Innovative bidding systems: Best Value or VE

Proponents want governments to buy their professional ideas from the planning stage, while Governments are concerned about the competitiveness and openness in a bid.

Cost = Construction + Loss due to congestion during construction

Design-Build Contract (Detailed design + Construction)

VE (Value Engineering) or Best Value Bid System

The winner will be decided by:

Minimum of construction cost + congestion cost or

Value = (Performance) / (Bidding Price)

Performance = *F* (Reduction of construction period, Reduction of road closure days, Construction procedure, Work zone safety, LCC etc)

eg. NJ, US in 2005 (Cheng & Capers from NJDOT, 23rd US-Japan Bridge Engineering Workshop)

US Rt. 1 carries more than 50,000 vehicles every day through the State Capital of NJ.

Three bridges suffered deterioration and were located close to each other near the State Capital.

They were 26.5 m, 24.5 m, & 18.3 m of single span bridges with 2 lanes in each direction

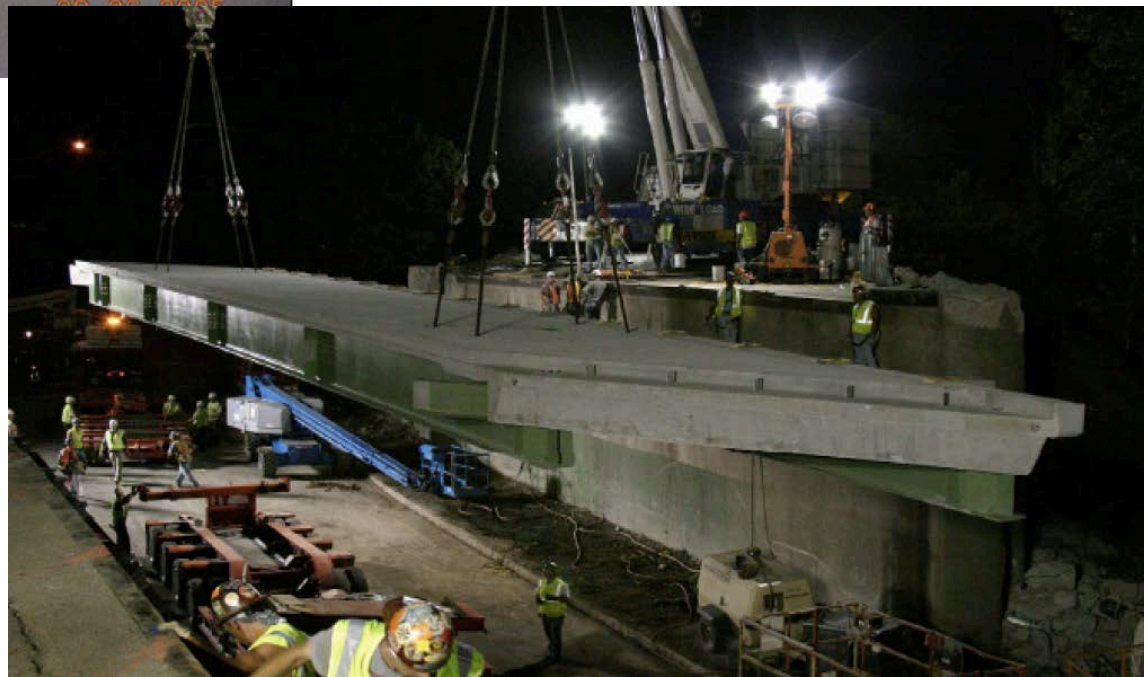
Use of 5 full-length modular segments for each bridge

Difficult to stop traffic during daytime

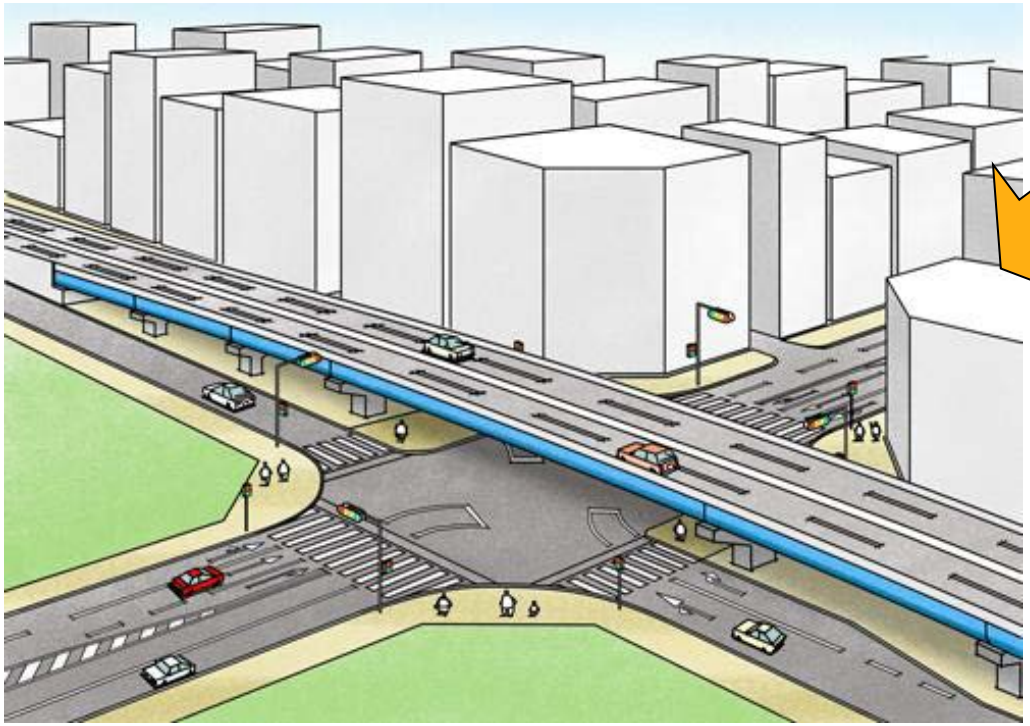
Road was closed from 7:00 pm Friday to 6 amp Monday (59 hours).

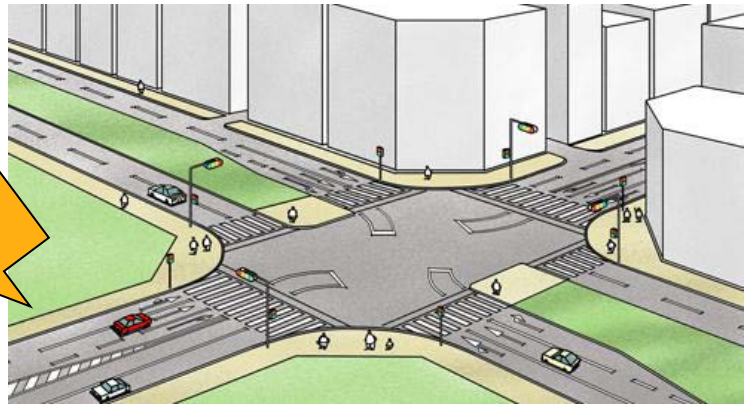
If this window was exceeded, a Lane occupancy charge would be assessed up to USD10,000 / day.

An incentive or disincentive of $2000 per hour was specified if the work was completed in less or more than 59 hours.



Example of VE requesting high-level technical proposals --- Flyover construction over a crossing with 100,000 ADT.





- Although traffic was restricted with partial lane closures during the construction, it had to be maintained and the restriction had to be minimized.

Required conditions for proposals

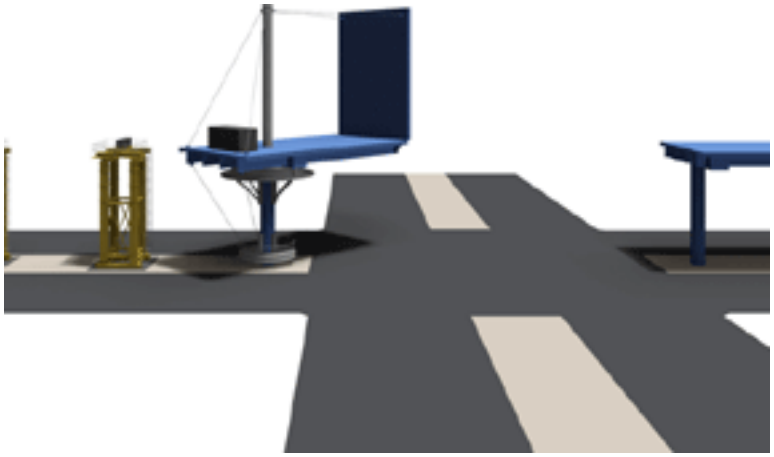
- Construction of flyover
- 4 out of 6 existing lanes have to be remained in operation.
- Construction is allowed only daytime in principle.
- Porous asphalt pavement
- **7-span continuous steel box-girder bridge erected with truck-cranes & bents (Changeable)**
- L = 500 m, W = 16 m
- Steel-box pier anchored with a steel frame
- **Prestressed concrete well foundation (Changeable)**
- Verification of seismic performance
- **Maximum lane restriction days are 550 days.**

Performance Proposal Evaluation Criteria

(Technical qualification evaluation is separately done.)

Evaluation Item		Points	Evaluation Criteria
Technical proposals	Traffic management	10	10 -- 5 -- 0
	Traffic restriction days during construction	10	0.1 point per day (A period of 450 days is the target)
Construction management	Planning & Feasibility	10	10 -- 5 – 0 on how real and careful in consideration of the construction site
	Feasibility of new technology	10	10 -- 5 -- 0 on work zone safety and noise and vibration reduction
Assigned engineers	Experience, knowledge & Communication skills	10	8 -- 6 -- 4 -- 2 -- 0

Many construction methods were proposed.



Dialogue with short-listed bidders

- Seismic / durability design methods
- Design and execution for the connection of pier to steel box girder
- Design and execution for the connection of pier to footing
- QC / QA

were checked through official dialogues between short-listed bidders and the evaluation committee *including specialists*

Bidding

Bidder	Given point	Proposal Evaluation Point (Traffic restriction days)	Total point (X)	Price (Y) (Million JPY)	(X x 1 million) / (Y)
A	**100**	**30 (500 days)**	**130**	**4800**	**0.0271**
B	**100**	**25 (550 days)**	**125**	**4650**	**0.0268**
C	**100**	**23 (530 days)**	**123**	**4820**	**0.0255**

All are below the reference value of (Given point) / (Expected price).

Contracting with A is the most valuable.

The minimum construction cost offer is not regarded the most valuable.

Completion