

4. In furtherance of its statutory duties INDOT is authorized under I.C. 8-23-2-6 to, among other things, contract with entities outside the department to carry out INDOT's statutory duties; and sue or be sued.
5. In furtherance of its statutory duties, on November 18, 2003, INDOT let a design/build contract for interchange modifications and bridge replacements in Lake County, Indiana.
6. The contract letting covered three bridge replacements over I-80/94 (Grant Street, Broadway Avenue and Martin Luther King, Jr. Drive) in Lake County, Indiana.
7. The contract letting was labeled as Contract Number R-26999-A.
8. On December 5, 2003, Superior Construction Company, Inc. (hereinafter "Superior") submitted a bid for approval by INDOT on Contract R-26999-A.
9. As a part of that bid, Superior submitted design drawings for Contract Number R-26999-A (hereinafter "Contract"), and specifically for the Martin Luther King, Jr. Drive Bridge.
10. Superior Construction Company, Inc.'s bid was the lowest qualified bid for the project.
11. Contract R-26999-A was executed by INDOT in Marion County, Indiana on December 24, 2003 and became a binding contract between Superior and INDOT as of that date.
12. A copy of Highway Contract Number R-26999-A is attached hereto as Exhibit "A."
13. Highway Contract Number R-26999-A incorporates by reference the plans, Standard Specifications, Supplemental Specifications and special provisions as part of the contract, the same as if set forth fully within the contract.
14. The Martin Luther King, Jr. Bridge over the I-80/94 Borman Expressway was erected in 2004 pursuant to the design submitted by Superior, which used two spans made of precast, prestressed bulb-tee beams that were made continuous over the center Pier 2 by

placing reinforcing steel in the deck. The Bridge has a short span of 118.5 feet and a long span of 154 feet.

15. The expected maintenance schedule for a bridge built in 2004, and with like or similar expected traffic, is 75 years on the superstructure, including the precast, prestressed bulb-tee concrete beams and 20 years on the deck.
16. The Bridge was opened to traffic on August 23, 2004.
17. On May 15, 2005, INDOT accepted the work performed by Superior based on the representation that the Bridge was constructed pursuant to the design, terms, conditions, standards, and specifications set forth in the contract, was structurally sound and fit for its intended purpose.

COUNT I—BREACH OF CONTRACT—Improper Construction Technique

18. On February 23, 2005, INDOT observed unremarkable deck cracking, a condition associated with the curing of the deck and common with bridge decking under anticipated loads.
19. INDOT did not observe any unusual cracking in the beams between May 15, 2005 and March 14, 2009.
20. However, INDOT did observe unusual cracking in the bridge deck during this time period.
21. On March 14, 2009, INDOT first noticed and began tracking shear cracks in the support beams of the Bridge.
22. On April 26, 2010, INDOT forwarded photographs of the Bridge to an engineering firm for review and comment on the structural integrity of the Bridge.

23. Based on the photographs, the engineering firm recommended the closing of the Bridge due to diagonal cracks in the web supports on the short span side of Pier 2, vertical cracks through the top flange of the exterior beams and deck on both the short span side and the long span side of Pier 2.
24. The engineering firm indicated that the cracks had the potential of becoming very serious and recommended an immediate review of shear and moment capacities to determine the potential structural deficiencies, remaining load capacity and potential cause(s) of the deck and beam cracking.
25. On May 12, 2010, the engineering firm conducted a field examination of the Bridge and determined the horizontal and diagonal cracks in the webs on the exterior beams shown in the photographs were also found in the interior beams.
26. Additionally, the cracks found on the Bridge deck were substantially in excess of normally anticipated cracking in the deck over Pier 2 on both the short and long span sides. The cracks ran both longitudinal and transverse to the structure and were closely spaced.
27. INDOT closed the right lanes for both north and southbound traffic on the Bridge on May 5, 2010, based on the recommendations made by the engineers.
28. Based on the cracks found at the field inspection and preliminary analysis, the engineering firm determined that, contrary to the design, terms, conditions, standards, and specifications of the Contract, the structure was highly over-stressed and did not appear to have the AASHTO reserve capacity to resist the applied truck loadings.
29. On May 18, 2010 the engineers recommended that the Bridge be closed to all traffic.
30. On May 19, 2010 INDOT closed the Bridge to all traffic.

31. The construction drawings and plans called for the use of temporary supports of the bulb-tee concrete beams while the concrete bridge decking was poured and until it reached its required strength of 4,000 pounds per square inch.
32. Construction documents show that the temporary supports were used, but records are inadequate as to the length of use and there was no confirmation that the bridge deck had attained the required strength prior to removal of the temporary supports.
33. On September 17, 2004, the temporary supports were removed from the longer span of the Bridge.
34. The lack of adequate analysis and documentation of the use of temporary supports while pouring the concrete bridge decking constitutes an improper construction technique and a violation of the construction specifications applicable to this project.
35. The improper and/or defective construction methods caused and/or contributed to the structural defects which currently exist in the Bridge, making it unsafe for public use.
36. The construction method used was/is defective in that:
 - a. Temporary supports for the long span beams remained in place until the entire deck, railing and sidewalks were poured, construction specifications prohibit the placement of the bridge rail while temporary supports are in place;
 - b. The validity of the use of the temporary supports was not adequately documented;
 - c. Calculations documenting the analysis of the construction sequence were not provided;
37. As a result of the improper/defective construction methods, the Bridge is structurally unsound for its intended purpose.

38. The General Conditions of the Construction Specifications, §104.01 requires, “all work shall be carried out in a thorough, careful, effective and satisfactory manner.”
39. The General Conditions of the Construction Specifications, §107.22 provides, “the Contractor, without prejudice to the terms of the contract, shall be liable to the Department for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the rights of the Department under any warranty or guarantee.”
40. The structural defects present in the Bridge are latent defects which could not have been discovered by INDOT during the construction process.
41. Because of the structural defects the Bridge is unfit for the purposes for which it was intended and the superstructure must be demolished and replaced.
42. Plaintiff has made demand upon Superior for demolition and replacement of the Bridge, but Superior has continuously denied responsibility and refused to comply with said demands.
43. As a result of the structural defects in the Bridge, the State of Indiana and its citizens have been forced to incur expenses and will continue to incur expenses and added costs.

WHEREFORE, Plaintiff prays that judgment be entered in amount commensurate with the costs of demolishing and rebuilding the Bridge, including increased costs of construction, and for all other relief just and proper under the circumstances.

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COUNT II—BREACH OF CONTRACT—Inadequate Components

44. Plaintiff reincorporates paragraphs one (1) through forty-three (43) as if set forth fully herein.
45. Pursuant to the terms of the Contract, Superior is responsible for the work and all materials used to construct the Bridge.
46. The General Conditions of the Construction Specifications, §104.01, states “the intent of the contract is to provide for the construction and completion in every detail of the work described. The Contractor shall furnish all labor, materials, equipment, tools, safety equipment, transportation, and supplies required to complete the work in accordance with the plans, specifications, and terms of the contract.”
47. The General Conditions of the Construction Specifications, §104.01 also states, “it is further provided that all work, including the furnishing of materials, equipment, tools, labor, and incidentals required to carry out the terms of the contract shall be done by the Contractor, its employees or subcontractors unless specifically set out otherwise in the Proposal Book.”

48. As the Contractor on this project Superior is responsible for furnishing the materials required to carry out the terms of the contract, including the concrete bridge beams.
49. When portland cement is mixed with water, the mixture begins to hydrate and one of the first hydration products formed is the ettringite.
50. The formation of this initial (or primary) ettringite takes place predominantly while the concrete is still in a "plastic" state and the volume changes associated with its formation are readily accommodated by the soft matrix of the early age concrete.
51. Once concrete reaches a final setting stability, any subsequent reaction, such as continued or delayed ettringite formation (DEF), will cause cracks resulting in the disintegration of the concrete microstructure.
52. This cracking may occur over the course of several years and will continue as long as the components required for DEF formation (i.e. aluminates, sulfates, calcium) are available in a given concrete element and are exposed to moisture while in service.
53. The most common cause of DEF formation is allowing the concrete to reach a temperature in excessive of the maximum allowable temperature during the curing cycle.
54. Exceeding the maximum allowable temperature during curing will eventually lead to the formation of DEF, especially deep inside the core sections of the beams.
55. The initial testing performed on core samples taken from the Bridge beams confirm the existence of DEF in the precast, prestressed concrete bulb-tee beams.
56. The presence of DEF in the precast, prestressed concrete bulb-tee beams is the result of improper, defective and non-confirming production practices.
57. Cracking due to DEF is a latent defect which materializes only after the concrete has been put into service and exposed to moisture over a time span of several years.

58. Further, overheating of the beams during production, when followed by sudden exposure to low ambient temperature at the end of the accelerated curing cycle, can also cause thermal cracking, or microcracks, in the beams.
59. Excessive microcracks are commonly associated with improper curing of concrete during fabrication of beams and most commonly occurs under the surface of the concrete, making them impossible to detect with a visual inspection.
60. Excessive microcracks formed inside the concrete during curing of beams has an extremely significant, detrimental impact on the structural integrity of the beams.
61. Microcracks, once formed, are further exacerbated by freeze/thaw cycles because they allow ingress of water and deicing chemicals to the interior of the concrete beams, particularly on the horizontal bottom flanges of the beams.
62. Testing performed on core samples taken from the Bridge beams confirm the existence of massive microcracks in the precast, prestressed concrete bulb-tee beams.
63. The materials used in construction of the Bridge, specifically the manufacture of the precast, prestressed concrete bulb-tee beams was/is defective in that the longitudinal cracking in the beam bottom flanges is a result of DEF, freeze and thaw deteriorations, and/or concrete microcracks.
64. The General Conditions of the Construction Specifications, §104.01 requires, “all work shall be carried out in a thorough, careful, effective and satisfactory manner.”
65. The General Conditions of the Construction Specifications, §107.22 provides, “the Contractor, without prejudice to the terms of the contract, shall be liable to the Department for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the rights of the Department under any warranty or guarantee.”

66. The structural defects present in the Bridge are latent defects which could not have been discovered by INDOT during the construction process.
67. As a result of the improper, defective and non-confirming structural elements, the Bridge is structurally unsound and unfit for its intended purpose.
68. Because the Bridge is structurally unsound and cannot be repaired in place, it must be torn down and replaced.
69. Plaintiff has made demand upon Superior for demolition and replacement of the Bridge, but Superior has continuously denied responsibility and refused to comply with said demands.
70. As a result of the structural defects in the Bridge, the State of Indiana and its citizens have been forced to incur expenses and will continue to incur expenses and added costs.

WHEREFORE, Plaintiff prays that judgment be entered in amount commensurate with the costs of demolishing and rebuilding the Bridge, including increased costs of construction, and for all other relief just and proper under the circumstances.

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COUNT III—BREACH OF CONTRACT—Improper or Inadequate Design

71. Plaintiff reincorporates paragraphs one (1) through sixty-one (61) as if set forth fully herein.
72. Pursuant to the Contract, Superior is responsible for the design, plans and drawings used to construct the Bridge.
73. The design of the Bridge was inadequate, defective and non-conforming in one or more of the following manners:
- a. Insufficient shear capacity in beams;
 - b. Insufficient moment capacity;
 - c. Beam stresses exceed AASHTO Standards Specification for Highway Bridges;
 - d. Deck contains different load distribution than assumed during design;
 - e. Unaccounted for fillet loads;
 - f. Unaccounted for pedestrian loads;
 - g. Unaccounted for weight in stay in place metal deck forms;
 - h. Inadequate documentation of temporary supports;
 - i. Non-standard application of dead loads;
 - j. Improper and inadequate use of computer software which was not approved for design; and
 - k. Construction methods did not match design criteria.
74. The General Conditions of the Construction Specifications, §104.01 requires, “all work shall be carried out in a thorough, careful, effective and satisfactory manner.”
75. The General Conditions of the Construction Specifications, §107.22 provides, “the Contractor, without prejudice to the terms of the contract, shall be liable to the

Department for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the rights of the Department under any warranty or guarantee.”

76. As a result of the inadequate, defective and non-conforming design, the Bridge is structurally unsound.

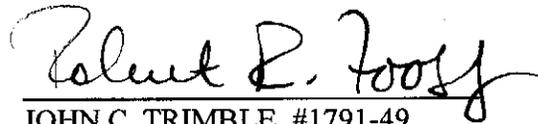
77. Because of the structural defects the Bridge is unfit for the purposes for which it was intended and must be demolished and replaced.

78. Plaintiff has made demand upon Superior for demolition and replacement of the Bridge, but Superior has continuously denied responsibility and refused to comply with said demands.

79. As a result of the structural defects in the Bridge, the State of Indiana and its citizens have been forced to incur expenses and will continue to incur expenses and added costs.

WHEREFORE, Plaintiff prays that judgment be entered in amount commensurate with the costs of demolishing and rebuilding the Bridge, including increased costs of construction, and for all other relief just and proper under the circumstances.

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IN THE MARION COUNTY SUPERIOR COURT
STATE OF INDIANA

STATE OF INDIANA, on behalf)
of INDIANA DEPARTMENT OF)
TRANSPORTATION)
)
Plaintiff,)
)
vs.)
)
SUPERIOR CONSTRUCTION)
COMPANY, INC.)
)
Defendant.)

49012 11 07 CT 026753

CAUSE NO.

FILED

(239)

JUL 1 8 2011

Elizabeth A. White
CLERK OF THE MARION CIRCUIT COURT

JURY DEMAND

Plaintiff, State of Indiana, on behalf of Indiana Department of Transportation, by counsel, pursuant to Trial Rule 38(B) of the Indiana Rules of Trial Procedure, respectfully request that this cause of action be tried by a jury.

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