

## **Executive Summary**

In this proposal for the Voorhees Replacement Hospital, it is determined that the helipad currently located in the parking lot area would be better served if it were located on the building's roof. Doing this will ensure that patients have to wait less time to get the emergency treatment that they need by eliminating any ambulance travel currently required to get the patient from the helipad to the hospital.

An in-depth study will need to be done to find the strength and other requirements for helipads located on the top of buildings. After researching the requirements of helipads a spot will need to be located to put the helipad. Locations close to existing elevator shafts will be explored in order to easily transport any patients from the roof down to the emergency room. The pad will then be designed as a two-way slab in order to support the required loads. If the helipad's supports do not match the gridlines of the building, a transfer beam will be required in order to transfer the loads to the building below.

The building's gravity structural system will be redesigned as a part of this proposal. The gravity system's members will be inspected and their sizes increase for the new loads introduced from the helipad. This will also require a look at the building's foundations in order to ensure they are of adequate size for the new loads.

The building's lateral system will also have to be redesigned for the new seismic loads that the helipad will create. By adding more weight to the building the seismic load will increase. A new seismic analysis will need to be performed. The values found will be inserted into an ETABS model and the member sizes will be checked for strength requirements.

Building B's lateral system will be changed by replacing moment connections with braced frame connections. This will help stiffen the building in the East – West direction.

The helipad will also require special lighting concerns so that the helicopter can see where it's landing. These new lights will need to be designed and then wired into an existing panel. Since it might be a large distance from the helipad to the panel, a voltage drop calculation will need to be performed.

The helicopter will also create a lot of extra noise on top of the building. An acoustical analysis will need to be performed for the building envelope to ensure that there is not a large amount of noise in the patient areas. If the building's envelope is found to be inadequate for the noise added, a redesign of the façade will be required to ensure a proper decibel reading from inside the room.