KOONTZ BRYANT JOHNSON WILLIAMS

FORMERLY CBC ENGINEERS

March 4, 2022

Contech Engineered Solutions LLC
9025 Centre Pointe Drive
Suite 400
West Chester, OH 45069

Attn: Mr. Erik Early, P.E.
Design Engineer – Drainage, Plate, and Specialty Products

Re: Peer Review of CANDE Finite Element Analyses, and Preparation of Load Rating Calculations for a BridgeCor Arch (635632); Sterling Ranch, Briargate Boulevard, El Paso County, Colorado; KBJW Report No. 24776D-1-0322-05

Ladies and Gentlemen:

Koontz Bryant Johnson Williams, Inc. (KBJW, formerly CBC Engineers and Associates, Ltd.) is pleased to submit our report for the above referenced project. This report contains the peer review of the CANDE finite element analyses and preparation of load rating calculations for the above referenced structure. Others are responsible for all other aspects of the design of the structure including but not limited to footing design, end treatment, backfill evaluation, hydraulics, and scour/abrasion/corrosion, and the only responsibility of KBJW is as referenced above.

If you have any questions, please contact us.

Respectfully submitted,

Koontz Bryant Johnson Williams, Inc.

Deepa Nair, M.S., P.E.
Project Engineer

COLORADO LICENSED MITCHELL T. HARDERT PE-45539 PROFESSIONAL ENGINEER

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1-File

Has independent review of these items been provided?

1.0 AUTHORIZATION

Authorization to proceed with this project was given by Mr. Erik Early of Contech Engineered Solutions LLC. Work was to proceed in accordance with CBC Engineers & Associates, Ltd. Quotation No. 22-113-05 dated February 24, 2022, and the terms and conditions of the Master Agreement for Engineering Services dated July 30, 2009.

2.0 STRUCTURE DESCRIPTION

The proposed project consists of a BridgeCor arch structure with a maximum span of 43'-0" and an inside rise of 26'-3 3/4". The 15" x 5-½" deep corrugated structural plates for the BridgeCor box structure are proposed to be 5 gage (0.218"). The design height of cover over the structure is reported to vary from 5.0 feet to 7.0 ft. above the crown @ 120 pcf. The design live load considered in the evaluation is the HL-93 live loading.

TABLE 1

STRUCTURE CHARACTERISTICS

Number of Structures	1
Structure Type	BridgeCor Arch
Maximum Span (ft.-in.)	43'-0"
Rise (ft.-in.)	26'-3 3/4"
Gage	5 gage (0.218")
Live Load	HL-93
Design Cover (ft.)	5.0' to 7.0' at 120 pcf

3.0 REVIEW OF CANDE ANALYSIS

The CANDE finite element analyses for the proposed BridgeCor box structure is based on AASHTO – LRFD Bridge Design Specifications considering the specific requirements of Section 12 for deep corrugated steel plate profiles using the CANDE 2019 computer model with elasticity based correction for live load distribution.

Should this be lower?

CANDE analyses have been performed for the structure considering the design height of cover of 5.0 to 7.0 feet at 120 pcf with HL-93 live loading. Based on the analyses of the proposed structure, the governing live load is HL-93 tandem live load over the structure with the design