STRUCTURES INSPECTION

CERTIFICATION TRAINING
COURSE

Code	Pre/Route	AFE	Function	Part
0	1000	7116	1174	N

- Hadley Eisenbeisz

  Bridge Construction Engineer

- Darrell utter

  Assistant Bridge Construction Engineer

- Rick Brandner

  Mitchell Area

- Kevin Heiman

  Yankton Area

STRUCTURES CONSTRUCTION MANUAL

- Field Reference for Use on Construction
- Desk Reference for Designers
- Training Aid
- Provide Uniformity

Inspector Responsibilities

- Inspector’s responsibility to assure that work is executed in accordance with the plans and specifications.
- Inspector is responsible for having a thorough understanding of Plans and Specifications.

Many times, the Inspector’s work is the deciding factor between a good project and an average or poor one.

Plans Review

- The importance of a thorough review of:
  - ⬇PLANS
  - ⬇SPECIFICATIONS
  - ⬇SPECIAL PROVISIONS
  - ⬇SUPPLEMENTAL SPECIFICATIONS

  cannot be overemphasized.

Plans Review

- Never assume the requirements are the same as for the last project.
- Many times plans errors or omissions are discovered on this review while they can still be easily corrected.

Preconstruction Meeting

- Visit project site prior to the meeting.
- Review any complex or unusual items so Contractor is fully aware of what is expected.
- Request that weekly project meetings be held.

TYPICAL BRIDGE TYPES

- State Roads
  - Continuous Concrete Bridge *(Slab Bridge)*
  - Girder Bridges
    - Steel Girder
    - Pre-stressed Concrete Girder
- County Roads
  - Double Tee Bridge
  - Bulb Tee Bridge

Continuous Concrete Slab Bridge

- The roadway slab is self-supporting
- Does not utilize girders or beams underneath the slab.
- Max. span approx. 50 feet
- Barriers or Curbs are an important structural element.


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Steel Girder Bridges

- Concrete roadway is supported by steel girders or beams.
- Girders may consist of:
  - Rolled Beams
  - Built-up Welded Girders
- Typically are Continuous and Composite.


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Prestressed Concrete Girder Bridges

- Concrete roadway supported by prestressed concrete girders
- Max. Span Length approx. 150 ft.
- Girders are simply supported for dead load, but continuous for live load.


Buffalo Herd

Other State Bridge Types

- Steel Truss Bridge
- Timber Arch Bridge
- Box Girder Bridge
- Timber Girder Bridge
- Concrete Ridged Frame Bridge


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County Road Bridges

- Double T
- Bulb T

Double Tee Bridges

- Primarily used on County/Secondary projects.
- Precast/Prestressed Deck Panels
  - Stems function as girders
  - Top Flange functions as deck


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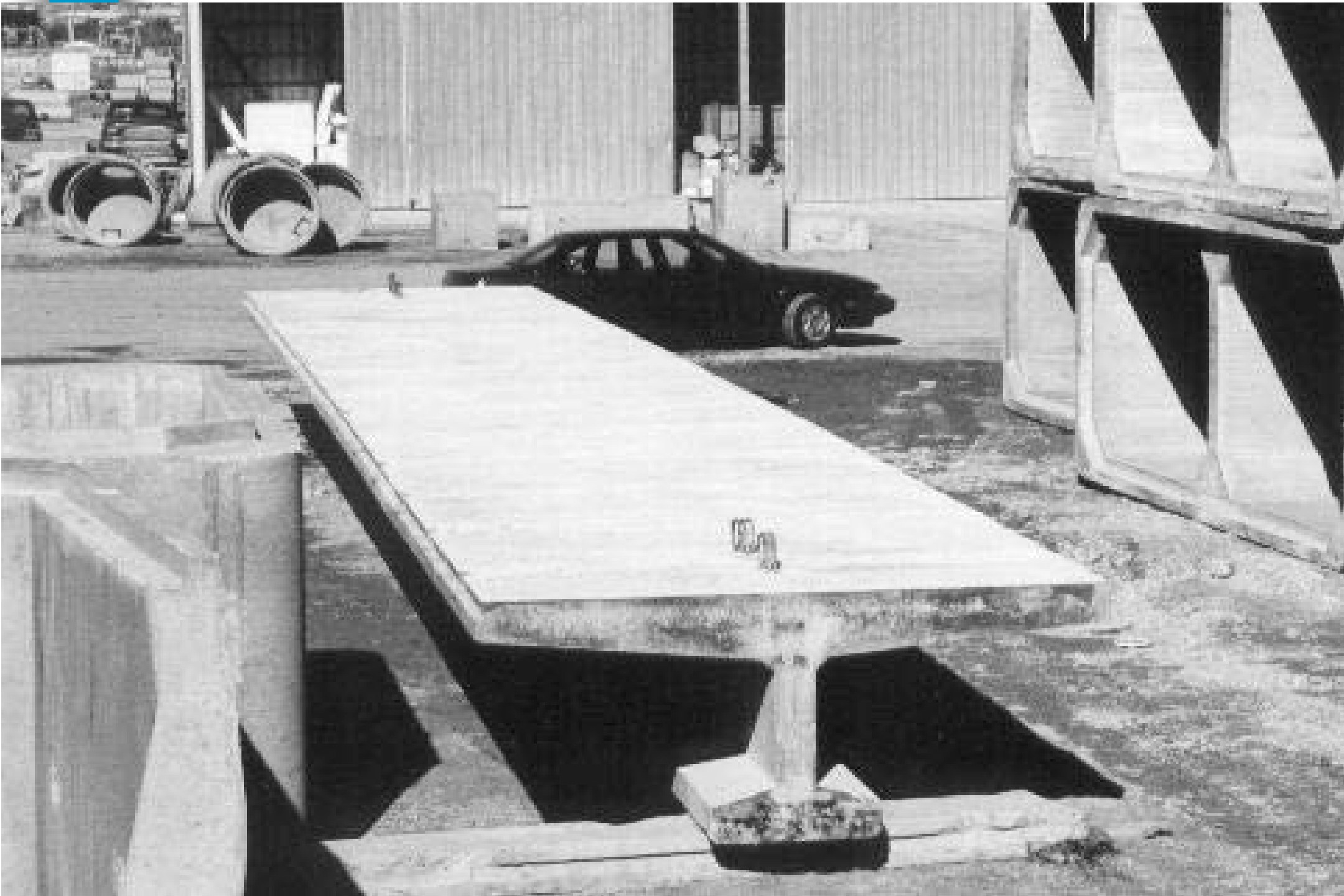
Bulb Tee Bridges

- Primarily used on County/Secondary Projects.
- The Bulb Tee Section is a prestressed girder in which the Top Flange functions also as the roadway.

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Other Misc. Structures

- Box Culverts
- Cast-in-Place Retaining Walls
- Mechanically Stabilized Earth Retaining Walls
- Pedestrian Bridges
- Sign Bridges


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Box Culverts

- Cast in Place Box Culvert
  - Inspection as critical as Bridge inspection
- Pre-Cast Box Culvert
  - Inspected at plant


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Components of a Bridge

- Superstructure
- Substructure

Superstructure

- That portion of the bridge that directly carries the traffic load.
- Transfers traffic load to supporting foundation members.
  - Bridge Deck, Girders, Barriers, Rails, Double T and Bulb T Girders.

Substructure

- The substructure is that portion of the bridge that supports the superstructure.

- Abutments
- Bents or Piers

Abutment

- Support each end of the bridge.
- Retain backfill.
- Are constructed on piles or on spread footings.

Abutments typically consist of two components:

- Backwall: *That portion supporting superstrucure.*
- Wingwall: Extensions off each end of the Abutment that retain backfill

Bents or Piers

- Bents or Piers support the superstructure loads at the intermediate locations between the abutments.

Bents / Piers

- Are typically constructed on pile footings, spread footings or drilled shafts.
- Generally are one of the following types:
  - Single Column with cantilevered concrete cap *(Hammerhead).*
  - Multiple Columns with a concrete cap.
  - Pier Walls - typically full width of bridge.


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