

STATEMENT OF QUALIFICATIONS

Design-Build / P3

N O R T H A M E R I C A

ADDRESS

Janssen & Spaans 9120 Harrison Park Ct. Indianapolis, IN 46216

CONTACT Office: 317-254-9686 Email: info@jsengr.com Web: www.jsengr.com



WHY JSE?

What sets JSE apart is our proven ability to effectively provide cost efficient designs and engineering solutions on a multitude of transportation projects.

In the past 40+ years, JSE has excelled in our ability to provide transportation design solutions for complex road and bridge construction projects. Our experienced professional engineers are known for providing innovative and cost effective designs that benefit our clients and contractors through improved construction time efficiencies and reduced construction material costs. JSE's ability to provide exceptional design solutions is confirmed by our numerous national and local engineering achievement awards. Additionally, our superior design efforts have been recognized in numerous professional publications.



LEO SPAANS, PE CEO - Founder - Chairman Ispaans@jsengr.com

OUR COMPANY

JSE specializes in providing transportation design engineering for complex bridge and road construction projects.



ABOUT US

Janssen & Spaans Engineering, Inc. (JSE) provides engineering excellence for government agencies, contractors and consultants on transportation projects throughout the United States, and abroad. We are prequalified to perform consulting services in 28 U.S. States with registered PE's in 40 states. JSE's experienced transportation staff includes registered professional engineers, registered structural engineers, licensed surveyors and certified construction inspectors.

WHO WE ARE

- Transportation Design Consultant Firm
- Founded in 1978, incorporated in 1991
- Innovation, Design Solutions
- DB and P3 Experience
- Lead Designer
- Technical Advisor
- Sub-Consultant to Contractor on Specialty Bridges
- Construction Engineering
- Final Design Services on \$12.0 Billion of Construction
- Proven, Winning Strategy and Results
- In-House Independent QC Group with formal QC/ QA protocol
- Roundtable Constructability Reviews of our designs

Our Mission

To bring our clients, owners and stake holders innovative design solutions that produce projects that are safe, cost effective and superior in design.

JANSSEN & SPAANS

LEADERSHIP TEAM

Lead by an excellent leadership team and a very experienced staff, JSE continues to grow in the transportation and structural engineering industry. Working in an energized environment we continue to look for value engineering and cost effective ideas that will benefit our clients.



CHAIRMAN, LEO SPAANS, PE, SE

42 years with numerous types of complex and non-complex bridge structures.

PRESIDENT, ABE SWIDAN, PE

34 years with numerous types of complex and non-complex road transportation projects.

VICE PRESIDENT, MARVIN BURNS, PE

41 years experience with construction engineering, bridge design and extensive on-site experience.

VICE PRESIDENT, BOB GRAY, PE

36 years professional experience in the planning, design and management of major transportation projects.

VICE PRESIDENT, BRIAN SLAGLE, PE, SE

23 years experience designing complex bridges including a number of design build and value engineering projects.

OUR SERVICES

JSE offers a comprehensive range of professional consulting services with our main focus on transportation projects. We have registered Professional Engineers experienced in all aspects of roadway design, bridge design, specialty structural services, construction engineering, inspection services, and survey and right of way services. Some of our main services types include:

- Design-Build (DB)
- Public-Private Partnership (P3)
- Construction Engineering (CE)
- Bridge Inspections (BI)
- Construction Inspections (CI)
- Value Engineering (VE)
 Independent Design Check & Peer Review

60% SUCCESSFUL ON DESIGN-BUILD PROJECTS WHEN SHORT LISTED JSE has the unique ability to provide both experienced design engineers and construction engineers to deliver services for DB and P3 projects. JSE has led the design efforts and provided construction engineering services for over 30 DB and P3 projects and pursuits with a construction cost of over \$10 billion.

JSE SERVICE LIST

The strong interface between contractors, our road designers, bridge designers and construction engineers has made JSE standout from our competition. Below are some of the transportation and structural engineering we provide to our clients.

Transportation Engineering

- 🗸 Road Desigr
- ✓ Traffic Design
- 🗸 Hydraulic Design
- 🗸 Utility Coordination
- ✓ Topographic Survey
- ✓ Right-of-Way Engineeri
- ✓ Environmental Studies

Structural Engineering

- ✓ Bridge Design (Prestressed Concrete, Structural Steel)
- Complex Bridge Design (Post Tensioned Concrete, Cable Stay, Concrete Segmental, Steel)
- ✓ Construction Engineering (Falsework and Shoring, Bridge Demolition
- ✓ Construction Sequencing & Erection, Cofferdams
- Construction Inspection (Road and Bridge)

OFFICE LOCATIONS

JSE's headquarters is located in historic Fort Harrison on the North East side of Indianapolis, Indiana.

HEADQUARTERS

• Indianapolis, Indiana

US BRANCH OFFICES

- Columbus, Indiana
- Chicago, Illinois
- Cape Coral, Florida
- Miami, Florida

OUTSIDE THE US

• Montréal, Québec

PUBLIC-PRIVATE PARTNERSHIP (P3) PROJECT EXPERIENCE

PUBLIC-PRIVATE PARTNERSHIP PROJECTS	DESIGN YEAR	CONSTRUCTION	NUMBER OF BRIDGES	MILES
TRANSFORM 66 P3 PROJECT, PRINCE WILLIAM CO., & FAIRFAX CO., VA	2016	\$2.1 B	9	90
STATE STREET REDEVELOPMENT PROJECT, LAFAYETTE, IN	2016	\$50 M	-	25
* I-70 RECONSTRUCTION – DENVER, COLORADO	2016	\$1.1 B	29	72
* TURCOT INTERCHANGE RECONSTRUCTION – MONTREAL, QUEBEC	2015	\$2.5 B	40	55
GOETHALS BRIDGE REPLACEMENT - NEW YORK CITY	2013	\$1.0 B	5	-
RT 460 CORRIDOR IMPROVEMENT – SUFFOLK, VA	2012	\$1.5 B	68	250
I-65 OHIO RIVER BRIDGES, JEFFERSONVILLE, IN (SCOPING ENG.)	2012	\$450 M	12	15
HIGHWAY 407E WDL EXTENSION – TORONTO, ONTARIO	2011	\$650 M	45	43
LBJ EXPRESSWAY MANAGED LANES - DALLAS, TX	2011	\$1.0 B	42	75
* S. FRASER PERIMETER ROAD – VANCOUVER, BRITISH COLUMBIA	2009	\$800 M	32	80
I-90 INDIANA TOLL ROAD - GARY, IN	2009	\$100 M	5	10
*PRE-BID	TOTAL	\$11.3 BILLION	288	720

DESIGN-BUILD (DB) PROJECT EXPERIENCE

DESIGN-BUILD PROJECTS	design YEAR	CONSTRUCTION	NUMBER OF	MILES
ITR 80/90 PUSH II - LAKE CO. IN	2019	\$60 M	16	44
* I-440 WIDENING, NASHVILLE, TN (SHORT-LISTED)	2017	\$110 M	14	45
ITR 80/90 PUSH I - NORTHERN, IN	2016	\$189 M	53	292
I-69 OVER PATOKA RIVER – OAKLAND CITY, IN	2010	\$35 M	1	-
I-69 OVER WHITE RIVER – PETERSBURG, IN	2010	\$15 M	1	-
PEABODY MINING BRIDGE – LYNNVILLE, IN	2010	\$900,000	1	-
SR 48 OVER LAUGHERY CREEK – NAPOLEON, IN	2010	\$400,000	1	-
US 460 CONNECTOR – BUCHANAN CO., VA	2009	\$90 M	2	-
I-65-BOONE COUNTY, IN	2009	\$60 M	3	50
SALT BARNS- CAMBRIDGE, CHESTERTON & MICHIGAN CITY, IN	2009	\$1.0 M EACH	-	-
I-88 OVER FOX RIVER, IL	2008	\$55 M	2	25
I-70 "SUPER 70" – INDIANAPOLIS, IN	2007	\$175 M	28	75
I-355 OVER DES PLAINES RIVER, IL	2007	\$125 M	2	10
96TH STREET OVER I-465 – INDIANAPOLIS, IN	2006	\$3.5 M	1	.06
DIXON MILL – SCIOTO CO., OH	2005	\$2 M	1	5
CENTRAL INSURANCE BRIDGE – COLUMBUS, OH	2005	\$200,000	1	-
I-465 AT I-70 – INDIANAPOLIS, IN	2003	\$69 M	19	55
I-65 AT 38TH ST. – INDIANAPOLIS, IN	2001	\$88 M	20	40
*PRE-BID	TOTAL	\$ 1.5 BILLION	165	641.6



PUBLIC-PRIVATE PARTNERSHIP

TRANSFORM 66 EXPRESS LANES PUBLIC-PRIVATE PARTNERSHIP PROJECT

Location:

Prince William & Fairfax Co., Virginia **Owner:** Virginia Department of

Transportation (VDOT)

Client: Ferrovial Agroman

Construction Cost: \$2.1 Billion Work Type: Public-Private Partnership

Completion Date: 2022 (estimated)



Project Description

This P3 known as the I-66 Express Lanes, encompasses a 25 mile-long section of the Interstate 66 ("I-66") corridor between U.S. Route 15 in Prince William County and Interstate 495 (the "Beltway") in Fairfax County in Northern Virginia.

JSE provided technical proposal plans for the highway, structural and traffic control on a 9 mile section of this P3 project. Services included highway design, bridge design, bridge rehabilitation planning, traffic design, drainage improvements and maintenance of traffic during construction. Highway design included converting an existing HOV lane and adding a second express lane for transit, carpools and toll paying users while retaining three general purpose lanes. Structural elements include multiple retaining walls to accommodate the widened section and the widening of three sets of mainline structures. One existing cross road structure is widened and has two ramp connections at the center of I-66 for express lane access. Four new bridge structures, one a complete replacement of an existing cross road, were also included. Maintenance of traffic plans were complex with many restrictions on the number and times of day those lanes could be closed.

JSE has been retained to work on final design for this project.

STATE STREET REDEVELOPMENT PUBLIC-PRIVATE PARTNERSHIP PROJECT

Location: West Lafayette, Indiana Owner: Purdue Research Foundation, City of W. Lafayette

Client:

Plenary Group & Rieth-Riley Construction Company **Construction Cost:** \$50 Million Work Type: Public-Private Partnership

Completion Date: 2018



Project Description

JSE is providing design and project management services for this \$50 million P3 reconstruction of twelve major roadways on the campus of Purdue University in West Lafayette, Indiana. The State Street Redevelopment Project (SSRP) will be completed near the end of 2018 in time for Purdue University's 150-year anniversary. SSRP will transform and serve as a gateway to the Purdue campus making it a better place for residents, students, business owners and visitors. This transformation will create a more desirable destination with new greenspaces, outdoor seating and overall improved aesthetics. Purdue University will enjoy the enhanced safety of pedestrian-friendly sidewalks and bike paths, and a renovated Western Gateway and Downtown & Village Gateway. The construction involves new roundabouts, intersections, travel lanes, bicycle paths, storm sewers, new roadway alignments as well as other improvements to enhance the University, City Village and Downtown.

JSE is providing the design services for this complex, urban reconstruction project. The design includes over 4 miles of roadway design, 2 new roundabouts, new storm sewers, detention and BMP structures, 18 new traffic signals, new and improved signing, street lighting and ITS features, design of over 75 ADA compliant curb ramps, added bike lanes, trees and landscaping. JSE is also providing maintenance of traffic and construction staging design services involving not only vehicle traffic but also pedestrian/ student MOT during construction.

CENTRAL 70 (I-70 EAST) PUBLIC-PRIVATE PARTNERSHIP PROJECT

Location: Denver, Colorado Owner: Colorado Department of Transportation (CDOT) Client: Ferrovial Agroman & SEMA Construction Construction Cost: \$1.2 Billion Work Type: Public-Private Partnership *Pre-Bid Work Completion Date: 2022 (estimated)



Project Description

The Central 70 project proposes to reconstruct a 10-mile stretch of I-70 east of downtown, add one new Express Lane in each direction, remove the aging 53-year old viaduct, lower the interstate between Brighton and Colorado boulevards, and place a 4-acre cover park over a portion of the lowered interstate. Construction is expected to begin in 2018.

JSE provided design and plan development services for the pre-bid phase for this P3 project. The services included road and bridge design, plan review, construction engineering, hydraulic design, retaining wall design and traffic design.

TURCOT INTERCHANGE PUBLIC-PRIVATE PARTNERSHIP PROJECT

Location: Montreal, Quebec

Owner: Transports Quebec Client: SNC Lavalin, Zachry Construction Construction Cost: \$2.5 Billion Work Type: Public-Private Partnership *Pre-Bid Work Completion Date: 2020 (estimated)



Project Description

The Turcot Interchange project reconstructs four existing interchanges serving Highways 15, 20 and 136. Over 100 lane miles of highway, ramps and local roads will be reconstructed. This requires the demolition of over 45 bridge structures and construction of 58 new bridge structures, including one signature cable-stayed structure. All construction operations are phased and required to meet a stringent level of services for the travelling public with very limited lane closure periods.

During the bid phase, JSE performed a value engineering analysis of the bridge structures, drainage design and road geometry. JSE provided detailed reports and met with the designers to convey all alternate design concepts.

Additionally, JSE provided an independent check on portions of the final design product submitted in the Technical Proposal.

GOETHALS OVER ARTHUR KILL STRAIT PUBLIC-PRIVATE PARTNERSHIP PROJECT

Location: Elizabeth, NJ & Staten Island, NY **Client:** Macquairi Capital (USA) Work Type: Public-Private Partnership

Owner:

Port Authority of NJ/NY

Construction Cost: \$1 Billion **Completion Date:** 2017



Project Description

JSE served as the lender's technical advisor on this P3 project. The lender provided financing for the winning team of Kiewit / Massman / Weeks Marine. This project constructs tie-ins, approach bridges and a new cable-stayed bridge over the Arthur Kill.

JSE actively participated in the pre-bid design task force meetings and regularly provided input and suggestions on design optimizations (value engineering) for the structural work. Many of these design suggestions were incorporated into the final design.

Additionally, JSE performed a detailed review and analysis of the main cable stayed bridge and of the approach span structures. At the conclusion of the design, JSE reviewed the final design packages and prepared the technical report for the lender.

TORONTO HWY 407E EXTENSION PUBLIC-PRIVATE PARTNERSHIP PROJECT

Location: Toronto, Ontario Owner: Ontario Ministry of Transportation Client: Ferrovial Agroman, SNC Lavalin

Construction Cost: \$650 Million Work Type: Public-Private Partnership

Completion Date: 2015



Project Description

This P3 project extends existing Highway 407E 24 km to the east in addition to adding a new north-south link connecting the extended 407E south to Highway 401. The project originates at Brock Road in Pickering, Ontario and terminates at Harmony Road in Oshawa, Ontario. JSE provided proposal and bid plans for the Highway 407 portion of this P3 project. JSE also performed the final design for Section 3 which included the new West Durham Link, 407E, 401 and two multi-level full speed directional interchanges. Four local streets were reconstructed to add overpasses.

Engineering calculations and analysis for the hydrology and hydraulics for every crossing were provided by JSE in accordance with the applicable highway and environmental standards. The structures were optimized to the smallest size possible in consideration of the hydrology, hydraulics and geomorphology.

JSE also provided structural engineering services for the design of 45 bridges. The types of bridges designed on this project included steel beam and prestressed concrete bridges both in simple span arrangement and continuous arrangement. Most of the deck design also utilized partial depth prestressed deck panels to expedite construction.

IH-635 MANAGED LANES (LBJ) PUBLIC-PRIVATE PARTNERSHIP PROJECT

Location: Dallas, Texas Owner: Texas Department of Transportation (TXDOT) **Client:** Ferrovial Agroman

Construction Cost: \$1 Billion Work Type: Public-Private Partnership

Completion Date: 2015



Project Description

This P3 project involved the construction of 4 miles of a 6 lane wide depressed tollway from Rosser Road to SH 75 on the north side of Dallas, Texas. JSE was the lead consultant for this complex interstate reconstruction project. 8 lanes of freeway, 4 to 6 lanes of frontage roads and one major interchange were reconstructed. JSE provided structural engineering services for the design of 43 bridges and 2 million square feet of various types of retaining walls including rock nail, MSE, cast-in-place and drilled shaft walls. Several existing bridges were strenghtened, widened or repaired. Four interior piers of a multi-level structure had to be moved to fit the new lane arrangement. Road design was completed for 75 lane miles of managed toll lanes, freeway and frontage roads along with multiple cross streets, slip lanes and ramps. New drainage systems consisting of over 20 miles of pipe were designed in conjunction with the detention ponds and water quality features.

JSE also completed the hydraulic study for a major water crossing. All traffic signals within the project limits were replaced, updated and connected to the new ITS system. New lighting was added. All traffic signs were replaced. Complex traffic maintenance plans to meet the stringent contract criteria that all lanes must remain in service for the duration of the construction were developed in cooperation with the contractor. All lanes remained open while completing the 30 foot deep excavation down the center of the existing highway. JSE also provided demolition analysis, load ratings, and staged removal procedures for the all of existing bridges throughout the project.

I-90 INDIANA TOLL ROAD (ITR) PUBLIC-PRIVATE PARTNERSHIP PROJECT

Location: Lake County, Indiana Owner: INDOT & Indiana Finance Authority **Client:** Ferrovial Agroman

Construction Cost: \$250 Million **Work Type:** Public-Private Partnership

Completion Date: 2011



Project Description

As part of the Indiana Toll Road concession agreement, the concessionaire was required to complete the added travel lanes project for this section of I-90. The project consisted of adding one additional travel lane in each direction with pavement rehabilitation or replacement for the existing pavement. The interchange at Broadway was also reconstructed. The project included the widening, reconstruction or replacement of seven bridges. The main structure was a 4000' long total steel structure supported by pinned steel columns on concrete pedestals. The bridge was widened and jacked vertically and horizontally to meet modern superelevation requirements. JSE also designed the widening and reconstruction of the GTP viaduct which is 2800' long. To expedite construction, precast pier caps were used in place of conventional cast in place caps. Five other bridges, two crossings of the Grand Calumet River, two ramp approaches to the BVE viaduct and the Tennessee Road Bridge, were also designed by JSE.

As the lead design firm, JSE provided plan and profiles, construction details, maintenance of traffic plans, pavement markings, erosion control details, retaining wall designs, drainage design, cross sections, interchange details, and bridge plans. The design effort included interchange reconfiguration with new traffic signals and signing. This Design Build team was comprised of Ferrovial Agroman and another design firm. JSE was designated the lead engineer designer for Section 2 of the project.



DESIGN-BUILD

I-88 OVER FOX RIVER BRIDGE DESIGN-BUILD PROJECT

Location: Kane County, Illinois

Owner: Illinois Tollway Authority Client: McHuh Construction

Construction Cost:

\$44.5 Million

Work Type: Design-Build

Completion Date: 2008



Project Description

JSE provided design plans and calculations for construction of the EB widening of I-88. JSE prepared all details required to construct this project including bridge plans, alignment plans, grading plans, traffic signal plans, landscaping plans, cross sections, drainage plans and maintenance of traffic details.

The highlight of the project was the I-88 over Fox River Bridge. This is a 10-span bridge approximately 1340' in length with the main spans (180' in length each) composed of structural arch members supporting a prestressed beam superstructure.

I-440 WIDENING DESIGN-BUILD PROJECT

Location: Nashville, Tennessee Owner: Tennessee Department of Transportation (TDOT) Client: Superior Construction

Construction Cost: \$110 Million (estimated) Work Type: Design-Build *Short-Listed Completion Date: N/A



Project Description

The proposed project for I-440, from I-40 to I-24 in Davidson County will include removing and/or replacing the existing concrete pavement with asphalt pavement, removing the existing elevated grass median and widening portions of the 7.6-mile corridor to provide three (3) travel lanes in each direction as depicted on the conceptual layouts.

JSE teamed with Superior Construction as the lead engineer. Are team was recently short-listed and is moving forward with the RFP. A primary key goal for the Superior DBT will be to effectively construct the new corridor while providing safe travel to public, all while limiting the inconvenience as much as possible.

Our team shares the philosophy that alternative delivery projects provide the best environment for innovation and cost savings to thrive. Our extensive experience with Design-Build highway projects is a tribute to this belief. As evidenced in the following sheets, our team has the experience, expertise, and capability to successfully delivery any DB project.

INDIANA TOLL ROAD 80/90 PUSH DESIGN-BUILD PROJECT

Location: Northern Indiana Owner: ITR Concession Co. & Indiana Finance Authority Client: Rieth-Riley Construction

Construction Cost: \$189 Million Work Type: Design-Build

Completion Date: 2017



Project Description

The 80/90 PUSH Project is a major rehabilitation and upgrade of a 73 mile section of the Indiana Toll Road (I-80 / I-90) between the cities of Lake Station and Elkhart. The existing mainline asphalt pavement was milled off and the underlying concrete pavement was crack and seated to accept a new pavement section. The project also required various types of bridge rehabilitation on 53 structures.

JSE was the prime consultant on this project providing road and bridge design services. JSE performed extensive traffic analysis considering different times of the year to estimate queue lengths in order for the contractor to determine their construction windows and maximum length of construction zones. A detailed maintenance of traffic scheme was developed by JSE that included interchange closures, as necessary, detour routes and phased construction on the mainline.

The project required every bridge to be inspected in order to generate a durability report to confirm the amount or rehabilitation required on each bridge. The durability report served as the scope document for which final plans were developed. All structures were required to meet minimum performance criteria defined by the owner. Post-construction, JSE performed the biannual inspection and load rating of every bridge included in this project.

PENSACOLA BAY BRIDGE DESIGN-BUILD PROJECT

Location: Pensacola, Florida Owner: Florida Department of Transportation (FDOT) **Client:** Johnson Bros. Corporation

Work Type: Design-Build (*Pre-Bid Work) **Completion Date:** 2015



Project Description

Janssen & Spaans Engineering (JSE) provided engineering services for the pre-bid design and plan development for the new proposed Pensacola Bay Bridge. The existing 60 year old bridge has been listed as structurally deficient by traffic engineers.

JSE prepared technical drawings for the entire 3.3 miles that included road and bridge design, plan review, construction engineering, hydraulic design, retaining wall design and traffic design. JSE also help prepare 3d renderings highlighting key features of the bridge and aesthetics throughout the project.

I-355 OVER DES PLAINES RIVER VALLEY DESIGN-BUILD PROJECT

Location: Lemont, Illinois

Owner: Illinois Tollway Authority Client: Walsh Construction

Construction Cost: \$125 Million

Work Type: Design-Build

Completion Date: 2007

Total Length: 6600' x 2 Number of Spans: 35 (Main Span 270' divided into 8 units Width: 2 @ 63' - 7"

Project Description

JSE provided design-build engineering services on this centerpiece project of the 14 mile I-355 extension. The superstructure design had spans up to 170' using prestressed 90" bulb tee girders, 216' spans using post-tensioned spliced segmental 102" bulb tee girders and 270' main spans using 120" haunched pier segments with 102" drop-in girders. The post-tensioned pier caps are supported on a single row of columns exceeding heights of 70'.

The construction cost of the design provided by JSE beat the next closest design's construction cost by \$8 million.

This bridge was featured in the Spring 2008 issue of Aspire magazine and was on Road & Bridges top 10 list of best bridges in 2006. Additionally, this bridge received an Honor Award from ACEC.

US 460 CONNECTOR - PHASE 1 DESIGN-BUILD PROJECT

Location: Buchanan County, Virginia Owner: Virginia Department of Transportation (VDOT) **Client:** Bizzack, CJ Mahan

Construction Cost: \$90 Million Work Type: Design-Build

Completion Date: 2014



Project Description

JSE provided design-build engineering services on this 1733 ft. long twin segmental box bridge. The superstructure had two main spans of 489 ft. with the box varying from 31 ft. to 12 ft. 6 in. in depth. The bridge is supported by "H" shaped columns with a maximum pier height of 220 ft. measured from top of footing to bottom of box. These are the tallest bridge piers in the state of Virginia.

One of the biggest innovations on this project was the elimination of hollow core piers originally suggested by the owner's engineer in the schematic design issued with the bid documents. Utilizing an "H" shaped pier eliminated the hollow core and the extensive internal inspection system and formwork typically required on hollow piers of this size and height. The piers also utilized advanced construction materials such as Grade 75 reinforcing with a 5000 psi high early strength concrete and contained Structure Vulnerability Mitigation features.

The construction cost of the design provided by the JSE beat the next closest design's construction cost by \$3 million on top of being the most responsive bid (bids weighted on technical proposal score).

I-69 BRIDGE OVER PATOKA RIVER DESIGN-BUILD PROJECT

Location: Pike & Gibson County, Indiana Owner: Indiana Department of Transportation (INDOT) Client: Kokosing Construction

Construction Cost: \$35.2 Million Work Type: Design-Build

Completion Date: 2013



Project Description

JSE provided design services for these precast prestressed semi-lightweight concrete bulb-tee superstructure twin bridges over the Patoka River Floodplain and CR 150N in Pike & Gibson County, Indiana. These bridges are located in the seismic zone 2 which requires comprehensive seismic analysis to be performed on the substructures.

These precast prestressed bridges consist of northbound structure with 30 spans and southbound structure of 31 spans with total length of each structure at approximately 4400 ft. The superstructure consists of a concrete deck supported by 4 beam lines of 84 in. precast prestressed bulb-tee beams. The substructures consisted of frame piers with reinforced concrete cap supported on two 4.5 ft. diameter columns; each column is supported on a 6 ft. diameter drilled shaft as foundation.

Utilizing semi-lightweight concrete beams, the bridges are able to span over 154 ft. span with 84 in. tall beams and also reduce the seismic forces distributed to the substructures which reduce the construction and material cost.

I-69 OVER WHITE RIVER DESIGN-BUILD PROJECT

Location:

Davies Co. & Pike Co., Indiana **Owner:** Indiana Department of Transportation (INDOT) **Client:** Force Construction Company, Inc.

Construction Cost: \$14.9 M Work Type: Design-Build

Completion Date: 2012



Project Description

JSE provided design services for these precast prestressed semi-lightweight concrete bulb-tee superstructure twin bridges over the White River and CR700N between Daviess and Pike County, Indiana. These bridges are located in the seismic zone 2 which required seismic analysis of deep drilled shafts and consideration of soilstructure interaction effects including soil liquefaction.

Both Northbound and Southbound precast prestressed bridges consist of 9 spans with a total length of each structure of approximately 1,275 feet. The superstructure consists of a concrete deck supported by 4 beam lines of 90" precast prestressed bulb-tee beams. The substructures consisted of bench piers with reinforced concrete cap supported on two 5'-6" diameter columns continuing into 5'-6" drilled shafts with permanent structural steel casings.

The structures contain special design items such as lightweight concrete to reduce structural mass and corresponding seismic forces, steel diaphragms at piers for rapid construction, bearing isolation system, and seismic restrainer cables across deck expansion joints to control movement of the superstructure due to extreme seismic events. The structures also feature a closed drainage system to prevent water runoff from directly entering the White River.

I-465 & I-70 INTERCHANGE DESIGN-BUILD PROJECT

Location: Indianapolis, Indiana Owner: Indiana Department of Transportation (INDOT) **Client:** Walsh Construction Company

Construction Cost: \$67 Million Work Type: Design-Build

Completion Date: 2002



Project Description

This project included the reconstruction of approximately 3.3 miles of I-465 on the east side of Indianapolis adding new lanes to provide four (4) travel lanes in each direction. This project also included construction of a new two (2) lane directional ramp, reconstruction/widening of the exiting directional ramp, reconstruction of five (5) other I-465/ I-70 interchange ramps and the south ramps at the I-465/Pendleton Pike interchange. The project included construction of three (3) new bridges, complete replacement of six (6) other bridges and reconstruction/widening of ten (10) additional bridges. This project also included reconstruction of 21st Street, Pendleton Pike, Shadeland Avenue and Post Road to accommodate the increased traffic expected during I-465 construction. Three (3) lanes in each direction for I-465 traffic were maintained at all times during construction. The project included new retaining wall design and construction to eliminate the need for additional right-of-way. New highway signs and new highway lighting design and construction were also part of this project.

JSE was the lead consultant for this complex project. JSE successfully completed the design on schedule and the contractor received the bonus for early construction completion.

I-65 INTERSTATE RECONSTRUCTION DESIGN-BUILD PROJECT

Location: Boone County, Indiana Owner: Indiana Department of Transportation (INDOT) **Client:** Milestone Contractors

Construction Cost: \$32 Million Work Type: Design-Build

Completion Date: 2010



Project Description

I-65 Added Travel Lanes interstate project was one of the first INDOT DB projects to utilize the double faced guardrail typical section for interstate added capacity and added travel lanes projects. Project was located on the northwest side of Indianapolis starting at the I-865 interchange and extending 8.1 miles north to the CR 100E interchange at Lebanon, Indiana.

JSE performed all the required design services by providing plan and profiles, construction details, maintenance of traffic plans, pavement markings, traffic signing, lighting, signals, ITS, erosion control details, retaining wall designs, drainage design, cross sections, interchange details, and bridge plans. JSE met regularly with INDOT, the Contractor, FHWA, INDOT's Consultant Project Management Team, resource agencies and others. JSE received approval from INDOT on all plan submittals, design computations, design exceptions, and ATC's. JSE submitted and received approvals for all required permits including Boone County Drainage Permits, IDEM Rule 5, and IDNR Construction in a Floodway.

I-70 "SUPER 70" RECONSTRUCTION DESIGN-BUILD PROJECT

Location: Marion County, Indiana Owner: Indiana Department of Transportation (INDOT) Client: Walsh Construction

Construction Cost: \$175 Million Work Type: Design-Build

Completion Date: 2007



Project Description

This project includes reconstruction of six (6) miles of I-70 on the busiest highway in the state of Indiana. The project begins just east of the I-65 north split in downtown Indianapolis and ends just east of the I-465 East leg interchange and includes minor ramp adjustments at Keystone Avenue/Rural Street, Emerson Avenue, and Shadeland Avenue interchanges.

JSE provided design plans for the replacement of 75 lane miles of pavement, 28 bridge decks, and widening of the interstate by 8 ft. on each side. The project included reconstructing I-70 over Sherman Drive and the CSX Railroad to replace an outdated underpass. Traffic was maintained on I-70 through the use of moveable barrier technology in order to maintain additional travel lanes in the peak direction during rush hour periods. A traffic management plan was developed by JSE for the project and plans for improvements to local routes were prepared in order to improve capacity on the local street network during the I-70 reconstruction time period.

I-65 & US 30 RECONSTRUCTION DESIGN-BUILD PROJECT

Location: Lake County, Indiana Owner: Indiana Department of Transportation (INDOT) Client: Walsh Construction

Construction Cost: \$30 Million Work Type: Design-Build

Completion Date: 2002



Project Description

This project involved reconfiguration and reconstruction of the I-65/ US 30 interchange, mainline pavement widening, pavement replacement for mainline I-65 and US 30, new signal installations, signing and lighting and bridge reconstruction.

As the lead design firm, JSE provided plan and profiles, construction details, maintenance of traffic plans, pavement markings, erosion control details, retaining wall designs, drainage design, cross sections, interchange details, and bridge plans. The design effort included interchange reconfiguration and profile grade adjustments for I-65 and US 30. Construction was completed in one construction season beginning December 2001 and ending in November 1, 2002.

This Design Build team was comprised of Walsh Construction and two design firms with JSE designated as the lead engineer designer.



JANSSEN & SPAANS ENGINEERING jsengr.com

9120 Harrison Park Ct. Indianapolis, Indiana 46216 Office: 317-254-9686 Email: info@jsengr.com