OVERVIEW

IPRO 307 has followed the path of its predecessors in order to help improve the shipping transportation and facilities in the immediate region, specifically Crete, IL.

PROJECT OBJECTIVES

- To integrate high speed rail and intermodal freight systems
- To design a space in Crete, Illinois, that would support an intermodal freight rail yard that will undergo one million lifts per year
- To design a viaduct system that stacks and includes three different modes of transportation (high speed passenger rail, freight rail, and automobile highway)
- To incorporate these three preceding objectives in order to create a newer and more efficient mode of transporting and shipping using an ATMS system

ATMS

ATMS utilizes a crane that spans over 4 lanes of track. Lining the 4 lanes of track are container storage racks that stack 2 high like the trains. ATMS reduces inefficiencies in crane lifting by making sure each lift has a container. It reduces the footprint of unloading and storage areas for containers waiting to be picked up. It reduces confusion in finding your container to pick up and speeds up the process of dropping a new container off.

HIGH SPEED

Members:
- John Allen (Arch. Engineer)
- Jeremy Levin (Mech. Engineer)
- Izydor Radzik (BME)

The high speed rail team determined, by use of the Davis Equation, that in order to move a 10,000 foot double-stacked intermodal train, 4 Acela Express Engines would be required.

SITE DESIGN

Site Efficiency:

<table>
<thead>
<tr>
<th>Old Site Design</th>
<th>New Site Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Size in Acres</td>
<td>1000 Acres</td>
</tr>
<tr>
<td>Intermodal Area in Million SqFt</td>
<td>4.5 Million SqFt</td>
</tr>
<tr>
<td>Total Building in Acres</td>
<td>300 Acres</td>
</tr>
<tr>
<td>Intermodal Area in Million SqFt</td>
<td>13 Million SqFt</td>
</tr>
<tr>
<td>Total Building in Acres</td>
<td>137.75 Acres</td>
</tr>
<tr>
<td>Acres of Intermodal to one Acre of Building</td>
<td>2.17 Acres per building Acre</td>
</tr>
</tbody>
</table>

- The capacity of the intermodal area (in lifts per day) stays the same in both designs.
- The original design had little room for future alterations.
- The original design had no room for trucks on site to alleviate traffic issues.
- The ratio of intermodal to building acres was made 5.5 times better.

VIADUCT DESIGN

Members:
- Sasha Bajzek (Civil Engineer)
- Aaron Davis (Mech. Engineer)
- Jessica Roth (Civil Engineer)

Total Viaduct Cost Estimate: $17,000,000.00

A SPECIAL THANKS TO

- The Entire IPRO Team
- Mi-Jack Products, Inc.