



1701 S. PADRE ISLAND DRIVE, CORPUS CHRISTI, TEXAS 78416 | 361.808.2660 | WWW.TXDOT.GOV

July 21, 2022

Mr. Keith Armstrong
Project Manager
Flatiron/Dragados, LLC
1620 N Port Ave
Corpus Christi, Texas 78401

RE: US 181 Harbor Bridge Replacement Project
CSJ# 0101-06-095
SEL: 000785 FDLLC Response to TxDOT Suspension of Work on New Harbor Bridge

Dear Mr. Armstrong:

This letter is in response to Flatiron Dragados, LLC's (FDLLC) correspondence regarding the above-referenced matter, dated July 18, 2022, and received several hours after close of business. All capitalized terms used and not defined herein have the meanings assigned them in the Comprehensive Development Agreement ("CDA") between FDLLC and the Texas Department of Transportation ("TxDOT"), dated September 28, 2015.

Although FDLLC has agreed in its July 18 letter to the suspension of work on the New Harbor Bridge, TxDOT feels it is necessary to correct the record regarding certain assertions in FDLLC's letter. While we will not attempt to address every inaccuracy and unsupported allegation in the letter, we offer the following.

For the reasons set forth in TxDOT's July 15, 2022 letter to FDLLC, TxDOT's suspension of the Work on the New Harbor Bridge was properly made in accordance with Section 16.2.3 of the CDA ("Developer Defaults Related to Safety") and is not a suspension for convenience. TxDOT's Notice of Nonconforming Work relates in detail the significant and unremedied safety issues presented by the design, including the potential for collapse. FDLLC's continued erection of the superstructure of the New Harbor Bridge despite the Notice of Nonconforming Work, TxDOT's numerous comments and concerns, as well as the findings of the IBT report, present an emergency or danger to persons and property.

While your letter states that FDLLC has consistently maintained that the design of the New Harbor Bridge is in all aspects contractually compliant, TxDOT has been equally consistent through design review comments, correspondence, meetings, and other communications in expressing its concerns with the design and FDLLC's failure to comply with the contract. FDLLC's assertion that "TxDOT issued a Certificate of Compliance noting it took no exceptions taken with the design which allowed FDLLC to proceed with construction" is false. First, TxDOT does not issue Certificates of Compliance. Pursuant to Section 2.2.7.7 of the Technical Provisions ("TP"), the Professional Services Quality Acceptance Manager issues the Certificates of Compliance of Design Documents. FDLLC is then required to obtain TxDOT concurrence prior to commencement of construction. TP Section 2.2.7.7

OUR VALUES: *People • Accountability • Trust • Honesty*
OUR MISSION: *Connecting You With Texas*

An Equal Opportunity Employer

Mr. Keith Armstrong

2

July 21, 2022

expressly provides that TxDOT's concurrence does not constitute "Approval" of the design or construction, nor does it relieve FDLLC of its responsibility for meeting the requirements of the Contract Documents. Indeed, FDLLC is solely responsible for the compliance of its Work with the CDA. TxDOT's signature on the Certificate of Compliance referenced in your letter expressly states it is an acknowledgement of receipt of the deliverable released by FDLLC in accordance with TP 2.2.7.7.

Second, TxDOT certainly took exception to elements of FDLLC's design and clearly stated its concerns to FDLLC, through design review comments, meetings, correspondence, and the Certificate of Compliance. The Certificate of Compliance refers FDLLC to TxDOT's letter of June 28, 2021, which provides the following regarding FDLLC's Released for Construction (RFC) plans for the main span tower foundations:

TxDOT continues to have concerns related to certain assumptions, and code interpretations contained in the RFC Submittal. These questions and concerns are documented in the attached comment review form, also transmitted via SharePoint. For additional emphasis, TxDOT has expressed concerns related to FDLLC's assumptions that the footing cap behaves as a rigid element and that the foundation loading can be modeled as a singular concentrated load in the center of the footing.

Similarly, a separate Certificate of Compliance refers FDLLC to TxDOT's letter of June 10, 2021, which provides the following comments regarding the superstructure segments, delta frames and median slab:

TxDOT continues to have concerns related to the design methodology, assumptions, design criteria, and code interpretations contained in the RFC Submittal. In addition, TxDOT is unable to evaluate the expected performance and behavior of the New Harbor Bridge during and after construction based on the information provided by FDLLC in the RFC Submittal. These questions and concerns are documented in the attached comment review form, also transmitted via SharePoint.

Both the June 10, 2021 and June 28, 2021 letters include the following:

Please be advised that pursuant to Section 2.2.7.7 of the Technical Provisions, TxDOT's concurrence does not constitute approval of the design or subsequent construction, nor does this letter relieve FDLLC of its responsibility to meet the requirements of the Contract Documents.

Attached for your reference are the TxDOT letters dated June 10, 2021 and June 28, 2021 and related Certificates of Compliance.

Well aware of TxDOT's concerns, comments, and reservations, FDLLC nevertheless proceeded with construction at its own risk. It is disingenuous for FDLLC to now claim that TxDOT is introducing a new position, as asserted in your letter.

FDLLC's letter claims that FDLLC has worked with TxDOT in good faith and fully responded to all questions and comments from TxDOT, HNTB and IBT. The facts are that FDLLC's response to TxDOT's significant comments and concerns has been to refuse to modify its design to conform to the CDA and to present various claims against TxDOT related to TxDOT's identification of FDLLC's

Mr. Keith Armstrong

3

July 21, 2022

defective work. TxDOT has repeatedly requested FDLLC to either provide additional information or confirm that there is no additional information pertinent to FDLLC's design that has not been considered by IBT. FDLLC has not responded to TxDOT's request. In good faith, TxDOT has engaged in numerous meetings with FDLLC, including project-level and executive meetings and, more recently, meetings with IBT and Arup-CFC to reach a resolution. Rather than engage in constructive discussions with TxDOT and IBT, FDLLC and its designer have used these meetings to deny that there are any issues with its design, to refute TxDOT's right to conduct an independent design review, and to refute the validity of IBT's report without addressing its substantive content. FDLLC's summary assertion that the IBT report does not meet industry standards is entirely without basis and is provided without explanation.

FDLLC claims it "has been more than reasonable and diligent in responding to TxDOT's purported concerns," however as set forth above, this has not been the case. In several instances, FDLLC merely forwarded its designer's letters denying any nonconformance despite TxDOT's comments, the Notice of Nonconforming Work, and the independent design review. FDLLC's statement that it offered a plan purporting to address TxDOT's concerns that was "rejected out of hand" is equally false. TxDOT refers FDLLC to TxDOT's letter dated June 21, 2022 in that regard.

Your July 18, 2022 letter lists certain materials, claiming "[u]nless this information is made available, FDLLC and its designers cannot more fully respond to IBT's purported concerns." Please note the information listed under (i) and (ii) in your letter was provided to FDLLC on July 19, 2022. TxDOT has no record of the request made under (iii) on page 2 of your letter. The load information requested was provided in the June 10 meeting and is included in Attachment A to FDLLC's own letter SEL: 000772. Furthermore, IBT's concerns are not "purported" as they are the carefully analyzed findings resulting from an independent design review by a world-renowned firm.

We remind FDLLC that TxDOT has had several meetings with FDLLC during which the problems with the delta frames were a subject of discussion. TxDOT continues to be willing to discuss the issues with FDLLC's design, including the delta frames, although the fact that FDLLC was planning to install the delta frames as designed, despite TxDOT's comments and the findings of the IBT report, is troubling and indicative of FDLLC's unwillingness to address the concerns identified by TxDOT. TxDOT confirms its request in its July 19, 2022 letter to advise TxDOT of when FDLLC is available to meet after reviewing the information forwarded with the letter.

TxDOT reserves all rights and remedies under the CDA and applicable law.

Sincerely,

DocuSigned by:

2956969BAA3C4CE...

Joseph Briones, P.E.
Corpus Christi District Project Manager
Texas Department of Transportation

Attachment: TxDOT's Letter Dated June 10, 2021
TxDOT's Letter Dated June 28, 2021
Certificate of Compliance – New Harbor Bridge Foundations
Certificate of Compliance – New Harbor Bridge Delta Frames

OUR VALUES: *People • Accountability • Trust • Honesty*
OUR MISSION: *Connecting You With Texas*

An Equal Opportunity Employer

Mr. Keith Armstrong

4

July 21, 2022

cc: Kurt Knebel, Flatiron Constructors, Inc.
Justo Molina, Flatiron/Dragados, LLC
Valente Olivarez, Jr., P.E.

OUR VALUES: *People • Accountability • Trust • Honesty*
OUR MISSION: *Connecting You With Texas*

An Equal Opportunity Employer



1701 S. PADRE ISLAND DRIVE, CORPUS CHRISTI, TEXAS 78416 | 361.808.2660 | WWW.TXDOT.GOV

June 10, 2021

Mr. Keith Armstrong
Project Manager
Flatiron/Dragados, LLC
1620 N Port Ave
Corpus Christi, Texas 78401

RE: US 181 Harbor Bridge Replacement Project
CSJ# 0101-06-095
Released for Construction (RFC) MSUPER-A Superstructure Typical Segments, Delta Frames
and Median Slab

Dear Mr. Armstrong:

The Texas Department of Transportation ("TxDOT") is in receipt of Flatiron/Dragados, LLC's ("FDLLC") Design Submittal titled *Released for Construction (RFC) MSUPER-A Superstructure Typical Segments, Delta Frames and Median Slab* and the related Certification of Compliance (together the "RFC Submittal") pursuant to Section 2.2.7 of the Technical Provisions for the Comprehensive Development Agreement ("CDA").

TxDOT continues to have concerns related to the design methodology, assumptions, design criteria, and code interpretations contained in the RFC Submittal. In addition, TxDOT is unable to evaluate the expected performance and behavior of the New Harbor Bridge during and after construction based on the information provided by FDLLC in the RFC Submittal. These questions and concerns are documented in the attached comment review form, also transmitted via SharePoint.

Notwithstanding the preceding concerns and in an effort to move construction of the Project forward, TxDOT provides its concurrence with the Professional Services Quality Acceptance Manager's Certification of Compliance for this RFC Submittal, which permits FDLLC to proceed with construction. Please be advised that pursuant to Section 2.2.7.7 of the Technical Provisions, TxDOT's concurrence does not constitute approval of the design or subsequent construction, nor does this letter relieve FDLLC of its responsibility to meet the requirements of the Contract Documents. Submittal reviews by TxDOT are not intended to serve as a full, independent design assessment. That responsibility rests with FDLLC as the Developer for the Project.

TxDOT reserves all rights under the CDA and at law in connection with the design and construction of the Project and any future Submittals. TxDOT specifically refers FDLLC to Sections 4.1.8, 6.7, 6.8, 10 and 18 of the CDA and does not intend to waive its rights thereunder pursuant to this letter for the work contained in the RFC Submittal.

OUR VALUES: *People • Accountability • Trust • Honesty*
OUR MISSION: *Connecting You With Texas*

An Equal Opportunity Employer

Mr. Keith Armstrong

2

June 10, 2021

If you have any further questions, please do not hesitate to contact me at (361) 808-2327.

Sincerely,

DocuSigned by:
Joseph Briones
2956969BAA3C4CE...

Joseph Briones, P.E.
Corpus Christi District Project Manager
Texas Department of Transportation

Attachment: MASTER_SUB-4591CRF(2021-05-25)Rev01.xlsx

cc: Nick Polce, Flatiron Constructors, Inc.
Hugo Fontirroig, Flatiron/Dragados, LLC
Valente Olivarez, Jr., P.E., TxDOT
John Becker, P.E., HNTB



Project US181 Harbor Bridge Project | NHB Professional Services Quality Management Plan
Doc. Name Design Submittal Certificate of Compliance-RFC Documents **Doc. No.** NHB-PSQP118FA
Date October 13, 2020 **Job No.** 277609

NHB-PSQP118FA Design Submittal Certificate of Compliance

RFC DOCUMENTS

Package Description	New Harbor Bridge MSUPER-A Superstructure Typical Segments, Delta Frames and Median Slab, R1	Date 5/25/2021
---------------------	--	----------------

The New Harbor Bridge Independent Technical Reviewer (ITR) Task Manager certifies that (check one of the below options):

- The deliverable has been reviewed by the ITR in accordance with the NHB-PSQMP and is considered complete to the appropriate stage of design and the conclusions are ready to be incorporated into released for construction documents.
 In accordance with the NHB-PSQMP the deliverable does not require an Independent Technical Review

SIGNED:  PRINT: Manuel Contreras Pietri DATE: 5/25/2021
 ITR TASK MANAGER

The New Harbor Bridge (NHB) Design Task Manager and NHB Design Manager certify that quality control activities have been conducted throughout the review process in compliance with the NHB Professional Services Quality Management Plan (NHB-PSQMP) and contractual requirements. The NHB Design Task Manager and NHB Design Manager certify that the deliverable is complete to the appropriate stage of design, is checked, and the conclusions are ready to be incorporated into released for construction documents.

COMMENTS:

SIGNED:  PRINT: Matthew Carter DATE: 5/25/2021
 NHB DESIGN TASK MANAGER (LEAD)

SIGNED:  PRINT: Peter Tillson DATE: 5/25/2021
 NHB DESIGN MANAGER or approved Alternate Signatory

The NHB Professional Services Quality Assurance Manager (NHB-PSQAM) certifies that the following reviews have been completed and that all comments have been resolved:

- Design Coordination Reviews, Independent Technical Review, Constructability Review, TxDOT comments addressed
 If one of these boxes is unchecked, the reason must be adequately explained in the COMMENTS section.

The NHB-PSQAM certifies that the work shown conforms to the Contract requirements, that design quality control procedures have followed the NHB-PSQMP, that the Personnel in Responsible Charge have signed all deliverables prepared under their direction, and by signing this release, the NHB-PSQAM approves the audit process and procedures conducted in support of this release.

(For those drawings and documents included in the submittal that are prepared by a manufacturer or supplier or other persons not under their direct supervision, the Personnel in Responsible Charge shall affix a stamp that indicates the design shown on the sheet or document conforms to the overall design and contract requirements.)

COMMENTS:

SIGNED:  PRINT: Ardalan Mosavi DATE: 5/25/2021
 NHB PSQAM



Project US181 Harbor Bridge Project | NHB Professional Services Quality Management Plan
Doc. Name Design Submittal Certificate of Compliance-RFC Documents **Doc. No.** NHB-PSQP118FA
Date October 13, 2020 **Job No.** 277609

The Developer Project Manager has verified that:
 Design has undergone constructability review and is constructible as represented.
 The deliverable is complete and approved.

COMMENTS:

SIGNED: *Keith Armstrong* Keith Armstrong DATE: 05-25-2021
 PROJECT MANAGER – Constructor or Approved Alternate Signatory

The TxDOT Project Manager has received this deliverable, released by the Developer in accordance with ~~TP 2.2.7.9~~ TP 2.2.7.7

COMMENTS: **Refer to TxDOT's letter dated 6/10/2021**

DocuSigned by:
 SIGNED: *Joseph Briones* DATE: 6/10/2021
 TxDOT PROJECT MANAGER or DESIGNEE

. 2.2.7.7

Written by: PGT	Revised by:	Approved by: AAM
Date: October 13, 2020	Date:	Date: October 13, 2020



1701 S. PADRE ISLAND DRIVE, CORPUS CHRISTI, TEXAS 78416 | 361.808.2660 | WWW.TXDOT.GOV

June 28, 2021

Mr. Keith Armstrong
Project Manager
Flatiron/Dragados, LLC
1620 N Port Ave
Corpus Christi, Texas 78401

RE: US 181 Harbor Bridge Replacement Project
CSJ# 0101-06-095
SEL: 000627 Response to TxDOT's letter dated June 3, 2021, Supplement to PCO-041 and RCO-037 and PCO-042 and RCO-038, and SUB-4403 Released for Construction (RFC) M02 Main Span Tower Foundations

Dear Mr. Armstrong:

The Texas Department of Transportation ("TxDOT") is in receipt of Flatiron/Dragados, LLC ("FDLLC") letter dated June 8, 2021 and Design Submittal titled Released for Construction (RFC) M02 Main Span Tower Foundations and the related Certification of Compliance (together the "RFC Submittal") submitted pursuant to Section 2.2.7 of the Technical Provision for the Comprehensive Development Agreement ("CDA").

It is TxDOT's understanding from FDLLC's letter and the RFC Submittal that FDLLC has determined it will utilize the LRF design methodology for the New Harbor Bridge instead of the previously selected methodology that is not permitted by the CDA.

As it has been noted before, the determination on which methodology to utilize resides entirely on FDLLC, provided such methodology complies with the CDA. FDLLC's decision to utilize the LRF design methodology is at FDLLC's sole election, and we confirm that TxDOT has provided no such direction to FDLLC in that regard. TxDOT's directive does not require FDLLC to implement an LRF design methodology. It simply requires FDLLC to comply with the Contract Documents, utilizing either ASD or LRF designs as detailed in Directive Letter No. 12.

TxDOT continues to have concerns related to certain assumptions, and code interpretations contained in the RFC Submittal. These questions and concerns are documented in the attached comment review form, also transmitted via SharePoint. For additional emphasis, TxDOT has expressed concerns related to FDLLC's assumptions that the footing cap behaves as a rigid element and that the foundation loading can be modeled as a singular concentrated load in the center of the footing.

Notwithstanding the preceding concerns and in an effort to move construction of the Project forward, TxDOT provides its concurrence with the Professional Services Quality Acceptance Manager's Certification of Compliance for this RFC Submittal, which permits FDLLC to proceed with construction. Please be advised that pursuant to Section 2.2.7.7 of the Technical Provisions,

Mr. Keith Armstrong

2

June 28, 2021

TxDOT's concurrence does not constitute approval of the design or subsequent construction, nor does this letter relieve FDLLC of its responsibility to meet the requirements of the Contract Documents.

TxDOT reserves all rights under the CDA and at law in connection with the design and construction of the Project and any future Submittals. TxDOT specifically refers FDLLC to Sections 4.1.8, 6.7, 6.8, 10 and 18 of the CDA and does not intend to waive its rights thereunder pursuant to this letter for the work contained in the RFC Submittal.

If you have any further questions, please do not hesitate to contact me at (361) 808-2327.

Sincerely,

DocuSigned by:
Joseph Briones
2956969BAA3C4CE...

Joseph Briones, P.E.
Corpus Christi District Project Manager
Texas Department of Transportation

Attachment: HB_SUB-4403CRF(2021-06-09)Rev05.pdf

cc: Nick Polce, Flatiron Constructors, Inc.
Hugo Fontirroig, Flatiron/Dragados, LLC
Valente Olivarez, Jr., P.E., TxDOT
John Becker, P.E., HNTB

Review Comments

Project Name	US 181 Harbor Bridge Replacement Project
CSJ	0101-06-095
Submittal Name	Released for Construction (RFC) M02 Main Span Tower Foundations
Engineer	Flatiron-Dragados, LLC
Organization	Flatiron-Dragados, LLC
Reviewer	HNTB GEC
Organization	HNTB GEC
Description of Comment Category	1 = Non-Compliant with Contractual Requirements 2 = Incomplete/Missing Information 3 = Observation

Submitted for Review		Date	12/14/20	Initial	
Review Complete					
Responses Provided					
Responses Resolved					
Changes Made					
Changes Verified					

ID	Sheet #	Section	Comment Type	Comment Category	Reviewer	Comment (Limit to One Item Per Row)	Rev #	Agree	Response	Resolved	Fixed	Verified
1	5 of 30310	277609-NHB-CAL-M02-00 Drilled Shafts Calculation Report	Design	1	TxDOT/HNTB	<p>The report states, "ASD Service Load combinations in accordance with the AASHTO Standard Specifications for Highway Bridges 17th Edition - 2002 are considered". AASHTO Standard Specifications for Highway Bridges 17th Edition - 2002 is not a contract document. TP 13.1 states, "The structural Elements of the Project, including bridges, shall be designed and constructed in conformance with the requirements of the Contract Documents, the current AASHTO LRFD Bridge Design Specifications... except where directed otherwise by the TxDOT Bridge Design Manual – LRFD and the TxDOT Geotechnical Manual". Section 1 – Limit States of the TxDOT Bridge Design Manual states, "Foundation loads for single column bents and other non-typical substructures should be determined by Service I Limit State and Service IV Limit State". The load factors for Service I are all 1.0 except for wind on structure which is 0.3. The same is true for Service IV except for wind on structure which is 0.7. Per Section 2 – Foundations of the TxDOT Bridge Design Manual, Foundations are to be designed with requirements outlined in the TxDOT Geotechnical Manual. Chapter 5 of the Geotechnical manual dictates a minimum factor of safety to be used to determine drilled shaft capacity of 2.0. Nowhere in these contract documents is a 33% overstress allowed therefore its use is not compliant with the contract. As previously clarified by TxDOT, AASHTO Standard Specifications for Highway Bridges is not a contract compliant design document; it is not referenced in the Contract.</p> <p>Rev01: Refer to TxDOT's response letter to PCO-041/RCO-37 dated Jan. 29, 2021.</p> <p>Rev02: Please refer to TxDOT's letter dated February 26, 2021 responding to FDLLC's correspondence SEL: 000564 and SEL: 000573.</p> <p>Rev03: Refer to TxDOT's Directive Letter No. 12 - New Harbor Bridge Foundation Design dated March 26, 2021</p> <p>Rev04: This comment remains unresolved and has been escalated outside of this submittal review process.</p> <p>Rev 05: As noted in the response, calculations based on AASHTO 17th Ed. have been removed. However, there are still open comments concerning the LRFD analysis (see Comment No. 15 below).</p>			Disagree with categorization that this comment has identified a non-compliance with the contractual requirements. Refer to Potential Change Order Notice No. 41.			Refer to TxDOT's letter dated 6/28/21
2	5 of 30310	277609-NHB-CAL-M02-00 Drilled Shafts Calculation Report	Design	1	TxDOT/HNTB	<p>The report states, "The capacity of the drilled shafts is described in the Geotechnical Engineering Report". The method used to determine the drilled shaft capacity listed in the Geotechnical Engineering Report is not compliant with the contract. See TxDOT/HNTB comments regarding this report as well as comment 1.</p> <p>Rev 01: Refer to TxDOT's response letter to PCO-041/RCO-37 dated Jan. 29, 2021.</p> <p>Rev02: Please refer to TxDOT's letter dated February 26, 2021 responding to FDLLC's correspondence SEL: 000564 and SEL: 000573.</p> <p>Rev03: Refer to TxDOT's Directive Letter No. 12 - New Harbor Bridge Foundation Design dated March 26, 2021</p> <p>Rev04: This comment remains unresolved and has been escalated outside of this submittal review process.</p> <p>Rev 05: As noted in the response, calculations based on AASHTO 17th Ed. have been removed. However, there are still open comments concerning the LRFD analysis (see Comment No. 15 below).</p>			Disagree with categorization that this comment has identified a non-compliance with the contractual requirements. Refer to Potential Change Order Notice No. 41.			Refer to TxDOT's letter dated 6/28/21
3	29,201-29203 of 30310	277609-NHB-CAL-M02-00 Drilled Shafts Calculation Report	Design	1	TxDOT/HNTB	<p>The casing was used to satisfy minimum shear reinforcement requirements. Calculations are provided that show that the shafts with #6's at 24" spaces have sufficient shear capacity. However, #6's @ 24" does not provide the minimum shear area required. So the casings are included to provide the minimum shear requirement.</p> <p>The plans state (on all shaft detail sheets): "Note 6: The steel casing is not accounted for in the design of the drilled shafts. The casing is provided only for the convenience of the construction means and methods. Only the length below top of shaft will remain in place permanently."</p>		✓	Note will be amended as follows. "The steel casing is not accounted for in the capacity verification of the drilled shafts. Only the length below the top of shaft will remain in place permanently."	✓	✓	✓
4	6 of 30310	277609-NHB-CAL-M02-00 Drilled Shafts Calculation Report	Design	1	TxDOT/HNTB	Confirm that the global analysis (and the resulting shaft forces) includes the effects of large deflection, as required by AASHTO LRFD Section 4.5.3.2.			The deformation of the structure does not result in a significant change in foundation reactions (only 3% increase in longitudinal moment or 4% increase in transverse moment at the more critical North Tower). Therefore in accordance with LRFD 4.5.3.2.1 the effects of deformation do not need to be considered in the equations of equilibrium.	✓		✓
5	26-122 of 190	277609-NHB-CAL-M02-00 ITR Calculation Report	Design	3	TxDOT/HNTB	The independent review is not consistent with the design. The two reports present very different results.			The purpose of the ITR is to independently verify that the plans, specifications and associated reports are compliant with the CDA. The ITR has maintained an independent approach to analysis and verification of the structure. Provided that both sets of calculations conclude that the structure as represented on the plans is adequate it is not necessary for the calculation results to match.	✓		✓
6	12 thru 28 and 5346 thru 5362 of 30,310	277609-NHB-CAL-M02-00 Drilled Shafts Calculation Report	Design	1	TxDOT/HNTB	Material Definitions - Modulus of Elasticity for concrete is 20 to 50% higher than defined in AASHTO 5.4.2.4.			As per note 5 on NHB0A, concrete material properties are per CEB-FIP 1990. The aggregate factor α_e was taken as 1.2 to account for the aggregate used being dense limestone (dolomite). The use of a stiffer modulus is generally more conservative since some loads are stiffness driven.	✓		✓
7	6939 thru 11187 of 30,310	277609-NHB-CAL-M02-00 Drilled Shafts Calculation Report	Design	1	TxDOT/HNTB	Software printout in metric units. Per TP 2.2.7.1, "Developer shall prepare and provide all Project-related Submittals and documents using English units of measure."		✓	We will remove this part of the printout. Pages 6938-11220 of Revision 0 removed.	✓	✓	✓
8	11813 of 30,310	277609-NHB-CAL-M02-00 Drilled Shafts Calculation Report	Design	1	TxDOT/HNTB	Indicates 1st order analysis is performed. Given bridge geometry, tower does not meet slenderness requirements of AASHTO 5.7.4.3 and a second order analysis is necessary.			Upper tower design considers tower slenderness effects. Refer to comment 4 for foundation design and M04 comments for lower tower design.	✓		✓
9	Global Analysis	277609-NHB-CAL-M02-00 Drilled Shafts Calculation Report	Design	2	TxDOT/HNTB	It is unclear how 6x6 stiffness matrix used for tower foundation based on soil-structure interaction is determined. If it comes from geotechnical analysis, please submit it for review.			Unit loads were applied to the foundation with explicit p-y, t-z, q-z springs to derive the 6 x 6 equivalent stiffness matrix. Springs were linearized to the design loads.	✓		✓
10	28497 of 30310	277609-NHB-CAL-M02-00 Drilled Shafts Calculation Report	Design	2	TxDOT/HNTB	It is unclear if weight of footing is included as a portion of drilled shaft reactions. Please clarify.			Weight of footing is included. E.g. p. 28498 indicates that load case L1 is Gravity applied to footing and shafts.	✓		✓
11	30060 of 30310	277609-NHB-CAL-M02-00 Drilled Shafts Calculation Report	Design	2	TxDOT/HNTB	Please clarify which AASHTO Specification was used to determine the LRFD strength limit state foundation loading			As per calculation report Section 2 the Basis of Design is documented in the General Notes sheets. Per General Notes I New Harbor Bridge, LRFD design is based on AASHTO LRFD Bridge Design Specifications 7th Edition with 2015 Interim Revisions.	✓		✓
12	5.0 Materials, Section D Note 4	General Notes II	Plan	3	TxDOT/HNTB	Consider specifying hot-dip galvanized reinforcing or allow continuously galvanized reinforcement as an alternate to epoxy coated reinforcement.			Noted. Drawing will remain unchanged and may be amended through a Notice of Design Change process if design-builder elects in the future to use galvanized reinforcement.	✓		✓
13	5.0 Materials, Section D Note 7	General Notes II	Plan	3	TxDOT/HNTB	Where is guidance for lap splice lengths, did not find this reference in AASHTO LRFD			This is industry standard practice because the tensile force required to be transferred across the lap is governed by the smaller bar.	✓		✓
14	Table 1	General Notes IV	Plan	3	TxDOT/HNTB	Consider using epoxy waterproofing instead of opaque sealer. This is now allowed in TxDOT thru a SP to that item			Noted. Drawing will remain unchanged and may be amended through a Notice of Design Change process if design-builder elects in the future to use epoxy waterproofing in lieu of opaque sealer.	✓		✓



Project US181 Harbor Bridge Project | NHB Professional Services Quality Management Plan
Doc. Name Design Submittal Certificate of Compliance-RFC Documents **Doc. No.** NHB-PSQP118FA
Date October 13, 2020 **Job No.** 277609

NHB-PSQP118FA Design Submittal Certificate of Compliance

RFC DOCUMENTS

Package Description	New Harbor Bridge M02 Main Span – Tower Foundation, R5	Date 6/8/2021
---------------------	--	---------------

The New Harbor Bridge Independent Technical Reviewer (ITR) Task Manager certifies that:

The deliverable has been independently checked by the ITR in accordance with the NHB Professional Services Quality Management Plan (NHB-PSQMP) and is complete to the appropriate stage of design including independent calculations signed/sealed by the ITR Task Manager and is ready to be released for construction.

SIGNED:  PRINT: Manuel Contreras Pietri DATE: 6/8/2021
 ITR TASK MANAGER

The New Harbor Bridge (NHB) Design Task Manager and NHB Design Manager certify that quality control activities have been conducted throughout the review process in compliance with the NHB Professional Services Quality Management Plan (NHB-PSQMP) and contractual requirements. The NHB Design Task Manager and NHB Design Manager certify that the deliverable is complete to the appropriate stage of design, is checked, and the conclusions are ready to be incorporated into released for construction documents.

COMMENTS:

SIGNED:  p.p. PRINT: Matthew Carter DATE: 6/8/2021
 NHB DESIGN TASK MANAGER (LEAD)

SIGNED:  P.G. Tillson PRINT: Peter Tillson DATE: 6/8/2021
 NHB DESIGN MANAGER or approved Alternate Signatory

The NHB Professional Services Quality Assurance Manager (NHB-PSQAM) certifies that the following reviews have been completed and that all comments have been resolved:

Design Coordination Reviews, Independent Technical Review, Constructability Review, TxDOT comments addressed

If one of these boxes is unchecked, the reason must be adequately explained in the COMMENTS section.

The NHB-PSQAM certifies that the work shown conforms to the Contract requirements, that design quality control procedures have followed the NHB-PSQMP, that the Personnel in Responsible Charge have signed all deliverables prepared under their direction, and by signing this release, the NHB-PSQAM approves the audit process and procedures conducted in support of this release.

(For those drawings and documents included in the submittal that are prepared by a manufacturer or supplier or other persons not under their direct supervision, the Personnel in Responsible Charge shall affix a stamp that indicates the design shown on the sheet or document conforms to the overall design and contract requirements.)

COMMENTS:

SIGNED:  PRINT: Ardalan Mosavi DATE: 6/8/2021
 NHB-PSQAM



Project US181 Harbor Bridge Project | NHB Professional Services Quality Management Plan
Doc. Name Design Submittal Certificate of Compliance-RFC Documents **Doc. No.** NHB-PSQP118FA
Date October 13, 2020 **Job No.** 277609

The Developer Project Manager has verified that:

- Design has undergone constructability review and is constructible as represented.
- The Released for Construction Package and working drawings for the portion of the Project to be constructed are complete and approved

COMMENTS:

SIGNED: *Keith Armstrong* PRINT: Keith Armstrong DATE: 6/9/2021
 PROJECT MANAGER – Constructor or Approved Alternate Signatory

The TxDOT Project Manager has received this deliverable, released by the Developer in accordance with ~~TP 2.2.7.9~~ TP 2.2.7.7.

COMMENTS: **Refer to TxDOT's Letter Dated 06/28/2021**

DocuSigned by:
 SIGNED: *Joseph Briones* PRINT: Joseph Briones DATE: 6/28/2021
 TxDOT PROJECT MANAGER or DESIGNEE

Written by: PGT	Revised by:	Approved by: AAM
Date: October 13, 2020	Date:	Date: October 13, 2020



Project US181 Harbor Bridge Project | NHB Professional Services Quality Management Plan
Doc. Name Release for Construction Certification of Compliance Checklist **Doc. No.** NHB-PSQP119FA
Date October 13, 2020 **Job No.** 277609

NHB-PSQP119FA Release for Construction Certification of Compliance Checklist		
Date: June 08, 2021		
PACKAGE: New Harbor Bridge M02 Main Span – Tower Foundation, R5		
Item	Status	Checked
TP Section 2.2.7.5.1 – Released for Construction Submittal		
PSQAM	Complete with a signed certification from the PSQA Manager	AAM
TP Section 2.2.7.7 – Released for Construction Package “Certification of Compliance”		
a)	Design Drawings - Complete	MC
b)	Design Calculations - Complete	MC
c)	Design Reports – Not applicable	MC
d)	Specifications - – No new specifications required. Project Technical Provisions and standard TxDOT specifications apply.	MC
e)	Electronic Files - Provided	MC
f)	Project ROW Documentation -	MF
g)	Government Approvals -	MF
h)	Utility Owner Approvals -	MF

Written by: PGT	Revised by:	Approved by: AAM
Date: October 13, 2020	Date:	Date: October 13, 2020



Project US181 Harbor Bridge Project | NHB Professional Services Quality Management Plan
Doc. Name Design Quality Review Certification **Doc. No.** NHB-PSQP116FA
Date October 13, 2020 **Job No.** 277609

NHB-PSQP116FA DESIGN QUALITY REVIEW CERTIFICATION

Work Package New Harbor Bridge M02 Main Span – Tower Foundation, R5

Quality Control Review Certification

As part of the Design Quality Review, I Matthew Carter, the Engineer of Record or Person in Responsible Charge for this Work Package, certify that the design team has completed a Quality Control Review of the plans, specifications and/or construction quality documents for the above referenced Work Package. Any review comments that I provided to the design team were addressed to my satisfaction, and review comments and responses are available to TxDOT upon request.

Name: Matthew Carter

Signature: p.p

Date: June 8, 2021

Title: NHB Lead Design Engineer

Quality Assurance Review Certification

As part of the Design Quality Review, I Ardalan Mosavi, an independent reviewer not associated with any design production work for this project, certify that I have completed a Quality Assurance Review of the plans, specifications, construction quality documents and/or quality control review for the above referenced Work Package. Any review comments I provided to the design team were addressed to my satisfaction, and review comments and responses are available to TxDOT upon request.

Name: Ardalan Mosavi

Signature:

Date: June 8, 2021

Title: NHB-PSQAM

Written by: PGT	Revised by:	Approved by: AAM
Date: October 13, 2020	Date:	Date: October 13, 2020



Work Package	M02 Main Span – Tower Foundation
Revision	02
Submittal Stage	Released For Construction
Date	02/08/21
Note	M02 contains the tower foundations drawings from the previous M02 submittal. These sheets are unchanged from the previous M02 submittal. The other M02 drawings relating to the general notes and layout will be transmitted separately as M02A.

Package	Sheet Number	Sheet Title	Revision	Redline Markup NDCs (for Record Drawings)
M02	NHB6	MAIN SPAN FOUNDATION LAYOUT I - TOWERS 1NT & 1ST	6	Not Applicable
M02	NHB8B	MAIN SPAN BORING LOGS TERMS AND SYMBOLS	0	Not Applicable
M02	NHB9	MAIN SPAN BORING LOGS I (NP-1)	0	Not Applicable
M02	NHB10	MAIN SPAN BORING LOGS I (NP-1)	0	Not Applicable
M02	NHB11	MAIN SPAN BORING LOGS I (NP-1)	0	Not Applicable
M02	NHB12	MAIN SPAN BORING LOGS I (NP-1)	0	Not Applicable
M02	NHB13	MAIN SPAN BORING LOGS II (NP-2)	0	Not Applicable
M02	NHB14	MAIN SPAN BORING LOGS II (NP-2)	0	Not Applicable
M02	NHB15	MAIN SPAN BORING LOGS II (NP-2)	0	Not Applicable
M02	NHB16	MAIN SPAN BORING LOGS II (NP-2)	0	Not Applicable
M02	NHB17	MAIN SPAN BORING LOGS III (SP-1)	0	Not Applicable
M02	NHB18	MAIN SPAN BORING LOGS III (SP-1)	0	Not Applicable
M02	NHB19	MAIN SPAN BORING LOGS III (SP-1)	0	Not Applicable
M02	NHB20	MAIN SPAN BORING LOGS III (SP-1)	0	Not Applicable
M02	NHB21	MAIN SPAN BORING LOGS IV (SP-2)	0	Not Applicable
M02	NHB22	MAIN SPAN BORING LOGS IV (SP-2)	0	Not Applicable
M02	NHB23	MAIN SPAN BORING LOGS IV (SP-2)	0	Not Applicable
M02	NHB24	MAIN SPAN BORING LOGS IV (SP-2)	0	Not Applicable
M02	NHB29C	MAIN SPAN ADDITIONAL PILES DATA TABLE - TOWER 1NT	2	Not Applicable
M02	NHB29D	MAIN SPAN ADDITIONAL PILES DETAILS - TOWER 1NT	2	Not Applicable
M02	NHB30A	MAIN SPAN DRILLED SHAFT LAYOUT - TOWER 1NT	3	Not Applicable
M02	NHB30B	MAIN SPAN DRILLED SHAFT LAYOUT - TOWER 1ST	3	Not Applicable
M02	NHB30C	MAIN SPAN PRECAST PILE LAYOUT - TOWER 1NT	2	Not Applicable
M02	NHB31	MAIN SPAN DRILLED SHAFT DETAILS TYPE A	3	Not Applicable
M02	NHB32	MAIN SPAN DRILLED SHAFT DETAILS TYPE B	3	Not Applicable
M02	NHB32A	MAIN SPAN DRILLED SHAFT DETAILS TYPE C	2	Not Applicable
M02	NHB32B	MAIN SPAN DRILLED SHAFT DETAILS TYPE D	3	Not Applicable
M02	NHB32C	MAIN SPAN DRILLED SHAFT DETAILS TYPE E	3	Not Applicable
M02	NHB32D	MAIN SPAN DRILLED SHAFT DETAILS TYPE F	3	Not Applicable

Review Comments

Project Name	US 181 Harbor Bridge Replacement Project
CSJ	0101-06-095
Submittal Name	Released for Construction (RFC) M02 Main Span Tower Foundations
Engineer	Flatiron-Dragados, LLC
Organization	Flatiron-Dragados, LLC
Reviewer	HNTB GEC
Organization	HNTB GEC
Description of Comment Category	1 = Non-Compliant with Contractual Requirements 2 = Incomplete/Missing Information 3 = Observation

Submitted for Review	Date	Initial
Review Complete	12/14/20	
Responses Provided		
Responses Resolved		
Changes Made		
Changes Verified		

ID	Sheet #	Section	Comment Type	Comment Category	Reviewer	Comment (Limit to One Item Per Row)	Rev #	Agree	Response	Resolved	Fixed	Verified
1	5 of 30310	277609-NHB-CAL-M02-00 Drilled Shafts Calculation Report	Design	1	TxDOT/HNTB	<p>The report states, "ASD Service Load combinations in accordance with the AASHTO Standard Specifications for Highway Bridges 17th Edition - 2002 are considered". AASHTO Standard Specifications for Highway Bridges 17th Edition - 2002 is not a contract document. TP 13.1 states, "The structural Elements of the Project, including bridges, shall be designed and constructed in conformance with the requirements of the Contract Documents, the current AASHTO LRFD Bridge Design Specifications... except where directed otherwise by the TxDOT Bridge Design Manual – LRFD and the TxDOT Geotechnical Manual". Section 1 – Limit States of the TxDOT Bridge Design Manual states, "Foundation loads for single column bents and other non-typical substructures should be determined by Service I Limit State and Service IV Limit State". The load factors for Service I are all 1.0 except for wind on structure which is 0.3. The same is true for Service IV except for wind on structure which is 0.7. Per Section 2 – Foundations of the TxDOT Bridge Design Manual, Foundations are to be designed with requirements outlined in the TxDOT Geotechnical Manual. Chapter 5 of the Geotechnical manual dictates a minimum factor of safety to be used to determine drilled shaft capacity of 2.0. Nowhere in these contract documents is a 33% overstress allowed therefore its use is not compliant with the contract. As previously clarified by TxDOT, AASHTO Standard Specifications for Highway Bridges is not a contract compliant design document; it is not referenced in the Contract.</p> <p>Rev01: Refer to TxDOT's response letter to PCO-041/RCO-37 dated Jan. 29, 2021.</p> <p>Rev02: Please refer to TxDOT's letter dated February 26, 2021 responding to FDLLC's correspondence SEL: 000564 and SEL: 000573.</p> <p>Rev03: Refer to TxDOT's Directive Letter No. 12 - New Harbor Bridge Foundation Design dated March 26, 2021</p> <p>Rev04: This comment remains unresolved and has been escalated outside of this submittal review process.</p> <p>Rev 05: As noted in the response, calculations based on AASHTO 17th Ed. have been removed. However, there are still open comments concerning the LRFD analysis (see Comment No. 15 below).</p>		Disagree with categorization that this comment has identified a non-compliance with the contractual requirements. Refer to Potential Change Order Notice No. 41.	Refer to TxDOT's letter dated 6/28/21			
2	5 of 30310	277609-NHB-CAL-M02-00 Drilled Shafts Calculation Report	Design	1	TxDOT/HNTB	<p>The report states, "The capacity of the drilled shafts is described in the Geotechnical Engineering Report". The method used to determine the drilled shaft capacity listed in the Geotechnical Engineering Report is not compliant with the contract. See TxDOT/HNTB comments regarding this report as well as comment 1.</p> <p>Rev 01: Refer to TxDOT's response letter to PCO-041/RCO-37 dated Jan. 29, 2021.</p> <p>Rev02: Please refer to TxDOT's letter dated February 26, 2021 responding to FDLLC's correspondence SEL: 000564 and SEL: 000573.</p> <p>Rev03: Refer to TxDOT's Directive Letter No. 12 - New Harbor Bridge Foundation Design dated March 26, 2021</p> <p>Rev04: This comment remains unresolved and has been escalated outside of this submittal review process.</p> <p>Rev 05: As noted in the response, calculations based on AASHTO 17th Ed. have been removed. However, there are still open comments concerning the LRFD analysis (see Comment No. 15 below).</p>		Disagree with categorization that this comment has identified a non-compliance with the contractual requirements. Refer to Potential Change Order Notice No. 41.	Refer to TxDOT's letter dated 6/28/21			
3	29,201-29203 of 30310	277609-NHB-CAL-M02-00 Drilled Shafts Calculation Report	Design	1	TxDOT/HNTB	<p>The casing was used to satisfy minimum shear reinforcement requirements. Calculations are provided that show that the shafts with #6's at 24" spaces have sufficient shear capacity. However, #6's @ 24" does not provide the minimum shear area required. So the casings are included to provide the minimum shear requirement.</p> <p>The plans state (on all shaft detail sheets): "Note 6: The steel casing is not accounted for in the design of the drilled shafts. The casing is provided only for the convenience of the construction means and methods. Only the length below top of shaft will remain in place permanently."</p>		√	Note will be amended as follows. "The steel casing is not accounted for in the capacity verification of the drilled shafts. Only the length below the top of shaft will remain in place permanently."	√	√	√
4	6 of 30310	277609-NHB-CAL-M02-00 Drilled Shafts Calculation Report	Design	1	TxDOT/HNTB	Confirm that the global analysis (and the resulting shaft forces) includes the effects of large deflection, as required by AASHTO LRFD Section 4.5.3.2.			The deformation of the structure does not result in a significant change in foundation reactions (only 3% increase in longitudinal moment or 4% increase in transverse moment at the more critical North Tower). Therefore in accordance with LRFD 4.5.3.2.1 the effects of deformation do not need to be considered in the equations of equilibrium.	√		√
5	26-122 of 190	277609-NHB-CAL-M02-00 ITR Calculation Report	Design	3	TxDOT/HNTB	The independent review is not consistent with the design. The two reports present very different results.			The purpose of the ITR is to independently verify that the plans, specifications and associated reports are compliant with the CDA. The ITR has maintained an independent approach to analysis and verification of the structure. Provided that both sets of calculations conclude that the structure as represented on the plans is adequate it is not necessary for the calculation results to match.	√		√
6	12 thru 28 and 5346 thru 5362 of 30,310	277609-NHB-CAL-M02-00 Drilled Shafts Calculation Report	Design	1	TxDOT/HNTB	Material Definitions - Modulus of Elasticity for concrete is 20 to 50% higher than defined in AASHTO 5.4.2.4.			As per note 5 on NHB0A, concrete material properties are per CEB-FIP 1990. The aggregate factor α_e was taken as 1.2 to account for the aggregate used being dense limestone (dolomite). The use of a stiffer modulus is generally more conservative since some loads are stiffness driven.	√		√
7	6939 thru 11187 of 30,310	277609-NHB-CAL-M02-00 Drilled Shafts Calculation Report	Design	1	TxDOT/HNTB	Software printout in metric units. Per TP 2.2.7.1, "Developer shall prepare and provide all Project-related Submittals and documents using English units of measure."		√	We will remove this part of the printout. Pages 6938-11220 of Revision 0 removed.	√	√	√
8	11813 of 30,310	277609-NHB-CAL-M02-00 Drilled Shafts Calculation Report	Design	1	TxDOT/HNTB	Indicates 1st order analysis is performed. Given bridge geometry, tower does not meet slenderness requirements of AASHTO 5.7.4.3 and a second order analysis is necessary.			Upper tower design considers tower slenderness effects. Refer to comment 4 for foundation design and M04 comments for lower tower design.	√		√
9	Global Analysis	277609-NHB-CAL-M02-00 Drilled Shafts Calculation Report	Design	2	TxDOT/HNTB	It is unclear how 6x6 stiffness matrix used for tower foundation based on soil-structure interaction is determined. If it comes from geotechnical analysis, please submit it for review.			Unit loads were applied to the foundation with explicit p-y, t-z, q-z springs to derive the 6 x 6 equivalent stiffness matrix. Springs were linearized to the design loads.	√		√
10	28497 of 30310	277609-NHB-CAL-M02-00 Drilled Shafts Calculation Report	Design	2	TxDOT/HNTB	It is unclear if weight of footing is included as a portion of drilled shaft reactions. Please clarify.			Weight of footing is included. E.g. p. 28498 indicates that load case L1 is Gravity applied to footing and shafts.	√		√
11	30060 of 30310	277609-NHB-CAL-M02-00 Drilled Shafts Calculation Report	Design	2	TxDOT/HNTB	Please clarify which AASHTO Specification was used to determine the LRFD strength limit state foundation loading			As per calculation report Section 2 the Basis of Design is documented in the General Notes sheets. Per General Notes I New Harbor Bridge, LRFD design is based on AASHTO LRFD Bridge Design Specifications 7th Edition with 2015 Interim Revisions.	√		√
12	5.0 Materials, Section D Note 4	General Notes II	Plan	3	TxDOT/HNTB	Consider specifying hot-dip galvanized reinforcing or allow continuously galvanized reinforcement as an alternate to epoxy coated reinforcement.			Noted. Drawing will remain unchanged and may be amended through a Notice of Design Change process if design-builder elects in the future to use galvanized reinforcement.	√		√
13	5.0 Materials, Section D Note 7	General Notes II	Plan	3	TxDOT/HNTB	Where is guidance for lap splice lengths, did not find this reference in AASHTO LRFD			This is industry standard practice because the tensile force required to be transferred across the lap is governed by the smaller bar.	√		√
14	Table 1	General Notes IV	Plan	3	TxDOT/HNTB	Consider using epoxy waterproofing instead of opaque sealer. This is now allowed in TxDOT thru a SP to that item			Noted. Drawing will remain unchanged and may be amended through a Notice of Design Change process if design-builder elects in the future to use epoxy waterproofing in lieu of opaque sealer.	√		√

