2015 Bridge Workers and Supervisors Conference

County Bridge Program and Panel Discussion

Clinton County Engineer

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Clinton County Stats

- Population:
  - County – 42,040
  - City of Wilmington – 12,520
- 265 Miles of County roads
- 299 Miles of Township roads
- 295 Bridges
- 1042 Culverts

Employees

- 25 Highway Workers
  - 3 Mechanic/Maintenance
  - 1 Grounds
  - 1 Sign Department
  - 20 Crew members
- 8 Office Staff
  - 2 Highway Department
  - 6 Engineers Office
- 2 Tax Map Office
- 1 GIS Department Manager

- 36 Total Employees

Bridge Replacements

- 295 Total Bridges that we are responsible for on County and Township roads

- Started effort to upgrade bridges in 1974
- Completed 248 Full Replacements
- 28 Major Rehabilitations

- 276 bridges rehabilitated or replaced since 1975

Types of bridges

- 5 Concrete Slabs
- 124 Precast Concrete Boxes
- 8 Concrete Pipe or Arch
- 113 Prestressed Box Beam Bridges
- 11 Steel Beam or Girder
- 23 Steel Multi Plates and Pipes
- 3 Stone Arches
- 5 Aluminum Pipe or Arches
- 3 Trusses

Progression of Construction

- 1970's and Early 1980's Steel Beam on concrete abutments
- 1981 Began using prestressed box beams
- 1983 Multi Plate Pipes
- 1986 Concrete Boxes
- 2004 Fiber Reinforced polymer deck
- 2009 Prestressed beams with composite deck

Steel Beam Bridges

- In 1975 Ceasars Creek Lake was being constructed in Warren and Clinton County
- State Bridges were torn out
- County was able to obtain old steel beams at scrap prices
- Brought to our property
- Had local bridge company cut to our required length
- Sand blasted and painted

Steel Beam Bridges (cont)

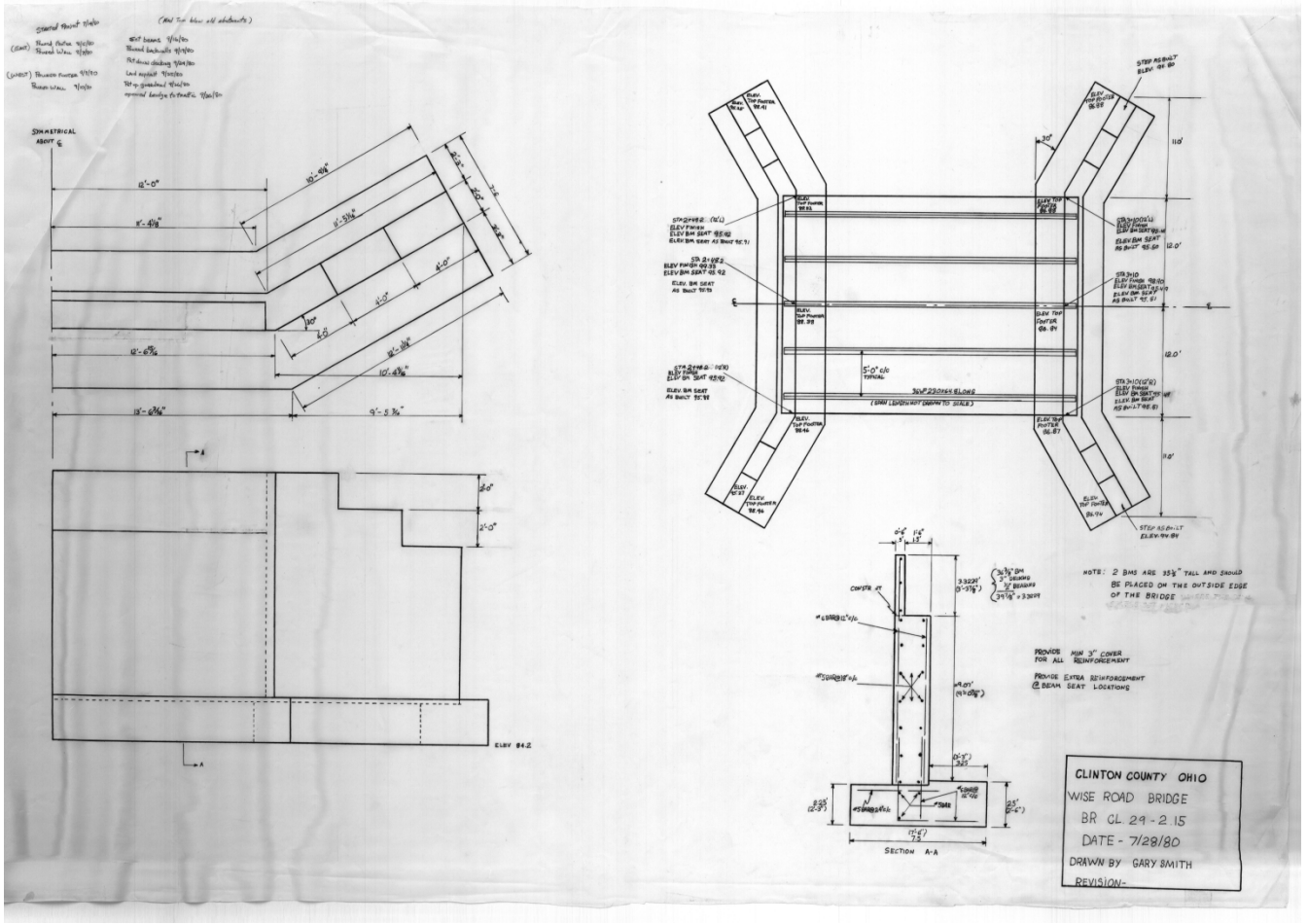
- Local bridge company began building abutments and then trained our crews
- Built cantilever walls with spread footings
- Simple plans
- Corrugated steel deck
- Paved asphalt deck

Salvaged Beams

Mills Road

Ireland Road

Basic Plans


SYMMETRICAL ABOUT ℄
ELEV 84.2
5'-0" c/c TYPICAL
SECTION A-A
NOTE: 2 BMS ARE 35½" TALL AND SHOULD BE PLACED ON THE OUTSIDE EDGE OF THE BRIDGE
PROVIDE MIN 3" COVER FOR ALL REINFORCEMENT
PROVIDE EXTRA REINFORCEMENT @ BEAM SEAT LOCATIONS
CLINTON COUNTY OHIO
WISE ROAD BRIDGE
BR CL 29-2.15
DATE - 7/28/80
DRAWN BY GARY SMITH
REVISION-

Prestressed Box Beams

- 1981 we began using prestressed box beam bridges.
- Similar footer and abutment design as steel beam
- Our crews did all road work and poured abutments
- Prestressed beams delivered and set
- County crews fill joints and waterproof
- Asphalt surface

Formwork

2 foot thick walls on spread footers

Plywood forms

Waterproofing

Widen Approaches

Completed Bridge

Hunter Road

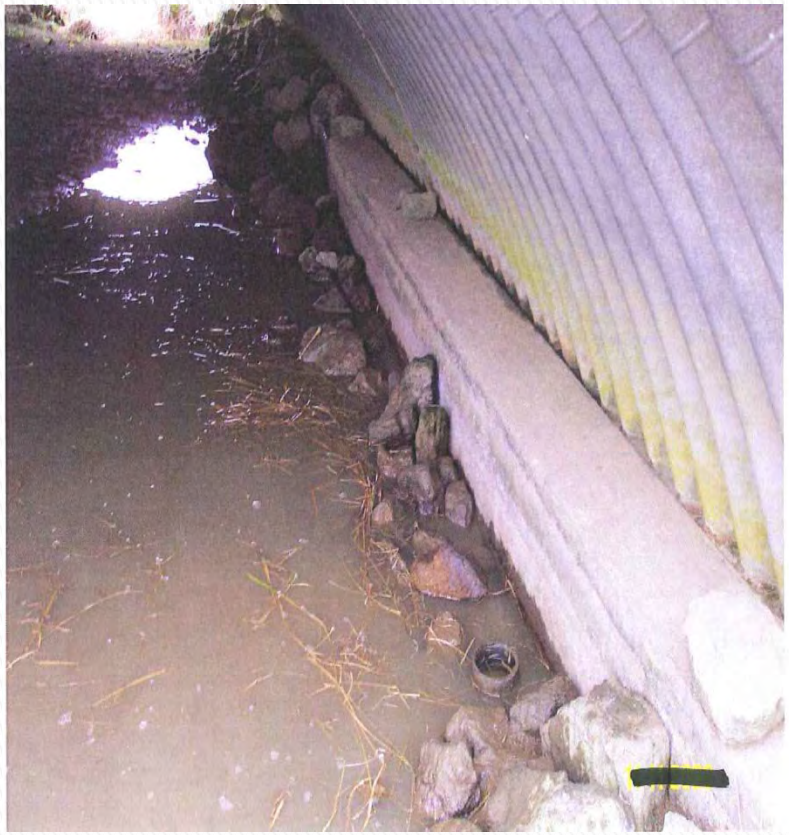
Hunter Road

Multi-Plate Pipes

- Needed solution for spans in the 10-16 foot in length
- Low profile, replacing steel beam bridges
- Low volume roads
- Used multi-plate Arches and Pipe Arches
- County crews prepared site and poured footers for arches.
- Put together and bolted all plates
- Backfill was critical

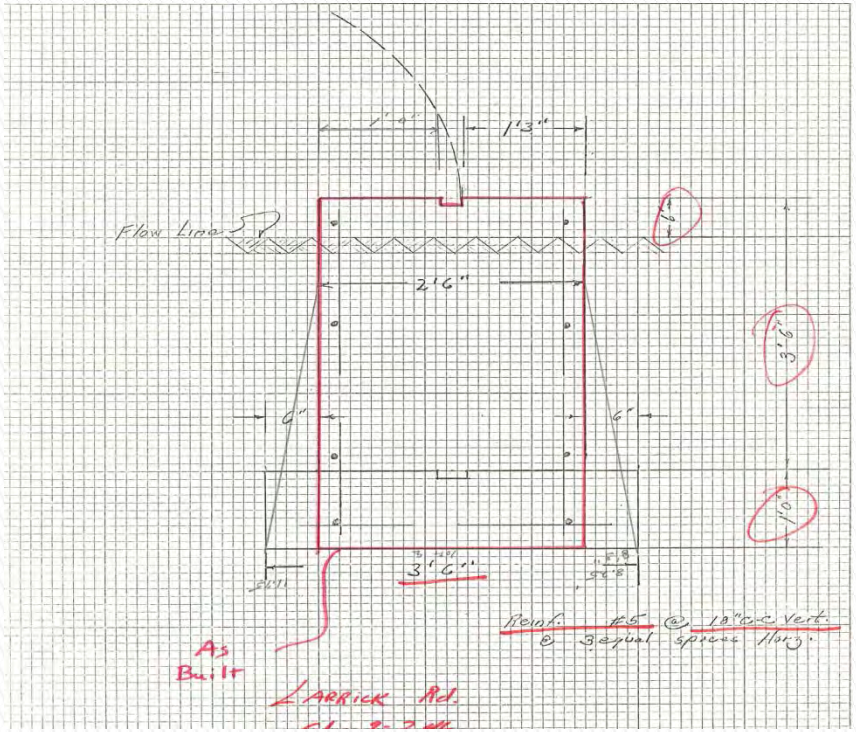
Multi-Plate Arch

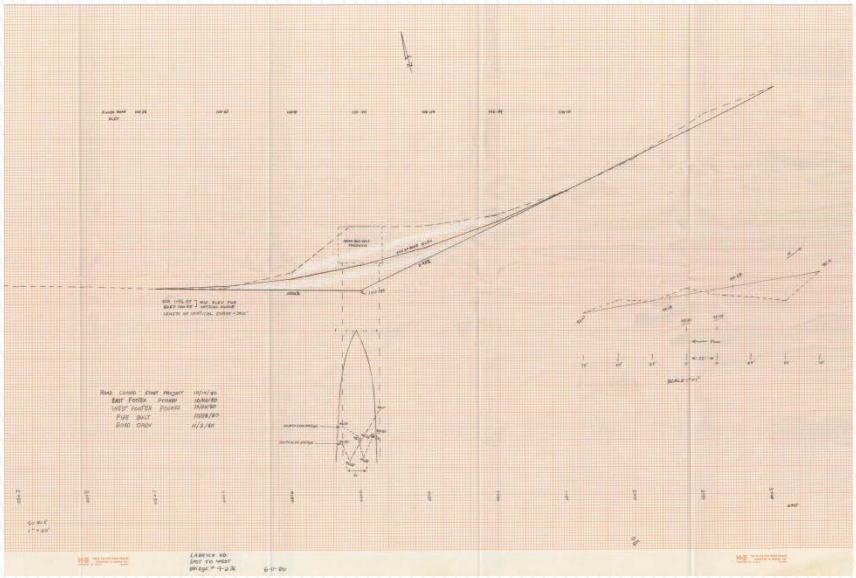
Arch with gabion headwalls



Concrete footers

Plans !

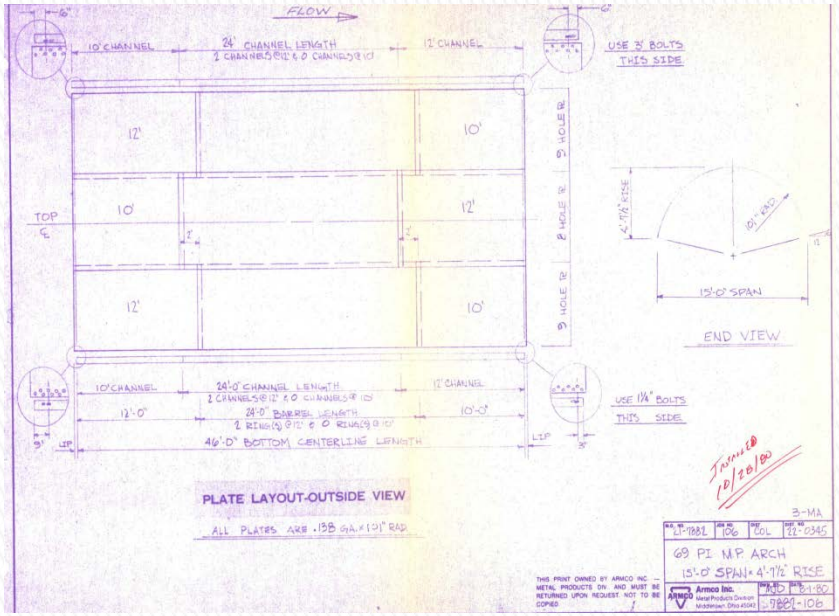


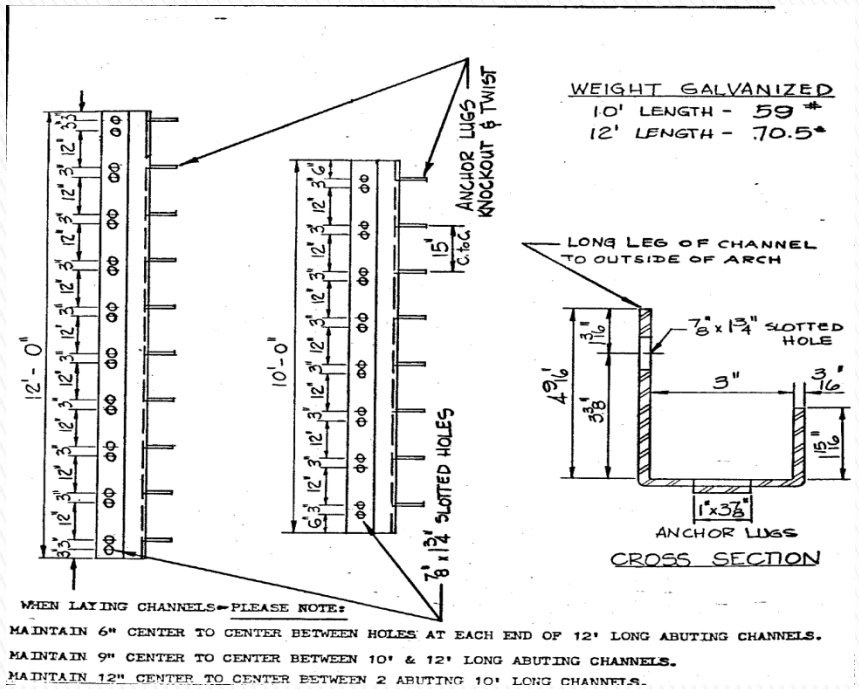


Concrete footer design

Basic plans

Manufacturers Plans





Manufacturers plans on panels and bolt locations

Steel Channel design

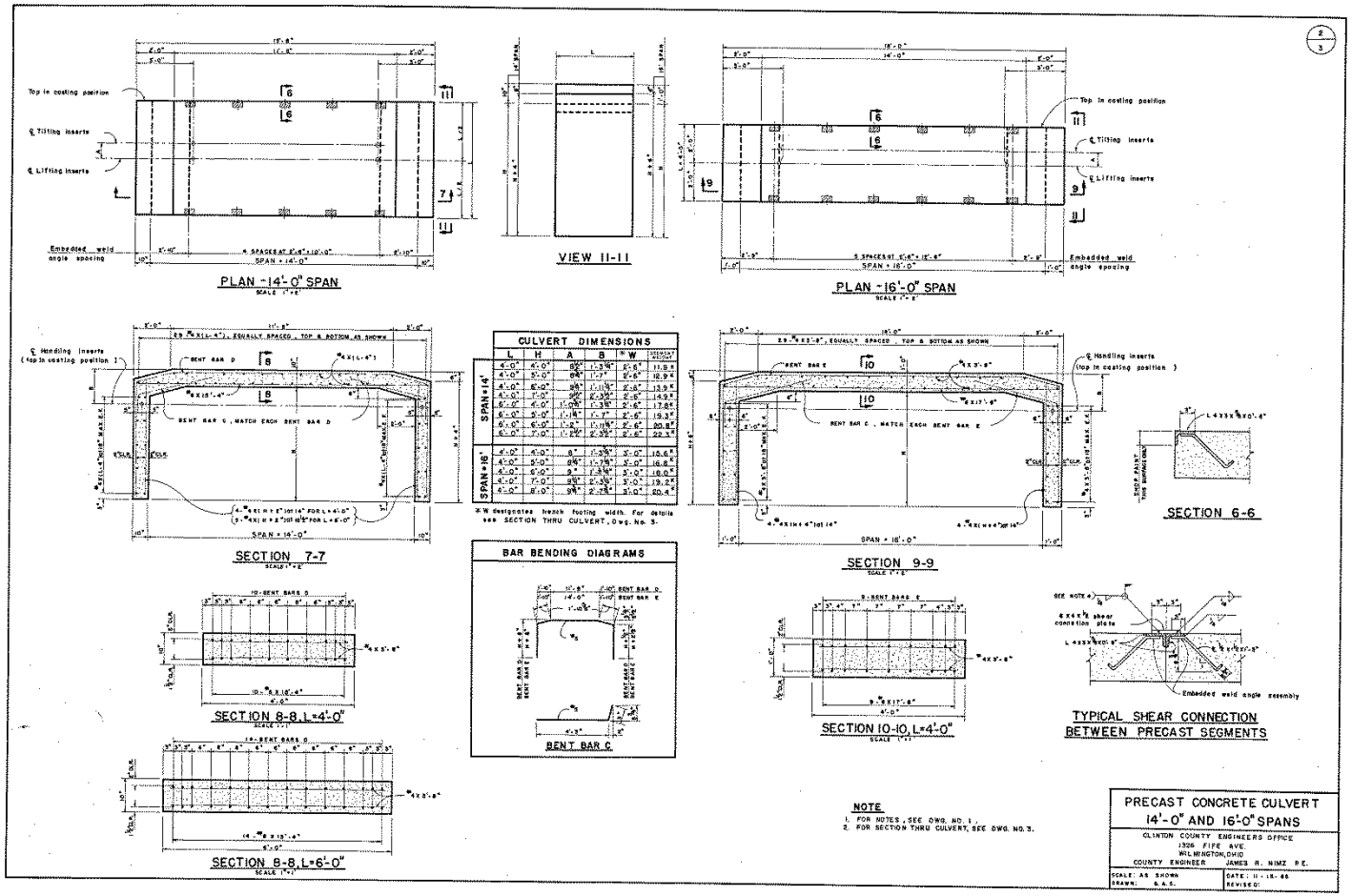
Precast Concrete Boxes

- 1985 Visited Greene County Engineers Office
- They were fabricating concrete boxes based on design by consulting firm: Lockwood, Jones and Beals .
- Early design had angled corners for ease of forming
- The design was eventually refined and became known as a Conspan

Precast Concrete Boxes

- Used existing plans with some modification
- Set up “Culvert” shop in an old Lean-to of a building we weren’t using.
- Installed furnace
- Poured Concrete Pads to build boxes on.
- Modified building roof to accommodate removal of boxes with crane
- Set-up shop with new rebar bender and cut-off saw

Precast Plans



Precast Production Site

- Location Choices

Removing Culverts

Retrofitted roof

Limited Space

Stockpiled Boxes

Used old trailer to move around yard

Stockpile in yard

Updated facility 1994

Production of Culverts

Symons Forms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