Development of Construction Technology for Rural Area in Thailand

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Difficulties of Bridge Construction in Rural Area

• Poor workmanship and quality control
• Troubles in delivery of long span members
• Robbery
Objectives of the Project

- To develop a standard practice for construction of medium-span bridge in rural area with satisfactory quality, expedited duration, and reasonable budget
Fundamental Concept

- Some bridge members may be designed with segmental concept
- Concrete segments will be produced in a well quality-control casting yard
- Concrete segments will be delivered to construction site by medium trucks
- Concrete segment will be assembled and installed on site
• Crossing Kam river, in Sakhonnakorn Province, 687 km far from Bangkok
Bridge Details
Bridge Drawing
Construction Process

- Casting for concrete segments
- Transportation of segments
- Installation and assembly of columns
- Assembly and installation of cap beams
- Assembly and installation of girders
- Installation of footpath and guardrails
Casting for Concrete Segments
Casting for Concrete Segments
Installation and Assembly of Columns
Installation and Assembly of Columns
Installation and Assembly of Columns
Assembly and Installation of Cap Beams
Installation and Assembly of Cap Beams
Assembly and Installation of Girders
Assembly and Installation of Girders
Installation of Footpath and Guardrails
Bridge at Completion
## Comparison with Cast-In-Place Bridge

<table>
<thead>
<tr>
<th></th>
<th>Cast-In-Place</th>
<th>Precast Segmental</th>
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<tbody>
<tr>
<td><strong>Performance</strong></td>
<td>Sustain AASHTO design load</td>
<td>Sustain AASHTO design load</td>
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<tr>
<td><strong>Time on Site</strong></td>
<td>253 days</td>
<td>74 days</td>
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<tr>
<td><strong>Cost</strong></td>
<td>7,967,112 Baht</td>
<td>8,880,318 Baht</td>
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Conclusion

• Bridge across Kam river was completed in 2009
• Quality control is required in every step
• There were problems due to unfamiliar to the method of contractor
• Significantly reduce construction time on site
• Budget was higher, compared to the cast-in-place method, however, it may be decrease when the amount of segments is large enough
Thank you for your kind attention.