Part C:

Selection of

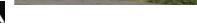
- Case Study Bridge
- Suitable Commercially Available Software to Link to





Selection of a Case Study Bridge





Selection Criteria: Steel or Concrete Suitable

- Recently designed, existing bridge that reflects current practice and has full contract plans and sets of shop drawings available.
- Two lanes of traffic in each direction, typical of many new bridges and Shoulder on each side
- Deck: 72 ft wide, approx., 8" or so thick
- Barrier- same for both, e.g. NJ
- 7-9 girders (8.5 11.33 ft spacing)





Selection Criteria: Steel or Concrete Suitable, cont'd

- 1.5 inch asphalt wearing surface
- · Non-zero skew
- Span lengths: approx. 100-140-100 ft, i.e., both structures as identical as possible (same span lengths, pier locations, etc) – Realistic span lengths for both steel and concrete alternatives.
- · Composite, deck placed in a continuous pour
- · Integral abutments





Selection Criteria: Steel or Concrete Suitable, cont'd

- Elastomeric bearings at pier supports
- · Empirical deck design for interior bays
- · Same collision loads for deck cantilevers
- · Deck reinforcement: grade 60, epoxy coated
- Deck concrete f'_c = 4000 psi.
- Seismic zone 2, so additional work or detailing is not much and the bulk of the country is covered
- Substructures CIP, as is traditional practice





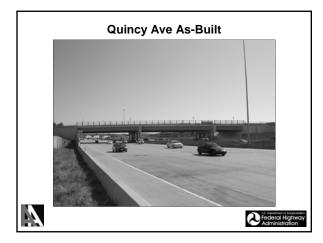
Selected Bridge: Quincy Ave over I-25

Selection Rationale:

- One of 3 candidates considered in detail
- It was the most "irregular" of the three with different support lines at different skew angles and unequal length spans.
- Other options: one had a highly unusual posttensioned pier bent cap beam and while another was quite narrow.





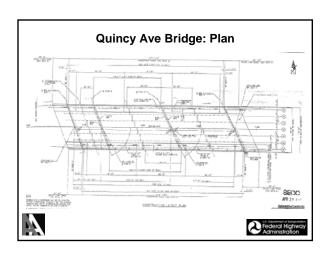


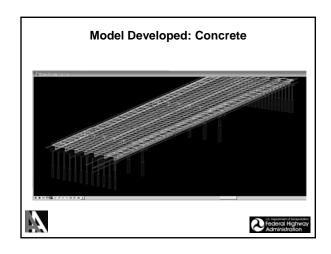
Features of Selected Bridge

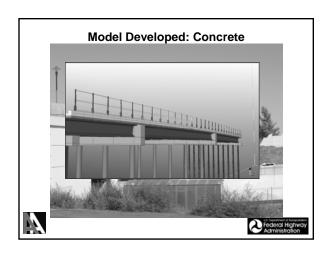
- 3 span continuous
- Unequal length spans
- Two different skew angles
- 2 lanes ea. way + sidewalks
- Over busy interstate

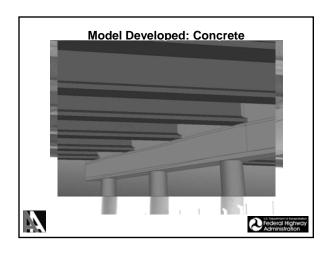




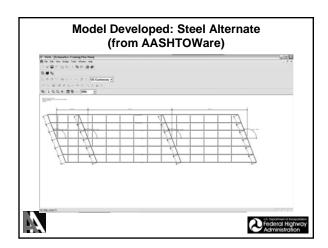


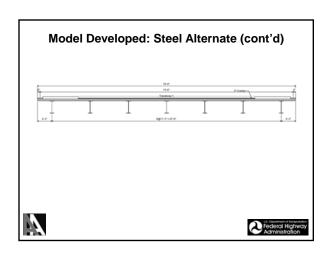












Selection of Suitable Commercially Available Software to Link to Federal Highy Selection Criteria: Working Guidelines for **Commercial Software Selection** • Use fewer, rather than more, applications or approaches. (The ideal case is to use only one if possible, although that is not the case.) • Use fewer, rather than more, software developers/vendors • When multiple developers are unavoidable, select those having cooperative relationships • Use software that has been well evaluated, for example, via wide use · Use software having a well-developed API **Commercial Software: Linkage Approaches** • DLLs (e.g. WSFL - QCONBRIDGE) • VBA (e.g. Bentley, MS Office (Excel)) • C#/.NET/API (e.g. Tekla, BridgeWare CSI/SAP2000, Bentley BrIM Apps) • C/MDL (e.g. Bentley) • CIS/2 (e.g. Fabtrol) • XML (e.g. Access, MathCad, LEAP, AASHTOWare Opis/Virtis/Pontis) • IFC (e.g. Timberline Estimating) Direct (e.g. SAP - Tekla, EstimatingLink -

MSProject, etc.)

