



## 2007 – SR 520 / SR 202 Interchange

### Description

#### Meta Fields

**Abc Construction Equipment** : High-capacity crane(s)

**Prefabricated Bridge Elements** : Precast column cap (precast bent cap; precast crossbeam);  
grouted duct connection

**Contracting** : Contractor option

**Project Delivery** : Design-Bid-Build

**Longitude** : -100

**Latitude** : 47.6688995

**Nbi #** : 0017272A

**State Id #** : 202/45W-W

**Construction Equipment** : Other ABC Method

**Total Bridge Length Ft** : 435

**Max Span Length Ft** : 145

**Beam Material** : Concrete

**Spans** : Three-span

**Location** : Urban

**Owner** : State

**State** : WA

**Year Abc Built** : 2007

**Contract Plans** : 1

**Additional Information** : Contract plans are available below. The precast crossbeam was done by change order; there are no precast crossbeam specifications or bid tabs.

**Costs** : No cost savings were submitted for the contractor's proposed change to precast the crossbeam at grade, on-site.

**Contacts** : Bijan Khaleghi, Ph.D., P.E., S.E. State Bridge Design Engineer Washington State Department of Transportation khalegb@wsdot.wa.gov 360-705-7181 **Submitter**: Jed Bingle P.E. Accelerated and Innovative Bridge Construction (ABC) Specialist Washington State Department of Transportation binglej@wsdot.wa.gov 360-705-7222 **Designer**: Washington State Department of Transportation Arthur Chu P.E. chua@wsdot.wa.gov 360-705-7176 **Contractor** Tri-State Construction Inc (425) 455-2570

**Construction Method** : The two crossbeams were precast on-site, on grade and erected with 500-ton crane. The elimination of the falsework to support crossbeam formwork accelerated and simplified the

construction of the crossbeam with complex geometry. Other than the decision for acceptance from the owner, all decision making was done by the contractor to reduce costs and improve convenience.

**Replacement Or New Bridge :** This bridge was originally designed to be constructed conventionally and to have CIP concrete piers, including the columns and crossbeams. Due to the complex geometry of the crossbeam, the contractor elected to cast the crossbeam at ground level at each corresponding pier. It eliminated falsework construction to support the crossbeam formwork on the existing grade. Corrugated ducts were cast into the crossbeam for the column reinforcement, and grouted after erection. A single 500-ton crane was used to erect the crossbeam.

**Existing Bridge Description :**

No existing bridge was replaced as a result of the construction of this bridge.

**Traffic Management :**

Traffic was not impacted for the construction of this bridge.

**Average Daily Traffic At Time Of Construction :** 35000

**Dimensions :** This bridge has three spans with five prestressed I-girder (WF74G) and a CIP bridge deck. All spans are 145-ft long with the roadway width varying from 45 ft to 46 ft. All piers are normal to the roadway alignment. The precast crossbeam elements were 45-ft long x 7-ft wide and varied in depth from 2 ft to 5 ft.

**Primary Drivers :** Contractor-initiated change - The contractor proposed to eliminate the falsework and simplify the crossbeam formwork by precasting the crossbeam on-site.

**Impact Category :** Tier 5 (within 3 months)

**Mobility Impact Time :** The contractor submitted for 10 days of time savings, reducing the construction schedule for the crossbeams.

**Project Location :**

Bellevue, Washington

**Project Summary :**

The contractor of this design-bid-build project elected to modify the crossbeam (bent cap) from cast-in-place crossbeams to the precast crossbeams. The crossbeams were cast on site, on grade at the base of the columns.