affect on the appearance of the building. Placing this addition on the west or northwest corner of the building would limit the overall visibility of the new structure from the current approach to the carousel house, although there is more space available for expansion to the southwest.

Heating, Ventilating and Air Conditioning

A new heating and air conditioning system with humidity control is needed both to protect the carousel from deterioration and to make the carousel building comfortable for riders at all times of the year. Depending upon the insulation that is added to the structure, approximately eight to ten tons of cooling will be required. We recommend that this come in the form of two units, each five tons or less, which are of a size that can be accommodated within or around the carousel house.

There are a variety of options for a new heating and cooling system. The most expensive, but least visible would be a ground source heat pump with four or five geothermal wells and two interior heat pumps mounted horizontally over the entry area. Ductwork might consist of spiral duct or fabric duct mounted around the inside of the carousel house within the roof arches and below the clearstory windows.

Less expensive options would involve conventional split systems with condensing units mounted either away from the carousel house, on the roof of the carousel house, or in an enclosure/addition underneath the overhang of the roof. Any of the conventional systems will involve some trade-off in the appearance of the building.

Lighting/Electrical

Most of the existing lighting within the carousel building is provided by daylight through the clearstory windows and roll-up doors, or by the lights on the carousel itself. The existing ceiling is painted a dark green color that absorbs, rather than reflects light. As a result, it is very dim inside the building. We recommend that the ceiling be repainted a lighter color, and that spots be used to provide reflected overall lighting. Some additional security lighting is needed on the exterior, as well.

The existing 150 amp electrical panel is not large enough to handle additional loads for the HVAC system and new lighting. We recommend that a larger panel be installed, probably 400 amps, with a 250 amp main.

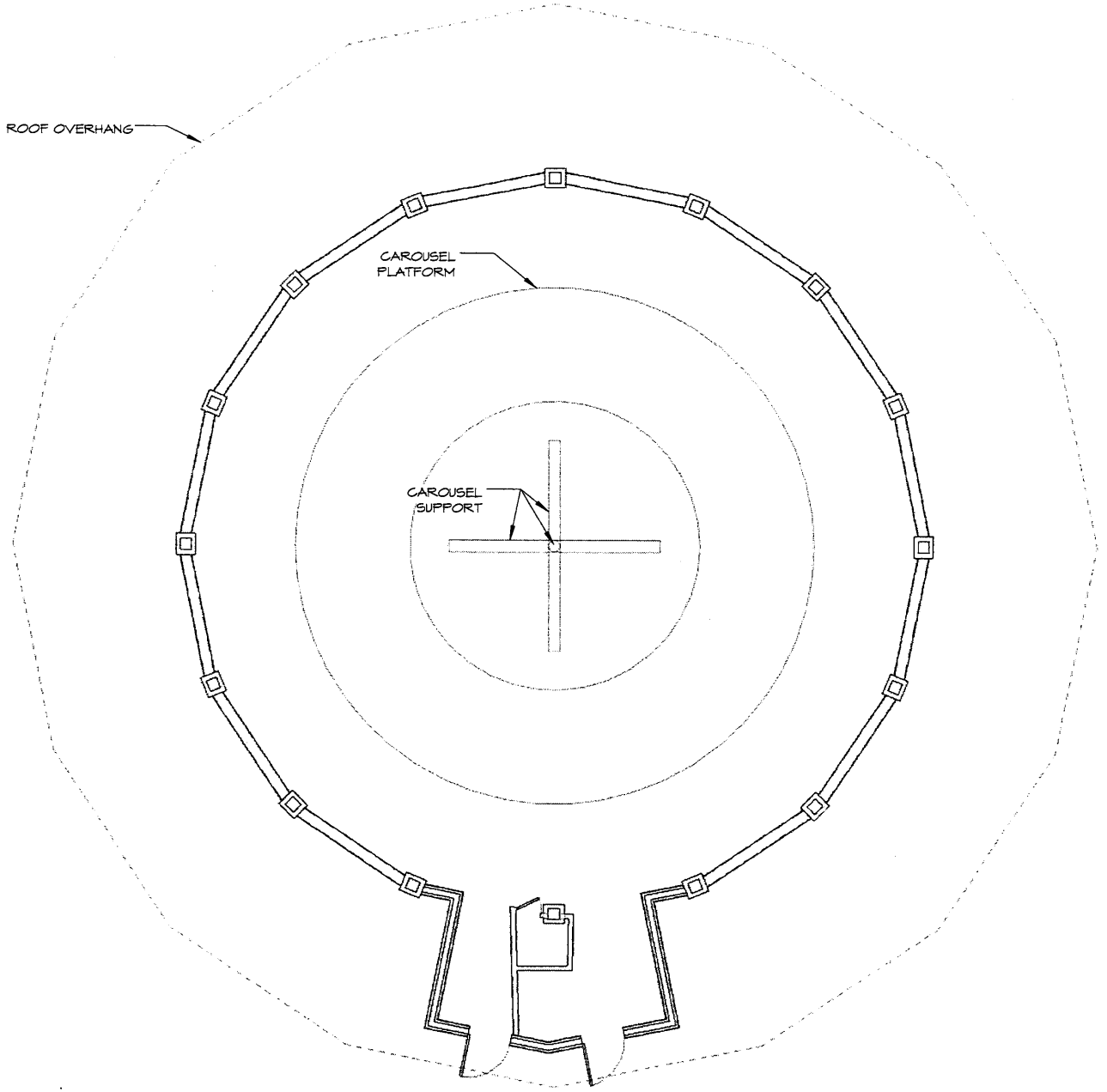
Sprinkler System/Fire Alarm

The existing sprinkler system is a relatively new dry pipe system. Some modifications to the sprinkler piping may be necessitated by changes to the building envelope and by the new sprinkler ductwork. With a heated building, it would be possible to change to a wet pipe system, although the dry pipe system does provide against water damage to the carousel due to system failures. The best protection for the carousel at a reasonable price would be via a VESDA early warning smoke detection system coupled with dry pipe sprinklers.

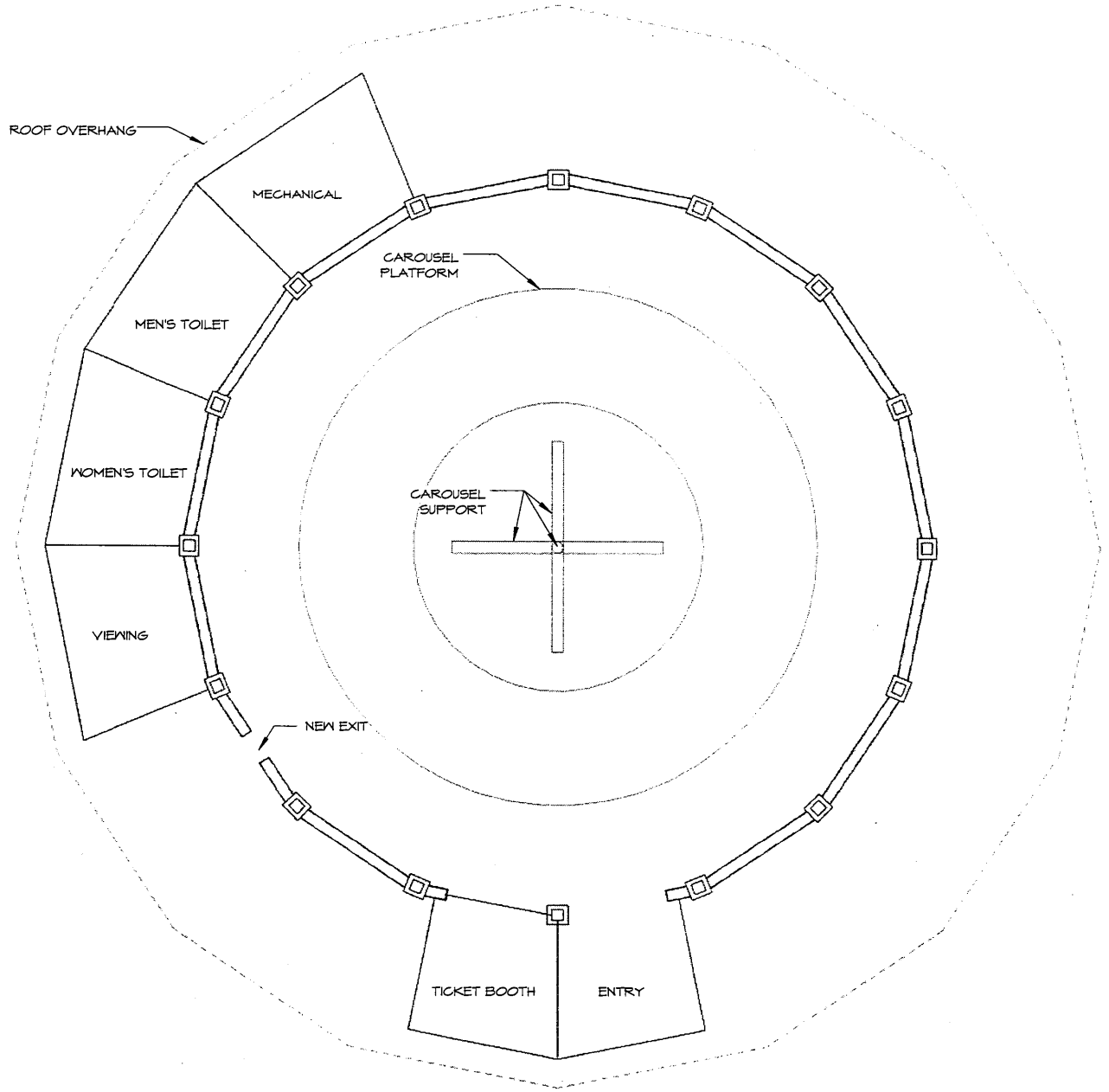
Plumbing

There is currently no plumbing in the building, other than the water main provided for the sprinkler system. If restrooms are added to the carousel house, then an

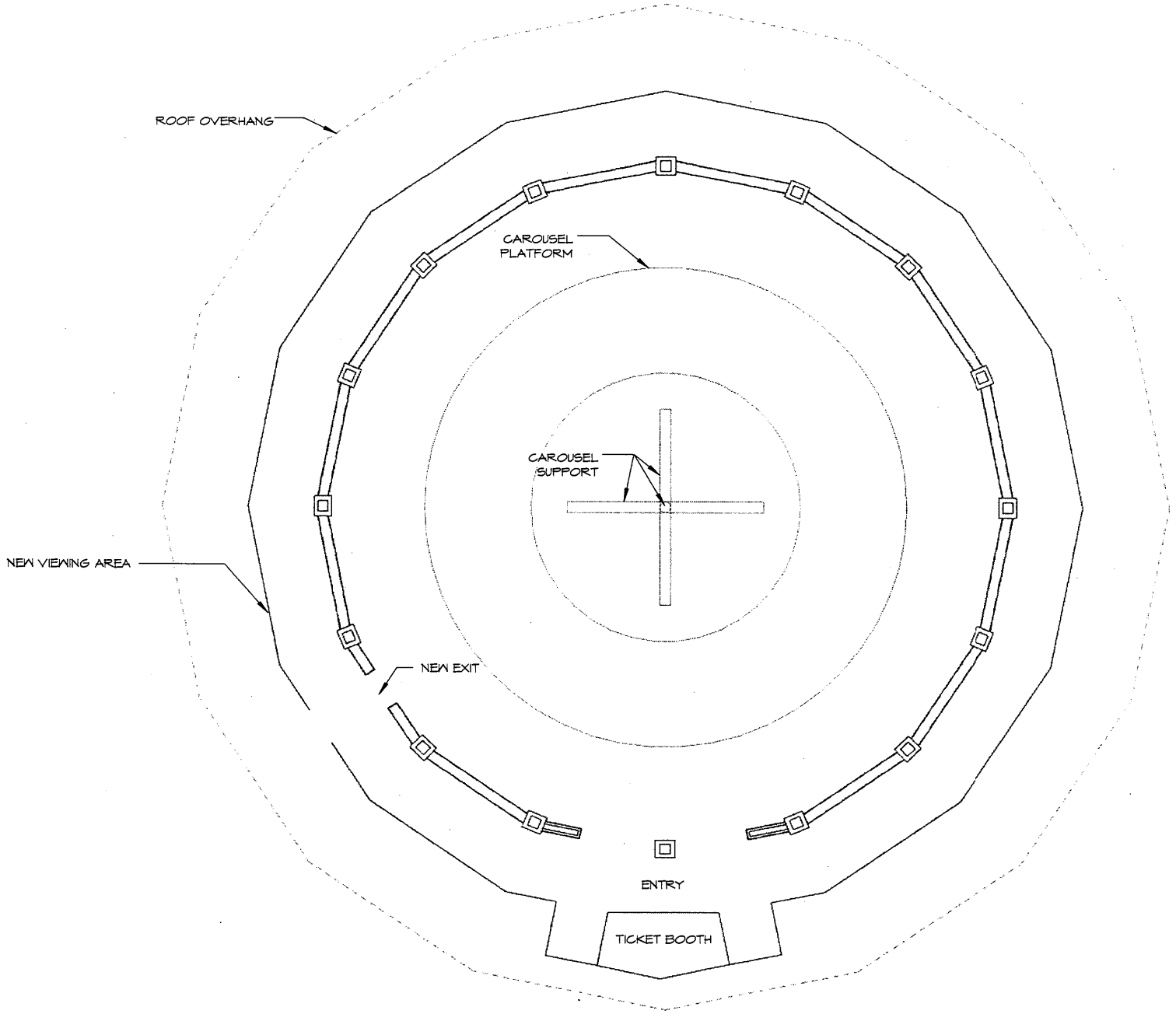
extension must be made to the sewer line that runs north/south along the edge of the creek to the west.



EXISTING FLOOR PLAN


ROOF OVERHANG
MECHANICAL
CAROUSEL PLATFORM
MEN'S TOILET
WOMEN'S TOILET
CAROUSEL SUPPORT
VIEWING
NEW EXIT
TICKET BOOTH
ENTRY

OPTION A


ROOF OVERHANG
CAROUSEL PLATFORM
CAROUSEL SUPPORT
NEW VIEWING AREA
NEW EXIT
ENTRY
TICKET BOOTH

OPTION B