

# Development of 220 mph High Speed Rail Service for Illinois

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**EXPERIENCE** | Transportation



**MIDWEST HIGH SPEED RAIL**  
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## Study Purpose

- Worldwide Use of High Speed Rail Technology
  - Japan, France, Italy, Germany, Spain, China, UK
- Feasibility of 220 mph Alternative to 110 mph Chicago – St. Louis
- Alternative Alignment to Serve Champaign and Decatur
- Use of Railroad Corridors for HSR Right of Way
- Develop Cost Estimate & Phasing Plan



Chicago-St. Louis 220 mph HSR



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## Design Criteria

- Trains Based on UIC Standards (Non-FRA Compliant)
- Requires Separate Dedicated Alignment
- Same Criteria as California and Florida HSR Systems



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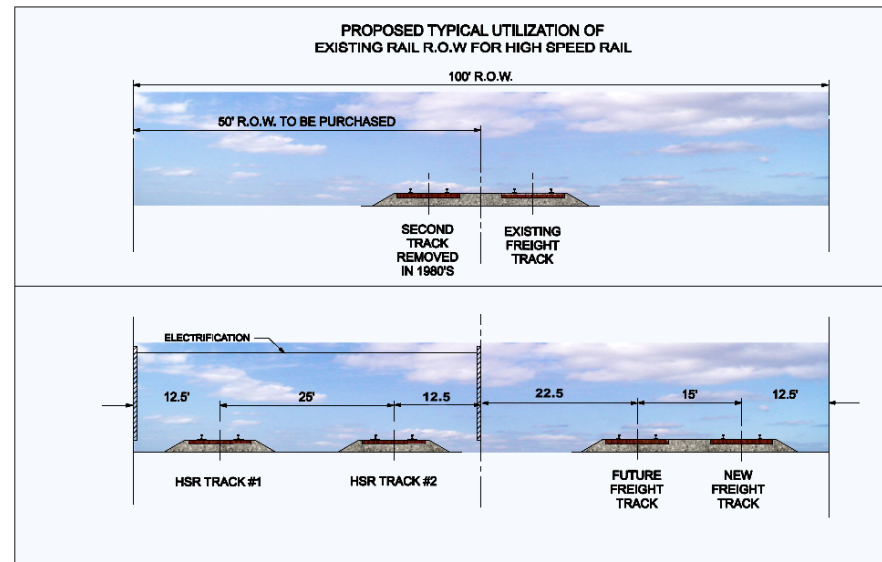
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## Key Findings

- Feasible for HSR to Share Existing 100 ft Railroad Right of Way
- Grade Separated Alignment Can Be Created Providing Benefits to Both Communities and Railroads
- Chicago – St' Louis Travel Time 1h52m for a non-stop train
- Infrastructure Cost \$11.5B



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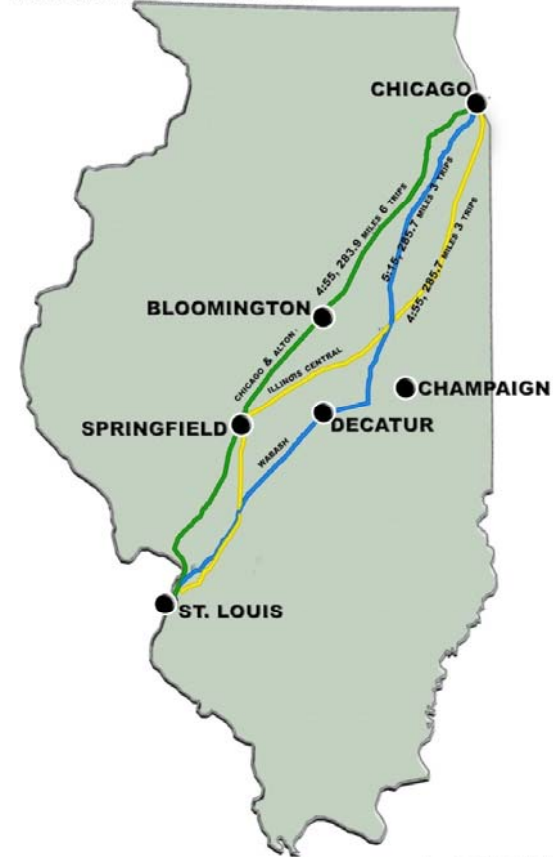
# Background

## Chicago-St. Louis Corridor - 1937

- 3 main routes
- 4h55m service operated on 2

Historical Route (1937)	Miles	Through trips	Fastest Time
Chicago & Alton	283.9	6	4:55
Wabash	285.7	3	5:15
Illinois Central	294.2	3	4:55
Comparison	Miles	Through trips	Fastest Time
Amtrak in 2009	283.9	6	5:20
Final EIS Chicago-St. Louis HSR Project (Jan. 2003)	283.9	3	4:00
Current Study, 220 mph Express Service via Champaign/Decatur/Springfield	306.9	Hourly	1:52

CHICAGO - ST LOUIS AND INTERMEDIATE CORRIDOR CITIES  
1937 PASSENGER TRAIN SERVICE



Source: Official Railway Guide, Feb 1937

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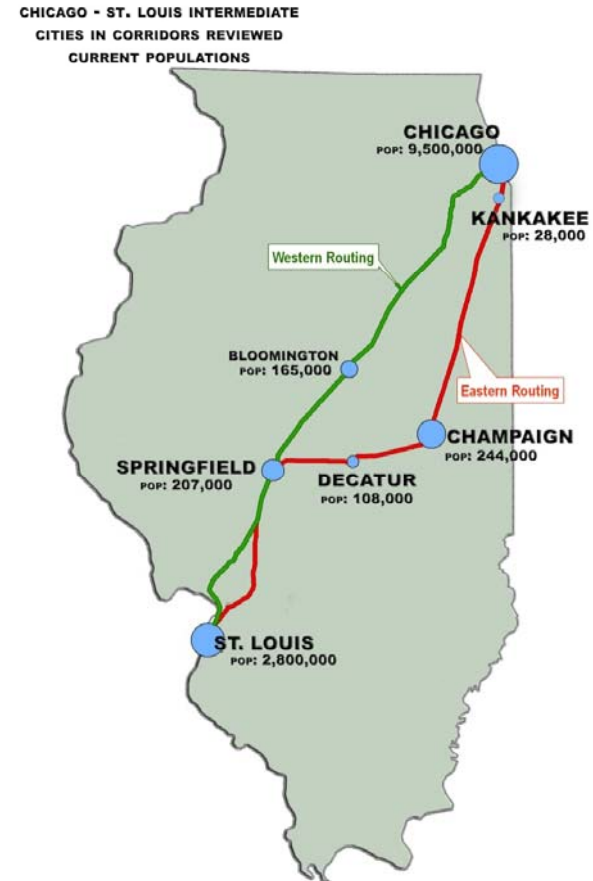
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## Chicago – St. Louis Routing via Champaign

- Champaign and the Research Activities at UIUC Have Increased Prominence and Need for Connectivity to Business Centers
- At 220 mph the Extra Distance to Serve Champaign Takes and Additional 6 minutes
- Use of the Former Illinois Central Railroad Right-of-Way Allows for Very Fast Operations



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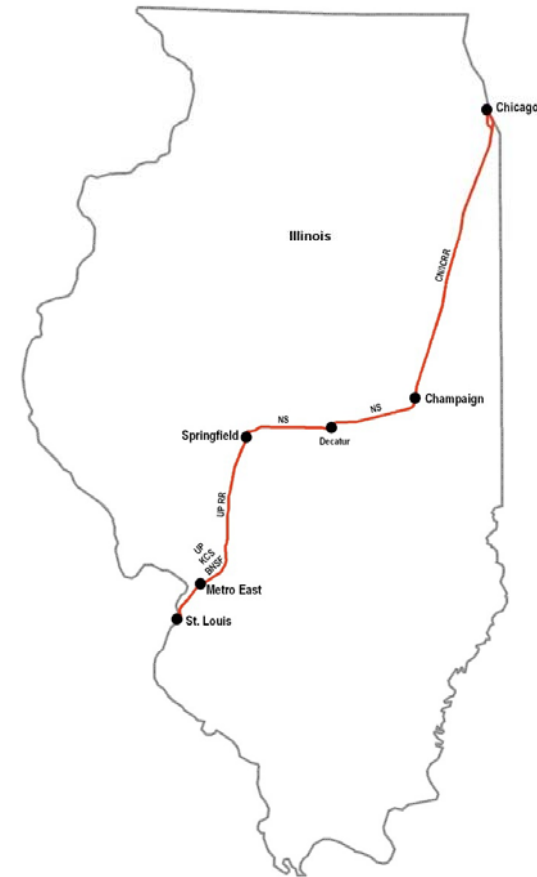
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## The Alignment

- Urban Segments
- Rural Segments



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## O'Hare Western Terminal

- Significant Ridership Base
- NW Suburbs Have 2.5M Population, Same as St. Louis
- Allows Full Air-Rail Integration
- Space Available for Adding Tracks Next to Metra
- 3 Key Flyovers Required
- Enables Lower Cost Site for Fleet Storage & Maintenance



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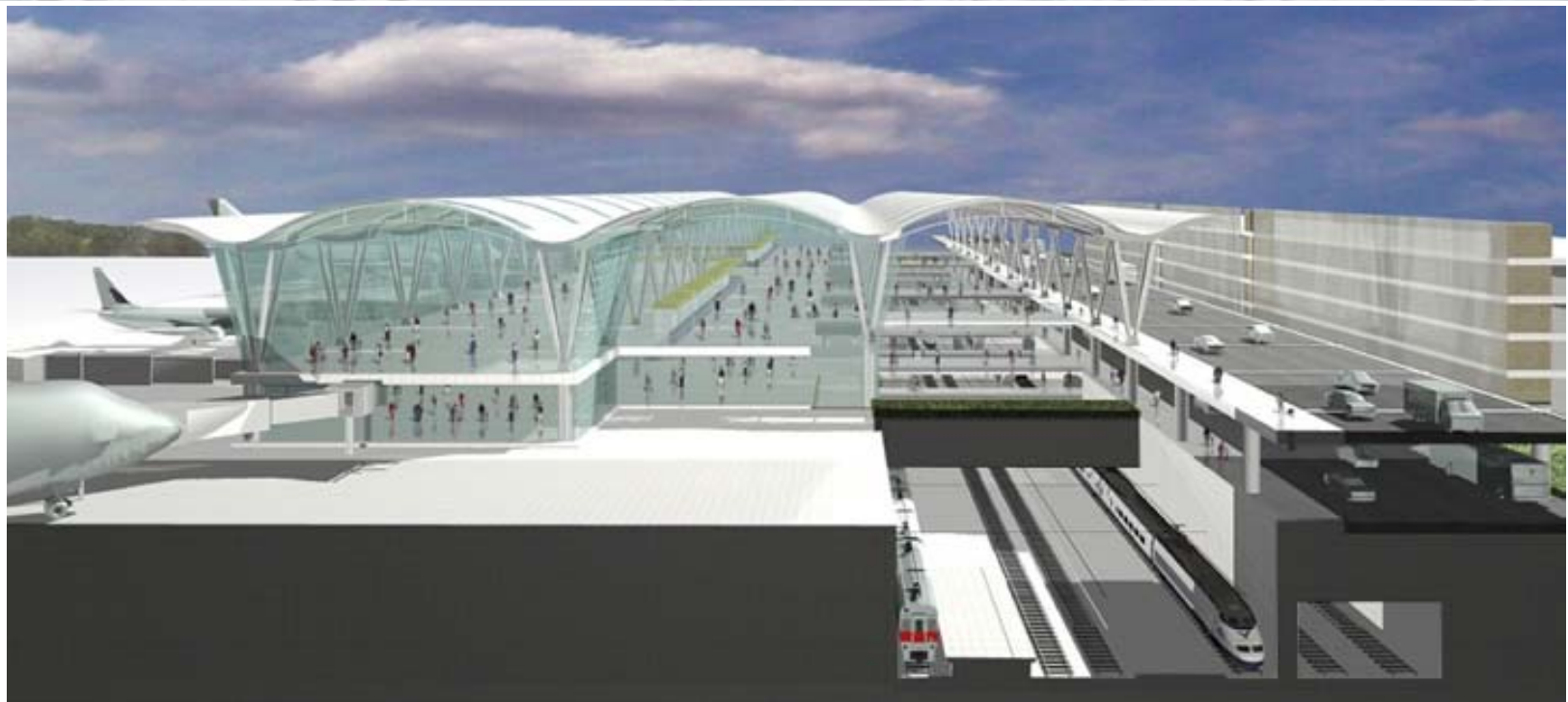


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## O'Hare Western Terminal



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## Urban Segments - Chicago

### Serves

- Union Station
  - Amtrak, Metra, CTA, Loop
- McCormick Place
  - Largest Convention Center in US



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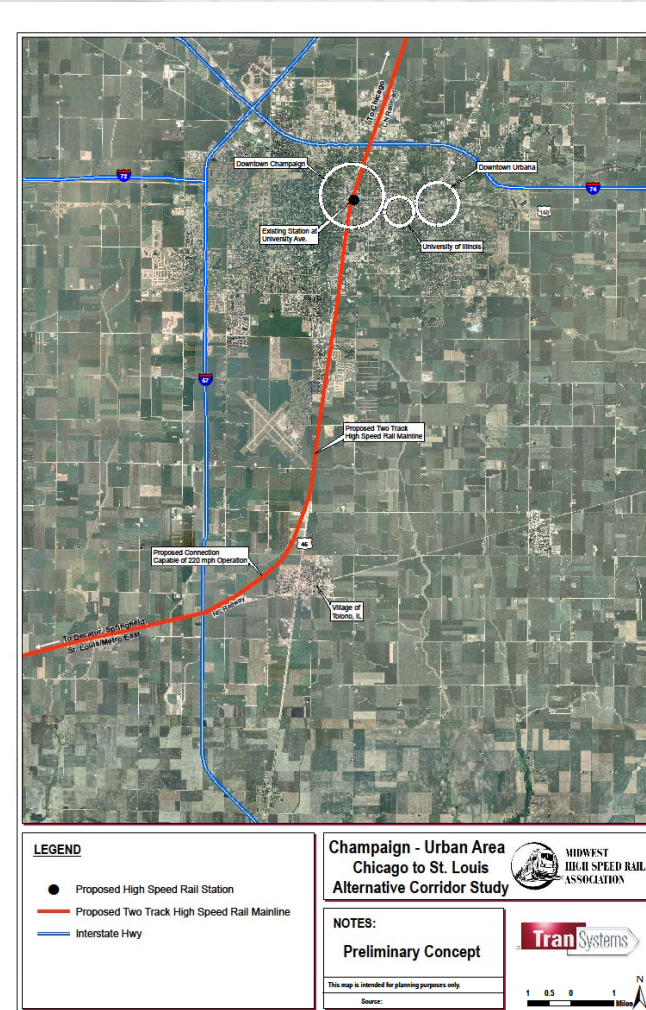
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# Urban Segments - Champaign

- UIUC Access
- Serves New "Illinois Terminal" Station



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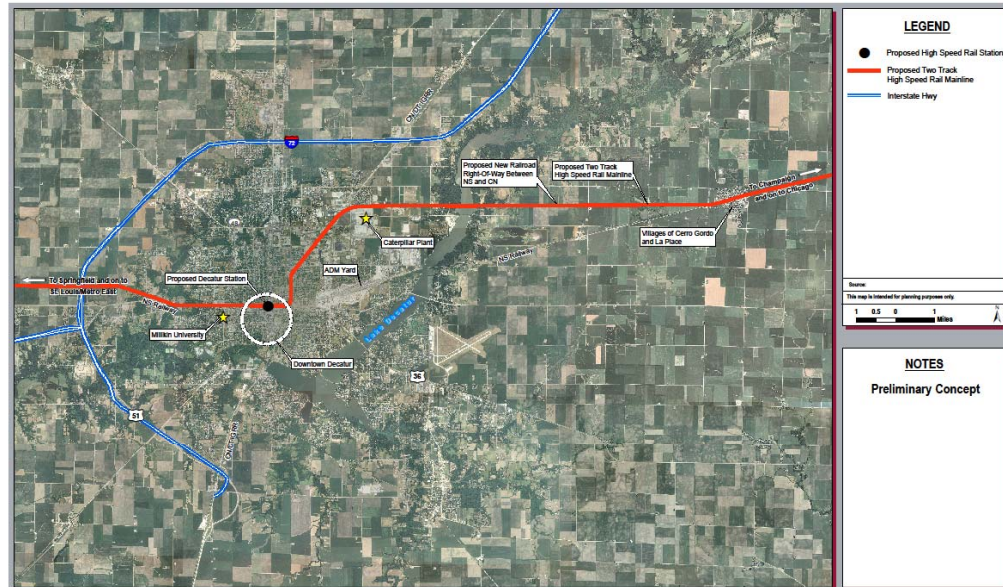


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## Urban Segments - Decatur

- ADM Headquarters
- Proposed Routing Avoids Complexity of RR Yards East of Downtown
- Operation via I-72 Alignment is Also an Option



Decatur - Urban Area  
Chicago to St. Louis Alternative Corridor Study

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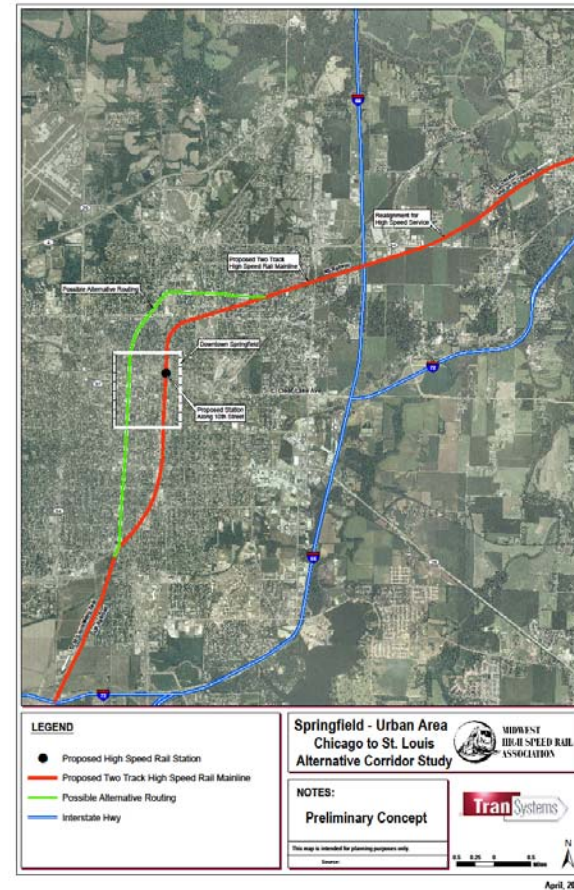
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## Urban Segments - Springfield

- Planned to Use 10<sup>th</sup> Street Corridor
- Potential Interchange Station with Existing Amtrak Service
- Serves State Capital



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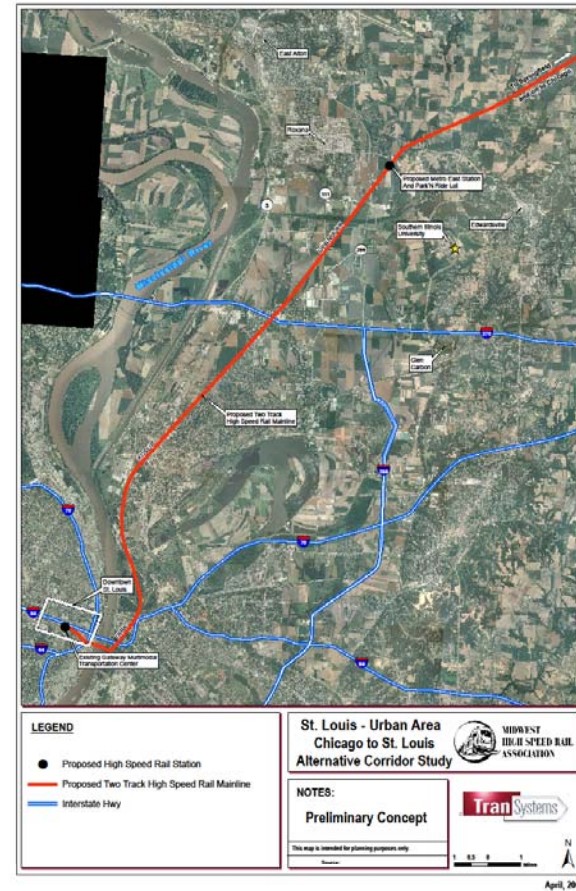
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## Urban Segments – St. Louis

- A “Greenfield” Metro East station is proposed, as well use of new Gateway station



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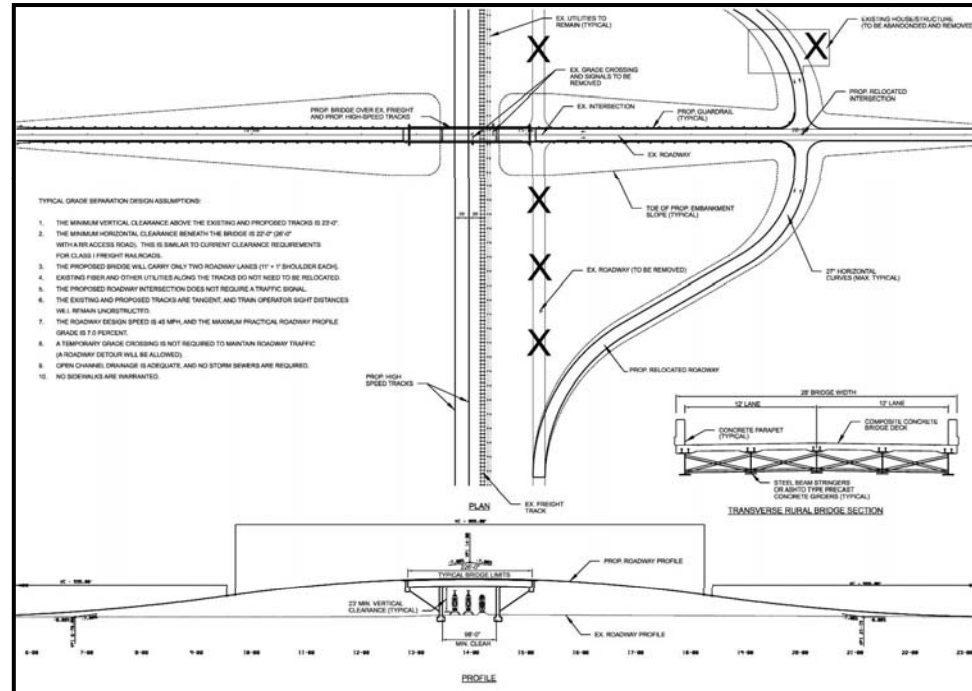


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# Rural Segments

- Plan is based on purchase of portion of ROW from Railroads
- Existing railroads would generally be separated as well
- Grade separation achieved through construction of separation for about half of the crossings and closing the others; essentially same strategy as utilized in construction of Interstates
- Possible alternative would be construction of a new alignment which would probably have lower cost but, more complex environmental clearance



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## Garnering Stakeholder Support

- Cities Served
- Rural Communities
- Railroads
- Contractors
- Airlines
- Tourism

Midwest High Speed Rail Study Chicago (O'Hare) to St. Louis (Downtown) (220 mph) Rail/Roadway Construction Cost Breakout			
ITEM DESCRIPTION	UNIT COST	TOTAL COST	
<b>Railroad Construction</b>			
		\$ 7,990,769,499	63.4%
Trackwork	\$1,902,185,017		
Electrification	\$1,265,620,140		
Signaling	\$ 353,750,800		
Bridges	\$ 690,787,900		
Flyovers	\$ 799,876,213		
Property & ROW	\$ 305,402,040		
Allocated Engineering, Final Design, PM, CM (12%)	\$ 601,466,408		
Allocated Contingency (35%)	\$2,071,680,981		
<b>Roadway Construction</b>			
		\$ 4,618,009,882	36.6%
Rural Grade Separations (Type I & II)	\$ 231,046,920		
Urban Grade Separations (Trench & Embankment)	\$2,641,558,485		
Bridge, Roadway (Includes Sub Structure)	\$ 6,888,000		
At-Grade Crossing Protection	\$ -		
Utilities & Environmental	\$ 174,745,935		
Allocated Engineering, Final Design, PM, CM (12%)	\$ 366,508,721		
Allocated Contingency (35%)	\$1,197,261,821		
<b>TOTAL PRELIMINARY COSTS</b>		<b>\$ 12,609,000,000</b>	<b>100%</b>

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# Travel Time / Cost / Phasing

SEGMENT	APPROXIMATE SEGMENT COST (in Millions)	APPROXIMATE CUMULATIVE COST (in Millions)	APPROXIMATE SEGMENT TRAVEL TIME (Min.)	APPROXIMATE CUMULATIVE TRAVEL FROM UNION STATION TIME (Hrs.:Min.)	EXPRESS RUN APPROXIMATE SEGMENT TRAVEL TIME (Min.)	EXPRESS RUN APPROXIMATE CUMULATIVE TRAVEL FROM UNION STATION TIME (Hrs.:Min.)
O'Hare Airport to Chicago Union Station	\$ 1,012	\$ 1,012	22	-	22	
Chicago Union Station to McCormick Place	\$ 119	\$ 1,131	3	0:03		
McCormick Place to Kankakee	\$ 2,719	\$ 3,850	21	0:24	43	0:43
Kankakee to Champaign	\$ 2,818	\$ 6,668	26	0:50		
Champaign to Decatur	\$ 1,741	\$ 8,409	15	1:05		
Decatur to Springfield	\$ 1,358	\$ 9,767	18	1:23	32	1:15
Springfield to Metro East	\$ 1,861	\$ 11,629	27	1:50		
Metro East to Downtown St. Louis	\$ 904	\$ 12,533	14	2:04	37	1:52

Costs include ROW acquisition, but not trains, stations, maintenance facilities

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## Ridership Estimates

- Fare Systems Studied - \$46 Standard Class Chicago – St. Louis
- Estimated Passenger Miles per Year – 581,578,000
- Estimated Passenger Trips per Year – 3,000,000
- PM/TM – 399, Train Capacity 500, 80% Load Factor
- Revenue - \$125 million per Year

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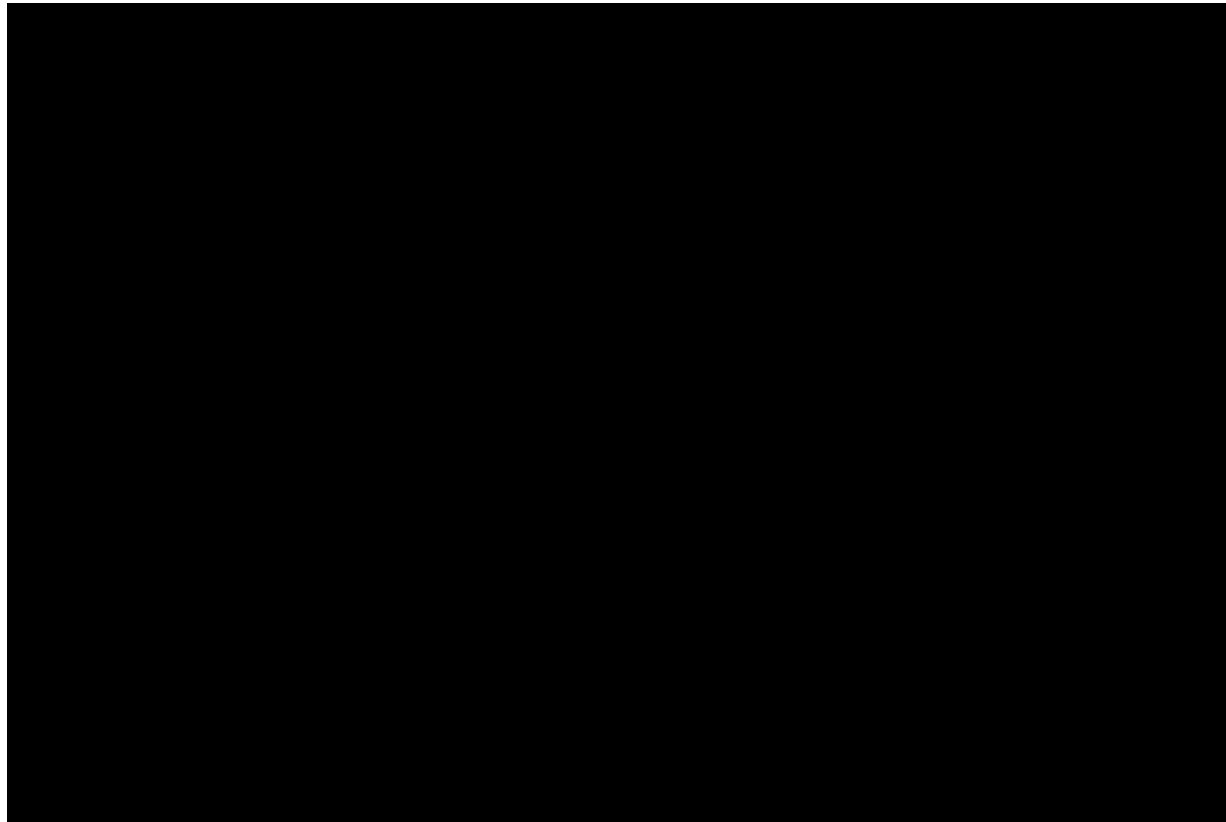


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## Benefits Estimates

- Construction Jobs over 7 years – 26,224
- O&M Permanent Jobs – 904
- New Job Creation – 16,390
- Value of Time Savings - \$35.6 million per year
- Vehicle Accident Reduction - \$56.3 million per year
- Consumer Travel Savings - \$42.8 million per year
- Carbon Emissions Net Savings – 187 million lbs.

## Riding 220 mph Trains



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