Bridge Factors Factual Report Attachment 50 – Excerpts from Rule 14-75 of the Florida Administrative Code

Miami, FL

HWY18MH009

(5 pages)

a. Type of Work 3.1: Minor Highway Design. This type of work requires at least one professional engineer, registered with the Florida State Board of Professional Engineers, having proficiency in civil engineering and at least one year of post-registration experience in the design and preparation of plans for highways.

b. Types of Work 3.2 and 3.3: Major Highway Design and Controlled Access Highway Design. These types of work require at least two professional engineers, registered with the Florida State Board of Professional Engineers, having proficiency in civil engineering and at least two years of post registration experience in the design and preparation of plans for highways, one year of which must be in the category for which qualification is sought.

(c) Group 4. Highway Design - Bridges. This work group involves the production and/or review of competently engineered bridge plans which conform with acceptable design standards and which meet the specific requirements of the Department or the Federal Highway Administration.

1. This group includes the following sub-categories of qualification:

a. Type of Work 4.1: Miscellaneous Structures and Minor Bridge Design. This type of work is subdivided into two categories.

(I) Type of Work 4.1.1: Miscellaneous Structures. This group type of work includes the design of sound barriers, structural supports for highway signals, luminaries, and traffic signals.

(II) Type of Work 4.1.2: Minor Bridge Design. This type of work includes the design of conventional, non-complex bridges and the structural design of other highway-related structures such as non-standard concrete box culverts and retaining walls. Generally, this group is limited to designs utilizing conventional foundation types, simple geometry, and having total estimated bridge(s) plan area(s) no greater than 100,000 square feet (sum of the areas of multiple bridges). Typically, this includes design for the construction, rehabilitation, widening, or lengthening of box culverts, retaining walls, cast-in-place or precast prestressed short span slab type bridges, simple span prestressed concrete beam bridges, and simple span I-beam bridges.

b. Type of Work 4.2: Major Bridge Design. This type of work includes the design of structures that cannot be included in Type of Work 4.1 because of deck area, complex geometry (curvature, skew, or variable width), complexity of design (including bridges with statically indeterminate superstructure components) with spans estimated to be less than 400 feet, non-conventional substructures, substructures requiring ship impact design, bridges over navigable waters, and railroad bridges. This type of work is subdivided into three categories:

(I) Type of Work 4.2.1: Major Bridge Design - Concrete: This group includes design for construction, rehabilitation, widening, or lengthening of structurally continuous concrete superstructures (longitudinally post-tensioned concrete beam bridges, etc.), reinforced concrete boxes, and post-tensioned substructures.

(II) Type of Work 4.2.2: Major Bridge Design - Steel: This group includes design for the construction, rehabilitation, widening, or lengthening of structurally-continuous steel superstructures (steel box girders, curved steel girder bridges, etc.)

(III) Type of Work 4.2.3: Major Bridge Design - Segmental: This group includes design for the construction, rehabilitation, widening, or lengthening of precast or cast-in-place concrete segmental superstructures or substructures.

c. Type of Work 4.3: Complex Bridge Design. This type of work includes the structures that cannot be included in Type of Work 4.1 or 4.2 because of unique, specialized, and uncommon types of designs as determined by the Department. Typically, this includes design for the construction, rehabilitation, widening, or lengthening of bridges with estimated span(s) longer than 400 feet, tunnels, cable-stayed bridges, suspension bridges, truss spans, concrete arch bridges, and bridges requiring unique analytical methods or other design features not commonly addressed in AASHTO publications. This type of work is separated into two categories:

(I) Type of Work 4.3.1: Complex Bridge Design - Concrete: This group includes design for the construction, rehabilitation, widening, or lengthening of concrete superstructures of the structure types listed in this category.

(II) Type of Work 4.3.2: Complex Bridge Design - Steel: This group includes design for the construction, rehabilitation, widening, or lengthening of steel superstructures of the types listed in this category.

d. Type of Work 4.4: Movable Span Bridge Design. This type of work includes the design of bascule bridges and other movable bridges. The work includes all structural, electrical, and mechanical requirements. Typically, this includes design for the construction, rehabilitation, widening, or lengthening of bascule bridges, swing bridges, and vertical lift bridges.

2. Qualification Requirements. Qualification will be assessed from the résumés of individuals employed by the firm. The résumés must state which bridge components were actually designed by the individual. General oversight or project management activities will not be considered for qualification purposes.

a. Type of Work 4.1.1: Miscellaneous Structures. This type of work requires at least one professional engineer, registered with the Florida State Board of Professional Engineers, having a minimum of five years of structural experience, designing items such as sound barriers, structural supports for highway signs, luminaries, and traffic signals, or in bridge design; and two structural design engineers/technicians having a minimum of three years each of design experience, either designing items such as sound barriers, structural supports for highway signs, luminaries, and traffic signals, or in bridge design. The qualifying professional engineer(s) shall be responsible for quality assurance of all the design services and shall sign a letter of certification stating the project documents have been reviewed under the quality assurance process and that all issues are resolved. Certifications will be pursuant to Section 837.06, F.S.

b. Type of Work 4.1.2: Minor Bridge Design. This type of work requires at least one professional engineer, registered with the Florida State Board of Professional Engineers, having a minimum of five years structural bridge design experience; and two structural design engineers/technicians having a minimum of three years each of bridge design experience. The professional engineer shall be responsible for quality assurance of all the design services.

c. Type of Work 4.2.1: Major Bridge Design-Concrete. This type of work requires at least two professional engineers, registered with the Florida State Board of Professional Engineers, having a minimum of five years each of structural bridge design experience in continuous span concrete bridges as defined for Work Group 4.2.1: Major Bridge Design - Concrete, excluding segmental bridges or qualified as required in Work Group 4.2.3: Major Bridge Design - Segmental with and additional two years of design experience in

continuous span concrete bridges as defined for Work Group 4.2.1: Major Bridge Design - Concrete; and three or more structural design engineers/technicians having a minimum of three years each of bridge design experience. The qualifying professional engineers shall be responsible for the quality assurance of all the design services and shall sign a letter of certification stating the project documents have been reviewed under the quality assurance process and that all issues are resolved.

d. Type of Work 4.2.2: Major Bridge Design - Steel. This type of work requires at least two professional engineers, registered with the Florida State Board of Professional Engineers, having a minimum of five years each of structural bridge design experience in continuous span steel bridges as defined in Work Group 4.2.2: Major Bridge Design - Steel and three or more structural design engineers/technicians having a minimum of three years of bridge design experience. The qualifying professional engineers shall be responsible for the quality assurance of all the design services and shall sign a letter of certification stating the project documents have been reviewed under the quality assurance process and that all issues are resolved. Certifications will be pursuant to Section 837.06, F.S.

e. Type of Work 4.2.3: Major Bridge Design - Segmental. This type of work requires at least two professional engineers, registered with the Florida State Board of Professional Engineers, having a minimum of five years each of structural bridge design experience in continuous span segmental concrete (precast or cast-in-place) bridges as defined in Work Group 4.2.3 Major Bridge Design - Segmental and three or more structural design engineers/technicians having a minimum of three years of bridge design experience. The qualifying professional engineers shall be responsible for the quality assurance of all the design services and shall sign a letter of certification stating the project documents have been reviewed under the quality assurance process and that all issues are resolved. Certifications will be pursuant to Section 837.06, F.S.

f. Type of Work 4.3.1: Complex Bridge Design - Concrete. This type of work requires at least three professional engineers, registered with the Florida State Board of Professional Engineers, having a minimum of five years each of structural concrete bridge design experience in categories as defined in Work Group 4.3.1: Complex Bridge Design - Concrete, and four or more structural design engineers/technicians having a minimum of three years each of bridge design experience. The qualifying professional engineers shall be responsible for the quality assurance of all design services and shall sign a letter of certification stating the project documents have been reviewed under the quality assurance process and that all issues are resolved. Certifications will be pursuant to Section 837.06, F.S.

g. Type of Work 4.3.2: Complex Bridge Design - Steel. This type of work requires at least three professional engineers, registered with the Florida State Board of Professional Engineers, having a minimum of five years each of structural steel bridge design experience in categories as defined in Work Group 4.3.2: Complex Bridge Design - Steel and four or more structural design engineers/technicians having a minimum of three years of bridge design experience. The qualifying professional engineers shall be responsible for the quality assurance of all the design services and shall sign a letter of certification stating the project documents have been reviewed under the quality assurance process and that all issues are resolved. Certifications will be pursuant to Section 837.06, F.S.

h. Type of Work 4.4: Movable Span Bridge Design. This type of work requires

qualification in type of work 4.2.2: Major Bridge Design - Steel, and also requires an electrical engineer and a mechanical engineer both registered with the Florida State Board of Professional Engineers. In addition to the experience requirements for type of work 4.2.2: Major Bridge Design - Steel, the professional engineers will have at least five years of movable bridge structural design experience and the three engineers/technicians shall have a minimum of three years of movable bridge design experience. At least one of the professional engineers or engineer/technicians will have experience in the design of at least three movable bridge electrical control systems within the last 10 years and one will have experience in the design of at least three movable bridge drive systems within the last 10 years. The electrical engineer will have experience in the design of at least three movable bridge electrical control systems within the last 10 years and experience with the commonly used bridge leaf motion control techniques used within the last 30 years. The mechanical engineer will have experience in the design of at least three movable bridge drive systems within the last 10 years and experience with the commonly used bridge drive systems used within the last 30 years. The qualifying professional engineers shall be responsible for the quality assurance of all the design services and shall sign a letter of certification stating the project documents have been reviewed under the quality assurance process and that all issues are resolved.

(d) Group 5. Bridge Inspection. This work group is defined as the on-site inspection, load rating, and preparation of bridge inspection reports in accordance with approved federal and state statutes, policies, guidelines, and standards. Availability of required equipment will also be considered, along with level of experience in evaluating qualification.

1. This group includes the following sub-categories of qualification:

a. Type of Work 5.1: Conventional Bridge Inspection. This type of work includes inspection and load rating of all types of bridges except movable bridges, box girders, bulb-tees, suspension, cable stayed, post-tensioned segmental concrete, large steel trusses, high-rise structures, and other complex bridge structures.

b. Type of Work 5.2: Movable Bridge Inspection. This type of work includes inspection and load rating of all types of movable structures (vertical lift, swing span, and bascule), utilizing specialty skills in inspection, load rating, and design of mechanical and electrical equipment.

c. Type of Work 5.3: Complex Bridge Inspection. This type of work includes inspection and load rating of all complex bridges except movable bridges. Typical types of structures will include box girders, bulb-tees, suspension, cable stayed, post-tensioned segmental concrete, high-rise structures, and large steel trusses.

d. Type of Work 5.4: Bridge Load Rating. This type of work involves the process of determining the live load capacity of a structure.

2. Qualification Requirements. Types of work 5.1, 5.2, 5.3, and 5.4: Bridge Inspection. This type of work requires at least one professional engineer registered with the Florida State Board of Professional Engineers, having experience appropriate to the sub-category requested. For types of work 5.1, 5.2, and 5.3, the engineer must have participated in field inspections meeting the requirements of the National Bridge Inspection Standards, Appendix C to U.S. Department of Transportation Federal Highway Administration, *Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges*, Report No. FHWA-PD96-001, December 1995, incorporated herein by