I-70 East Project

Statement of Qualifications:

Kiewit meridiam PARTNERS

Original of Volume 1

EAST
INTERSTATE
70
Central
Park
Blvd
NPT

airport
70
center
NPT

FORM A: SUBMITTAL LETTER

Proposer Name:	Kiewit-Meridiam Partners
Proposer's business address:	160 Inverness Drive West, Suite 110, Englewood, CO 80112
SOQ Submission Date:	June 22, 2015

High Performance Transportation Enterprise and Colorado Bridge Enterprise
c/o High Performance Transportation Enterprise
Colorado Department of Transportation
4201 E. Arkansas Avenue, Room 230
Denver, Colorado 80222
Attn: Michael Cheroutes, HPTE Director and Shailen Bhatt, CDOT Executive Director acting as BE Executive Director

Re. Submission of SOQ in connection with the I-70 East Project

1) Introduction.

a) Kiewit-Meridiam Partners (the "Proposer") submits this statement of qualifications (this "SOQ") in response to the Request for Qualifications dated March 25, 2015 (as amended by Addendum No. 1 thereto dated May 29, 2015, the "RFQ") the "RFQ") issued by the High Performance Transportation Enterprise ("HPTE") and the Bridge Enterprise ("BE"), each of which is a division of the Colorado Department of Transportation, in relation to the I-70 East Project.

b) Capitalized terms not otherwise defined in this letter have the meanings given to them in the RFQ.

c) References to Sections and Parts herein are references to Sections and Parts of the RFQ.

2) Enclosures.

a) Enclosed, and by this reference incorporated herein and made a part of this SOQ, are each of Volume 1 Volume 2 of the SOQ as required to be submitted in accordance with the RFQ. This letter itself constitutes the Submittal Letter.

b) For the Procuring Authorities' ease of reference:

i) attached as Annex A to this letter is a reference chart indicating the conclusions of Proposer's evaluation of each element of the SOQ for compliance with the Pass/Fail Evaluation Criteria; and

ii) attached as Annex B to this letter is a reference chart indicating each element of the SOQ that Proposer believes is relevant to each of the Substantive Evaluation Criteria.

3) Representations and Warranties; Acknowledgments and Agreements.

a) Proposer represents and warrants to HPTE, BE and CDOT that it (i) has read the RFQ (including Addendum No. 1 thereto) and (ii) agrees to abide by the contents and terms of the RFQ and the statements and commitments in Proposer's SOQ.

b) Proposer acknowledges (i) receipt of, or access to, and understanding and consideration of (A) all information and materials posted on the Project Website and (B) all written information and materials provided directly to it through the Official Representative and (ii) the terms of Section 1.4.3 of Part B, including the limitation on Proposer's ability to rely on such information and materials.

c) Proposer acknowledges and understands that, under the terms of the RFQ, the Procuring Authorities have reserved to themselves a number of rights related to the selection of Short-listed Proposers and the procurement of the Project, including as set out in Section 9 of Part B.

d) Proposer further understands that all costs and expenses incurred by it in preparing this SOQ and participating in the Project procurement process will be borne solely by Proposer, other than as may be expressly provided for in the RFP.

e) Proposer agrees that, in accordance with Section 6.2.3 of Part B, it, and not the Procuring Authorities, will be responsible for any errors, omissions, assumptions, inaccuracies or incomplete statements in its SOQ.

f) Proposer acknowledges and agrees to the protest provisions set out in Section 8.1 of Part B and understands that such provisions limit Proposer's rights and remedies to protest or challenge any aspect of the RFQ process or any determination or short-listing thereunder.

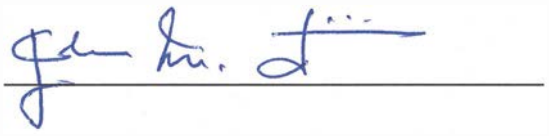
4) Official Representative. For the purpose of any future communications, the "Official Representative" for Proposer is:

Name:	John Dionisio
Title:	Senior Investment Director
Employer:	Meridiam
Address:	605 Third Avenue, 28th Floor, New York, NY 10158
Phone (office):	[redacted]
Phone (mobile):	[redacted]
Email:	[redacted]
Fax (if any):	[redacted]

5) Governing law. This letter shall be governed by and construed in all respects according to the law of the State of Colorado.

Under penalty of perjury, I hereby swear and affirm that I am authorized to act on behalf of Proposer in signing and delivering this letter, and acknowledge that the Procuring Authorities are each relying on my representation to this effect.

Proposer: Kiewit-Meridiam Partners

By: 

Printed Name: John Dionisio

Title: Official Representative

Under penalty of perjury, each of the undersigned:

a) certifies on behalf of the entity for which he or she signs that:

   i) the Official Representative named above is authorized by the relevant entity to sign this Submittal Letter on behalf of Proposer; and

   ii) the representations, certifications, statements, disclosures, authorizations and commitments made, and information contained, in the SOQ (including, for the avoidance of doubt, in Form D (Legal Disclosures)) in respect of such entity have been authorized by such entity, is or are correct, complete and not materially misleading; and

b) swears and affirms that he or she is authorized to act on behalf of the entity for which he or she signs and acknowledges that the Procuring Authorities are each relying on his or her representation to this effect:

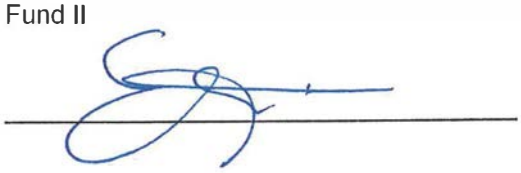
Equity Member and Joint venturer in Lead Operator: Meridiam I-70 E CO, LLC

By: 

Printed Name: Sven Kottwitz

Title: Authorized Signatory

Financially Responsible Party for Meridiam I-70 E CO, LLC: Meridiam Infrastructure North America Corp. on behalf of Meridiam Infrastructure North America Fund II

By: 

Printed Name: Emmanuel Rotat

Title: Chief Financial Officer

Under penalty of perjury, each of the undersigned:

(a) certifies on behalf of the entity for which he or she signs that:

(i) the Official Representative named above is authorized by the relevant entity to sign this Submittal Letter on behalf of Proposer; and

(ii) the representations, certifications, statements, disclosures, authorizations and commitments made, and information contained, in the SOQ (including, for the avoidance of doubt, in Form D (*Legal Disclosures*)) in respect of such entity have been authorized by such entity, is or are correct, complete and not materially misleading; and

(b) swears and affirms that he or she is authorized to act on behalf of the entity for which he or she signs and acknowledges that the Procuring Authorities are each relying on his or her representation to this effect:

Equity Member and Joint venturer in Lead Operator: Kiewit Development Company

By: _____

Printed Name: James Geer

Title: Vice President, Development

Lead Contractor: Kiewit Infrastructure Co.

By: _____

Printed Name: Craig A. Briggs

Title: Senior Vice President

Financially Responsible Party for Kiewit Development Company and Kiewit Infrastructure Co.: Kiewit Infrastructure Group Inc.

By: _____

Printed Name: Scott Cassels

Title: President

Under penalty of perjury, each of the undersigned:

(a) certifies on behalf of the entity for which he or she signs that:

(i) the Official Representative named above is authorized by the relevant entity to sign this Submittal Letter on behalf of Proposer; and

(ii) the representations, certifications, statements, disclosures, authorizations and commitments made, and information contained, in the SOQ (including, for the avoidance of doubt, in Form D (*Legal Disclosures*)) in respect of such entity have been authorized by such entity, is or are correct, complete and not materially misleading; and

(b) swears and affirms that he or she is authorized to act on behalf of the entity for which he or she signs and acknowledges that the Procuring Authorities are each relying on his or her representation to this effect:

Joint venturer in Lead Engineer: Parsons Brinckerhoff, Inc.

By: _____

Printed Name: James L. Price, PE

Title: Vice President/ Sr. Area Manager
Colorado / Wyoming

Under penalty of perjury, each of the undersigned:

(a) certifies on behalf of the entity for which he or she signs that:

(i) the Official Representative named above is authorized by the relevant entity to sign this Submittal Letter on behalf of Proposer; and

(ii) the representations, certifications, statements, disclosures, authorizations and commitments made, and information contained, in the SOQ (including, for the avoidance of doubt, in Form D (*Legal Disclosures*)) in respect of such entity have been authorized by such entity, is or are correct, complete and not materially misleading; and

(b) swears and affirms that he or she is authorized to act on behalf of the entity for which he or she signs and acknowledges that the Procuring Authorities are each relying on his or her representation to this effect:

Joint venturer in Lead Engineer: Jacobs Engineering Group Inc.

By: 

Printed Name: Julie Skeen

Title: Vice President, Rocky Mountain Region
Operations Manager

Under penalty of perjury, each of the undersigned:

(a) certifies on behalf of the entity for which he or she signs that:

(i) the Official Representative named above is authorized by the relevant entity to sign this Submittal Letter on behalf of Proposer; and

(ii) the representations, certifications, statements, disclosures, authorizations and commitments made, and information contained, in the SOQ (including, for the avoidance of doubt, in Form D (*Legal Disclosures*)) in respect of such entity have been authorized by such entity, is or are correct, complete and not materially misleading; and

(b) swears and affirms that he or she is authorized to act on behalf of the entity for which he or she signs and acknowledges that the Procuring Authorities are each relying on his or her representation to this effect:

Joint venturer in Lead Operator: Roy Jorgensen Associates, Inc.

By: _____

Printed Name: Charles E. Henningsgaard, PE

Title: Senior Vice President

ANNEX A to the Submittal Letter

Pass/Fail Evaluation Criteria Verification

No.	Pass/Fail Evaluation Criteria	RFQ Reference	Satisfied[23]
(1)	SOQ conforms to all RFQ instructions regarding organization, format and content, including page limitations.	General Requirements, Financial Requirements and SOQ Submission Requirements	☒
(2)	Volume 1 of SOQ includes each of the following:		☒
	(a) Submittal Letter (Form A);	Section 1.1 of the Volume 1 Requirements	☒
	(b) narrative executive summary;	Section 1.2 of the Volume 1 Requirements	☒
	(c) SOQ Submission Public Statement;	Section 1.3.1 of the Volume 1 Requirements	☒
	(d) Confidential Contents Index (Form B);	Section 1.3.2 of the Volume 1 Requirements	☒
	(e) completed Form C (*Information Regarding Proposer*) for each of:	Section 2.1.1 of the Volume 1 Requirements	☒
	(i) each Equity Member;	Section 2.1.1.a of the Volume 1 Requirements	☒
	(ii) Lead Contractor;	Section 2.1.1.b of the Volume 1 Requirements	☒
	(iii) Lead Engineer;	Section 2.1.1.c of the Volume 1 Requirements	☒
	(iv) Lead Operator; and	Section 2.1.1.d of the Volume 1 Requirements	☒
	(v) each Financially Responsible Party (if any);	Section 2.1.1.e of the Volume 1 Requirements	☒
	(f) organizational chart (entity level);	Section 2.1.2 of the Volume 1 Requirements	☒
	(g) organizational chart (or charts, if different by time period) identifying Key Personnel and management structures;	Section 2.1.3 of the Volume 1 Requirements	☒
	(h) narrative description of Proposer's organizational and management structure;	Section 2.1.4 of the Volume 1 Requirements	☒
	(i) list of names and titles of senior involved personnel;	Section 2.1.5 of the Volume 1 Requirements	☒
	(j) narrative description of workloads and (other than for (vi) below) availability of non-financial resources for each of:	Section 2.2 of the Volume 1 Requirements	☒

[23] Proposer should check each box to confirm that it believes the relevant Pass/Fail Evaluation Criteria has been satisfied.

	(i) each Equity Member;	Section 2.2.a of the Volume 1 Requirements	☒
	(ii) Lead Contractor;	Section 2.2.b of the Volume 1 Requirements	☒
	(iii) Lead Engineer;	Section 2.2.c of the Volume 1 Requirements	☒
	(iv) Lead Operator;	Section 2.2.d of the Volume 1 Requirements	☒
	(v) Financially Responsible Party (if any); and	Section 2.2.e of the Volume 1 Requirements	☒
	(vi) each proposed Key Personnel;	Section 2.2.f of the Volume 1 Requirements	☒
	(k) either: (i) confirmation of absence of any organizational conflicts of interest; or (ii) narrative description of any such organizational conflicts of interest;	Section 3.1 of the Volume 1 Requirements	☒
	(l) completed Form D (Legal Disclosures);	Section 3.2.1 of the Volume 1 Requirements	☒
	(m) completed Part A (Summary of Certifications) of Form E (Certifications);	Section 3.2.2 of the Volume 1 Requirements	☒
	(n) completed Part B (Certifications) of Form E (Certifications) for each of:	Section 3.2.3 of the Volume 1 Requirements	☒
	(i) each Equity Member;	Section 3.2.3.a of the Volume 1 Requirements	☒
	(ii) Lead Contractor;	Section 3.2.3.b of the Volume 1 Requirements	☒
	(iii) Lead Engineer;	Section 3.2.3.c of the Volume 1 Requirements	☒
	(iv) Lead Operator; and	Section 3.2.3.d of the Volume 1 Requirements	☒
	(v) each Financially Responsible Party (if any);	Section 3.2.3.e of the Volume 1 Requirements	☒
	(o) statement regarding the presence (or absence) of anticipated legal issues;	Section 3.3 of the Volume 1 Requirements	☒
	(p) completed Form F (Project Experience) for each of:	Section 4.1 of the Volume 1 Requirements	☒
	(i) the Equity Members (collectively), with respect to at least 3 but no more than 5 General Reference Projects (of which the Procuring Authorities permit 1 General Reference Project to not satisfy paragraph (a) of the definition of General Reference Project);	Section 4.1.a of the Volume 1 Requirements	☒

	(ii) the Lead Contractor (collectively), with respect to at least 4 but no more than 6 General Reference Projects (of which the Procuring Authorities permit 1 General Reference Project to not satisfy paragraph (a) of the definition of General Reference Project);	Section 4.1.b of the Volume 1 Requirements	☒
	(iii) the Lead Engineer (collectively), with respect to at least 4 but no more than 6 General Reference Projects (of which the Procuring Authorities permit 1 General Reference Project to not satisfy paragraph (a) of the definition of General Reference Project); and	Section 4.1.c of the Volume 1 Requirements	☒
	(iv) the Lead Operator (collectively), with respect to at least 2 but no more than 4 O&M Reference Projects.	Section 4.1.d of the Volume 1 Requirements	☒
	(q) completed Form G (Safety Questionnaire) for each of:	Section 4.2 of the Volume 1 Requirements	☒
	(i) Lead Contractor;	Section 4.2.a of the Volume 1 Requirements	☒
	(ii) Lead Engineer; and	Section 4.2.b of the Volume 1 Requirements	☒
	(iii) Lead Operator;	Section 4.2.c of the Volume 1 Requirements	☒
	(r) completed Form H (Stakeholder and Economic Engagement Questionnaire);	Section 4.3 of the Volume 1 Requirements	☒
	(s) completed Form I (Key Personnel) attaching resumes (including a list of references in the form of Annex A to Form I) for each of:	Section 4.4 of the Volume 1 Requirements	☒
	(i) Design-Build Manager;	Section 4.4.a of the Volume 1 Requirements	☒
	(ii) Design Manager;	Section 4.4.b of the Volume 1 Requirements	☒
	(iii) O&M Manager;	Section 4.4.c of the Volume 1 Requirements	☒
	(iv) Quality Manager;	Section 4.4.d of the Volume 1 Requirements	☒
	(v) Environmental Manager;	Section 4.4.e of the Volume 1 Requirements	☒
	(vi) Utilities Manager; and	Section 4.4.f of the Volume 1 Requirements	☒
	(vii) Community and Public Relations Manager; and	Section 4.4.g of the Volume 1 Requirements	☒
	(t) statement of technical approach.	Section 5 of the Volume 2 Requirements	☒

(3)	Volume 2 of SOQ includes each of the following:		☒
	(a) narrative description of Proposer's organizational and management structure as it relates to financial matters;	Section 1.1 of the Volume 2 Requirements	☒
	(b) narrative description of the financial capacity available to Proposer for this Project;	Section 1.2 of the Volume 2 Requirements	☒
	(i) each Equity Member;	Section 1.2.a of the Volume 2 Requirements	☒
	(ii) Lead Contractor;	Section 1.2.b of the Volume 2 Requirements	☒
	(iii) Lead Engineer;	Section 1.2.c of the Volume 2 Requirements	☒
	(iv) Lead Operator; and	Section 1.2.d of the Volume 2 Requirements	☒
	(v) each Financially Responsible Party (if any);	Section 1.2.e of the Volume 2 Requirements	☒
	(c) narrative description of the relevant experience of the Core Proposer Team Members on General Reference Projects;	Section 1.3 of the Volume 2 Requirements	☒
	(d) statement of financial approach;	Section 2 of the Volume 2 Requirements	☒
	(e) letter of support from each Financially Responsible Party (if any);	Section 3.1 of the Volume 2 Requirements	☒
	(f) letter or letters from an Eligible Surety, together (at Proposer's option) with a letter or letters from an Eligible Financial Institution, as evidence of bonding/letter of credit capacity and ability to secure performance security;	Section 3.2 of the Volume 2 Requirements	☒
	(g) equity funding letter from each Equity Member;	Section 3.3 of the Volume 2 Requirements	☒
	(h) financial statements for:	Section 4.1 of the Volume 2 Requirements	☒
	(i) each Equity Member;	Section 4.1.a of the Volume 2 Requirements	☒
	(ii) Lead Contractor;	Section 4.1.b of the Volume 2 Requirements	☒
	(iii) Lead Engineer;	Section 4.1.c of the Volume 2 Requirements	☒
	(iv) Lead Operator; and	Section 4.1.d of the Volume 2 Requirements	☒

	(v) each Financially Responsible Party (if any);	Section 4.1.e of the Volume 2 Requirements	☒
	(i) information regarding material changes in financial capacity, or confirmation of the absence of any such changes, for:	Section 4.2 of the Volume 2 Requirements	☒
	(i) each Equity Member;	Section 4.2.b.i of the Volume 2 Requirements	☒
	(ii) Lead Contractor;	Section 4.2.b.ii of the Volume 2 Requirements	☒
	(iii) Lead Engineer;	Section 4.2.b.iii of the Volume 2 Requirements	☒
	(iv) Lead Operator; and	Section 4.2.b.iv of the Volume 2 Requirements	☒
	(v) each Financially Responsible Party (if any);	Section 4.2.b.v of the Volume 2 Requirements	☒
	(j) identification of off balance sheet liabilities, or confirmation of the absence of such liabilities, for each of:	Section 4.3 of the Volume 2 Requirements	☒
	(i) each Equity Member;	Section 4.3.a of the Volume 2 Requirements	☒
	(ii) Lead Contractor;	Section 4.3.b of the Volume 2 Requirements	☒
	(iii) Lead Engineer;	Section 4.3.c of the Volume 2 Requirements	☒
	(iv) Lead Operator; and	Section 4.3.d of the Volume 2 Requirements	☒
	(v) each Financially Responsible Party (if any);	Section 4.3.e of the Volume 2 Requirements	☒
	(k) completed Form J (Credit Ratings); and	Section 4.4.1 of the Volume 2 Requirements	☒
	(l) all rating information and materials for each entity that has a credit rating as indicated on the completed Form J (Credit Ratings).	Section 4.4.2 of the Volume 2 Requirements	☒

ANNEX B TO THE SUBMITTAL LETTER

Scoring Reference Chart

Relevant RFQ Section (of Part C)	Substantive Evaluation Criteria	SOQ Vol. & Sec. Ref.
	Technical Criteria	
Section 1.1	Organization, Structure and Experience	
Section 1.1.a	• Likelihood of success based on:	
Section 1.1.a.i	- management, organization and structure	• Volume 1, Section 2.1.2 • Volume 1, Section 2.1.3.a. • Volume 1, Section 2.1.3.b. • Volume 1, Section 2.1.4 • Volume 1, Section 2.1.5 • Volume 1, Section 2.2. • Volume 1, Section 4.4. • Volume 2, Section 1.1.
Section 1.1.a.ii	- prior experience and Demonstrated Performance	• Volume 1, Section 2.1.5 • Volume 1, Section 2.2. • Volume 1, Section 4.1. • Volume 1, Section 4.2. • Volume 1, Section 4.3. • Volume 1, Section 4.4. • Volume 2, Section 1.3.
Section 1.1.b	• Experience and Demonstrated Performance on Reference Projects based on:	
Section 1.1.b.i.A	- design and construction	• Volume 1, Section 4.1. • Volume 1, Section 4.2.
Section 1.1.b.i.B	- operations and maintenance	• Volume 1, Section 4.1. • Volume 1, Section 4.2.
Section 1.1.b.ii.A	- workforce, subcontractor and stakeholder engagement	• Volume 1, Section 4.1. • Volume 1, Section 4.3.
Section 1.1.b.ii.B	- environmental monitoring and mitigation	• Volume 1, Section 4.1. • Volume 1, Section 4.3.
Section 1.2	Technical Approach to Project	
Section 1.2.a	• Understanding of key challenges and risks	• Volume 1, Section 5.A. • Volume 1, Section 5.B.
Section 1.2.b	• Project plan	• Volume 1, Section 5.C.
Section 1.2.c	• Public interest and engagement plan	• Volume 1, Section 4.3. • Volume 1, Section 5.D.
	Financial Criteria	
Section 2.1	Financial Qualifications and Capacity	
Section 2.1.a	• Experience and Demonstrated Performance on closing financing of Reference Projects	• Volume 1, Section 4.1. • Volume 2, Section 1.3
Section 2.1.b	• Financial capacity	• Volume 2, Section 1.2. • Volume 2, Section 3.1 • Volume 2, Section 3.2 • Volume 2, Section 3.3 • Volume 2, Section 4 (All Subvolumes)
Section 2.2	Financial Approach to Project	• Volume 2, Section 2.0

NPT

I-70 East Project

COLORADO BRIDGE ENTERPRISE AND
HIGH PERFORMANCE
TRANSPORTATION ENTERPRISE

Kiewit meridiam PARTNERS

I-70/Pecos Street Bridge Replacement, Denver, Colorado

EXECUTIVE SUMMARY

I-25 T-REX "The Narrows", Denver, Colorado

Kiewit-Meridiam Partners will invest in the I-70 East Project. We look forward to earning the trust of the communities along the I-70 "Corridor of Opportunity". Partnership, Transparency, and Certainty are the guiding principles of our approach.We see the I-70 East Project as an opportunity to continue a partnership with CDOT, and the people of Denver and Colorado.

Community is the "heart" of this project and Kiewit-Meridiam Partners is committed to the I-70 East Project communities. We will support, serve, protect, and develop the communities in the delivery and long-term operations of I-70. Because Kiewit-Meridiam Partners is a true project stakeholder (that is, key members are already an integral part of the Denver community) and one that offers industry leading, full-service transportation experience, we will be the most responsive to CDOT's goals across the project's life cycle.

EQUITY	Meridiam Kiewit
LEAD CONTRACTOR	Kiewit
LEAD ENGINEER	Parsons Brinckerhoff Jacobs
LEAD OPERATOR	Jorgensen
EXCLUSIVE SUBCONSULTANTS	HCL Muller Engineering Company Railroad Coordination, LLC RMC Consultants Shannon & Wilson, Inc. Transtec Group, Inc.
EXCLUSIVE SUBCONTRACTORS	Anderson Drilling Bilingual Prof. Services Iron Woman JKS Industries Sturgeon Electric Villalobos

Our Commitment —

To serve as the springboard to a vibrant economic revitalization along the corridor

To be the driving force behind community enhancements

To put people to work and develop local skills

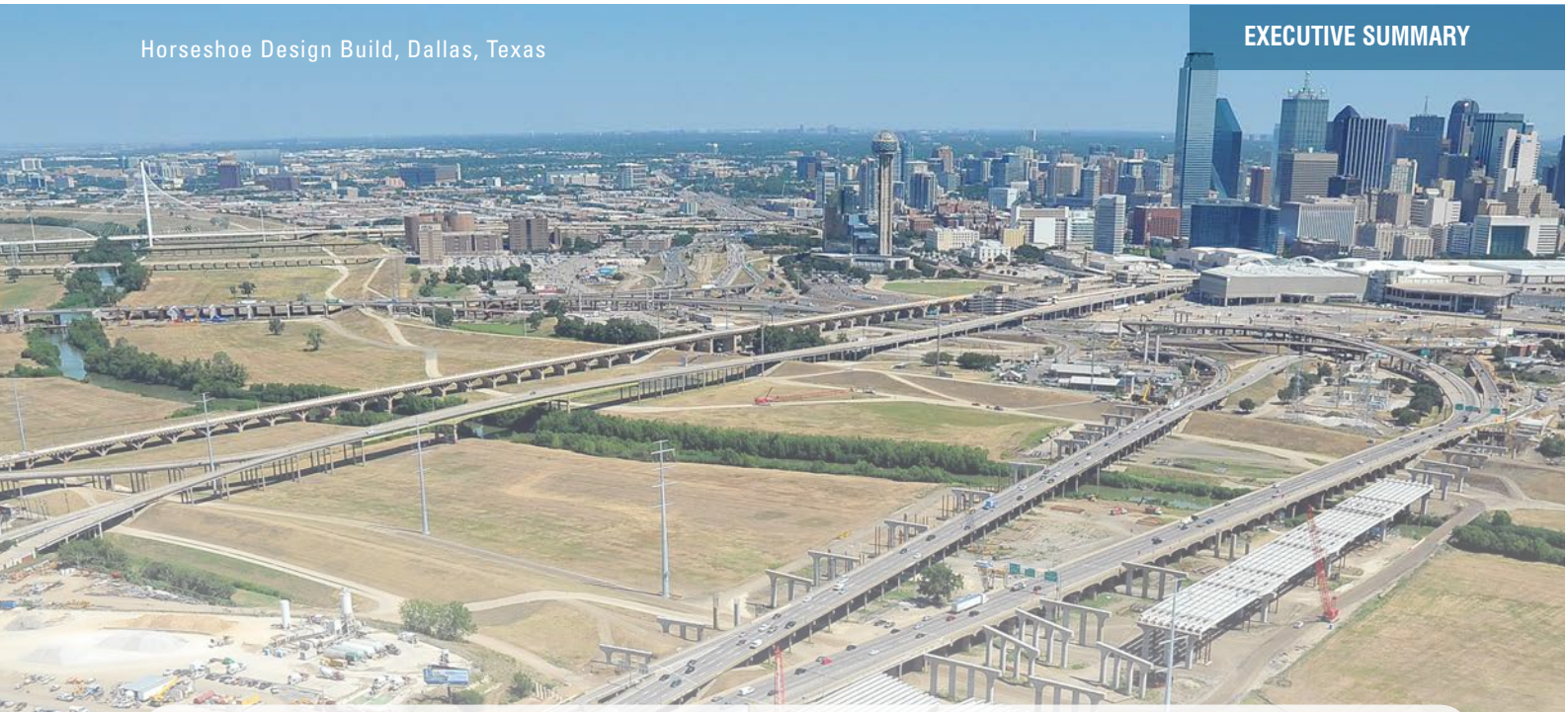
To contribute to the design, construction and long-term maintenance

To cultivate growth and independence in our communities

To provide sustainable solutions that fit community needs

To actively engage communities where we live and work

To continue to grow partnerships with local suppliers and subcontractors



Horseshoe Design Build, Dallas, Texas

Our Foundation – Ethics and Trust

Kiewit-Meridiam Partners all share a like-minded approach to business. We focus on making the right decisions for our client and each other for the long term. We offer a proven depth of experience with P3 model delivery and know how this will bring value to CDOT and communities along I-70. Having personal, long-established relationships, there is no learning curve among our members. We have solved challenges together before, we are solving challenges together now, and we will solve challenges on the I-70 corridor moving forward.

Long-Term Partners

Equity partners Meridiam and Kiewit have an established track record of successfully financing and delivering very similar P3 projects — we have closed 28 availability payment projects with private financing of $18 billion. We are experienced, long-term investors and our goals align with yours.

Design Build

Our design build team members, including Lead Constructor Kiewit Infrastructure Co. and Lead Engineer Parsons Brinckerhoff and Jacobs, have been working on challenging transportation projects in Colorado for nearly 75 years. We have delivered some of the most complicated, time-sensitive and cost-certain projects in North America.

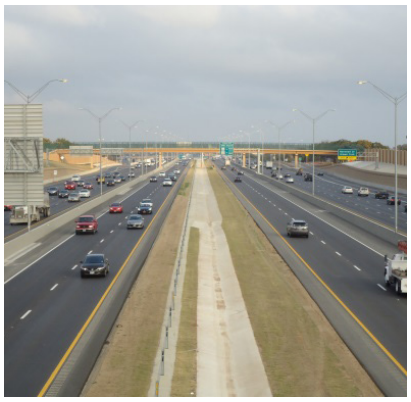
Operations and Maintenance

Jorgensen brings experience from existing long-term maintenance contracts on more than 12,000 lane miles across the U.S. This experience, properly integrated across life cycle of the project term, will provide full Lead Operator transparency to CDOT and confidence in a team you can trust.

Together, Best in Class

DFW Connector

Kiewit – Lead Contractor
Parsons Brinckerhoff – Lead Engineer
Jacobs – Owner's Engineer



North Tarrant Express

Meridiam – Equity Member and Lead Operator (Co-Lead)
Jacobs – Owner's Engineer

I-595 Express

Jorgensen – Lead Operator

I-25 T-REX

Kiewit – Lead Contractor
Jacobs – Owner's Engineer

Denver Union Station

Kiewit – Lead Contractor
Parsons Brinckerhoff – Owner's Engineer
Jacobs – Program Manager for RTD

I-225 Rail Line

Kiewit – Lead Contractor
Parsons Brinckerhoff – Project Manager for RTD Planning Phase
Jacobs – Program Manager for RTD

E-470 Segment 4 Toll Road, Denver, Colorado

Public Engagement

Kiewit-Meridiam Partners will continue the work and relationship building CDOT has developed with these communities to deliver the vision of better community connectivity, opportunity for local workforce involvement, enhanced aesthetics to reflect community identities, and community-inspired landscaping of the highway cover near Swansea Elementary School. Our outreach to the community will be inspired to meet the distinct needs and visions of each community. Giving back is the way of doing business for Kiewit-Meridiam Partners.

Our Communities Matter

On Port of Miami Tunnel Meridiam sponsored a "Bob the Builder" museum exhibit where equipment was placed around the museum for the opening of the exhibit to encourage interest in mathematics and science. In addition, a local Girl Scout troop named the Tunnel Boring Machine "Harriet" in reference to Harriet Tubman and the Underground Railroad.

At Waterloo LRT, coordinated with stakeholders to develop a traffic management plan that maintains access to businesses as well as individualized construction liaison plans for each area of work, and a corridor-specific crisis communications plan.

T-REX engaged stakeholders and residents by including them in the design development process. Residents and neighborhoods worked with the project team to choose aesthetics for the walls to reflect their neighborhoods. T-REX earned the Gold Pick for the Best Communications Program Award from the Public Relations Society of America.

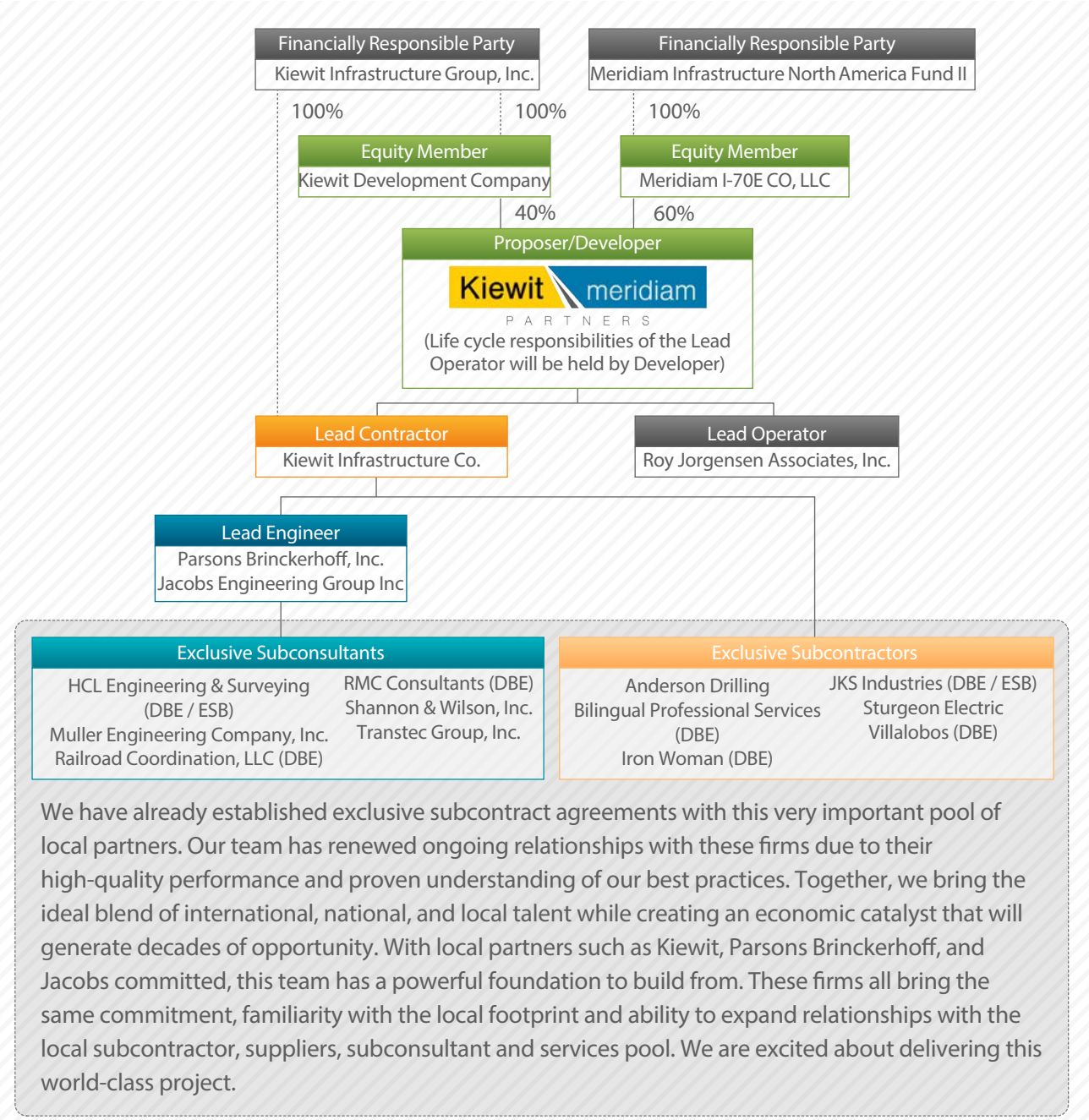
Miami's I-595 Express is in a region with a high population of Hispanic families. The ability to communicate and interact with the customers and motorists whose first language is Spanish is critical to providing reliable customer service. Jorgensen is on-call and available 24/7/365, to field daily customer calls.

Denver Union Station Transit Improvements Project had a giving program that included holding a turkey drive each Thanksgiving for the nearby Denver Rescue Mission. We also volunteered to serve breakfast at the Mission nearly a dozen times during the project. The team also held a food drive at Christmas time for Food Bank of the Rockies.

Port of Miami Tunnel, Miami, Florida

Partners to Deliver

We have combined a group with exceptional talent focused on the I-70 East Project. Kiewit-Meridiam Partners has followed the CDOT project development process for several years, we understand the effort that has gone into the key decisions, the lessons-learned and the path forward to drive value into this P3 model. With this common understanding, we have evolved into the ideal long-term partnership. We bring a design and construction resource pool, members of the same local fabric, and expertise on some of the most challenging transportation projects in North America. Further, we provide a strong national O&M reputation and a comprehensive resume within our members. We wrap all this together with a commitment to continue to engage the local pool of expertise for labor, supplies, and subcontracting opportunities.



We have already established exclusive subcontract agreements with this very important pool of local partners. Our team has renewed ongoing relationships with these firms due to their high-quality performance and proven understanding of our best practices. Together, we bring the ideal blend of international, national, and local talent while creating an economic catalyst that will generate decades of opportunity. With local partners such as Kiewit, Parsons Brinckerhoff, and Jacobs committed, this team has a powerful foundation to build from. These firms all bring the same commitment, familiarity with the local footprint and ability to expand relationships with the local subcontractor, suppliers, subconsultant and services pool. We are excited about delivering this world-class project.

Kiewit-Meridiam Partners is defined by team members with a common belief of service to clients and project stakeholders. We bring a long-established local partner with deep roots in the community and a proven strategy to significantly leverage the local subcontracting market. Kiewit is committed to the local construction sector as a partner for this unique Project. The table below illustrates the overlapping principles this team brings to CDOT and the communities along I-70.

OVERLAPPING PRINCIPLES OUR TEAM BRINGS TO CDOT AND THE COMMUNITIES OF I-70

Common Credentials	Kiewit meridiam PARTNERS	Common Principles
International equity investment firm, with more than 150 employees, that has achieved financial close on 34 P3 projects globally (6 in the US, 9 in North America) with a total value of nearly $30 billion. Developed and reached financial close on 10 transportation infrastructure projects in North America.	**Meridiam** 10 years	*To be a part of a team that will create long-term benefits for the I-70 corridor communities. This team understands each other and will hit the ground running, with a powerful local presence, far-reaching global relationships and a streamlined management structure.*
National and international E/C and equity investment organization, with more than 11,000 staff and 14,000 craft employees of which 1,400 are Colorado-based. Since the early 1990s, Kiewit has participated in 15 P3 projects with a capital value of over $9 billion. Further, Kiewit has completed more than $32 billion in infrastructure projects using DB, DBOM or DBFOM delivery, and owns one of the most modern equipment fleets available valued at more than $2 billion. The organization has supported projects in Colorado for more than 75 years.	**Kiewit** 130 years	*To be a part of a team that will do the right thing for CDOT and its partners. Kiewit shares a strong belief in ethics, trust, and transparency among partners. This team has personal, long-established relationships with each other and in this community. To partner with the right group of firms to deliver this project the right way in its own backyard. To this point, all partners have been focused on the same outcome of "knocking it out of the park."*
National and international A/E firm, with more than 15,000 employees. Supported transportation projects in Colorado for more than 25 years. Parsons Brinckerhoff has helped owners, contractors and agencies deliver more than $13 billion in infrastructure improvements using alternative delivery project management systems.	**Parsons Brinckerhoff** 130 years	*To be a part of a team based on trust, commitment to delivery, professionalism in the delivery process, and quality in the completed project. These attributes are completely aligned with the core values of Parsons Brinckerhoff.*
National and international A/E firm, with 66,000 employees, of which 240 are Colorado-based. Supported transportation projects in Colorado for more than 40 years and delivered more than $15 billion in DB, DBOM, DBFOM projects.	**Jacobs** 70 years	*To be a part of a team with like-minded values, a performance-driven quality approach, and client commitment coupled with a long and successful working relationship with Core Team members. These are the "right" partners.*
National O&M firm, with nearly 500 employees specializing in facility and highway infrastructure, consulting, maintenance and management services. The firm has access to an equipment fleet valued at $5 million.	**Jorgensen** 50 years	*To be a part of a team comprising of individuals who share the same vision, ideals, and principles and will remain dedicated to deliver on commitments from beginning to end.*

Key Personnel

Tom Howell
Design-Build Manager

Tom's management of high-profile, billion-dollar highway/transit projects has earned him a reputation in the industry for guiding mega-projects to on-time delivery within budget. Tom brings 34 years of experience in heavy transportation construction using alternative delivery. Since 2001, Tom has lived in Colorado, from the initial mobilization of I-25 T-REX through more recent endeavors such as Denver Union Station and I-225 Rail Line.

Doug Andrew
Design Manager

Doug is a senior design manager specializing in large design build and design build, finance, operate, maintain transportation infrastructure projects. He performs design in a collaborative manner that results in a constructed project that the owner is proud of. Doug leads his team to design constructible solutions, collaborates with the owner and their engineer, and consistently performs in a demanding schedule environment.

Abraham Henningsgaard
O&M Manager

Abe brings a strong history in the development and implementation of project maintenance and operational management systems, value engineering, and capital expense budgeting from over 10 years of service with Jorgensen. He routinely develops performance-based cost modeling, comprehensive work planning, and mobilization plans evidenced through his leadership on I-595 and I-495 O&M contracts.

Hunter Sydnor
Community & Public Relations Manager

Hunter brings 14 years of experience in overseeing the execution of the local public information plans on high-profile transportation and highway projects. She has collaborated with CDOT personnel to develop and implement communication plans to ensure acurrate and effective information dissemination to stakeholders on projects including I-25 T-REX, Denver Union Station, I-225 Rail Line, and the recent Pecos Street over I-70 Project. Her efforts on I-25 T-REX helped the project team earn the Gold Pick for the Best Communications Program Award from the Public Relations Society of America.

Gordon Peterson
Quality Manager

Gordon Peterson is a professional engineer with more than 30 years of dedicated experience in Quality Management. In the early 1990s Gordon established one of the first fully accredited contractor materials testing labs in Colorado. He has also served as Chair of the Colorado Asphalt Pavement Association, a joint CDOT-Industry Forum in addition to his decade long commitment on the CAPA Board of Directors. Most recently, as the Quality Management program director on the highly successful $991 million DFW Connector he established a proactive, internationally accredited project-specific ISO 9001 quality program.

Jenn Bradtmueller
Environmental Manager

With more than a decade of targeted transportation environmental management experience, Jenn Bradtmueller has established transparent and trusted relationships with regulatory agencies in several western states, including the Colorado Department of Public Health and Environment. Jenn has managed environmental programs for mega design build projects including Denver Union Station, I-225 Light Rail, I-25 T-REX, and the DFW Connector to ensure compliance with all applicable environmental regulations and permit applications.

Kevin Custy
Utilities Manager

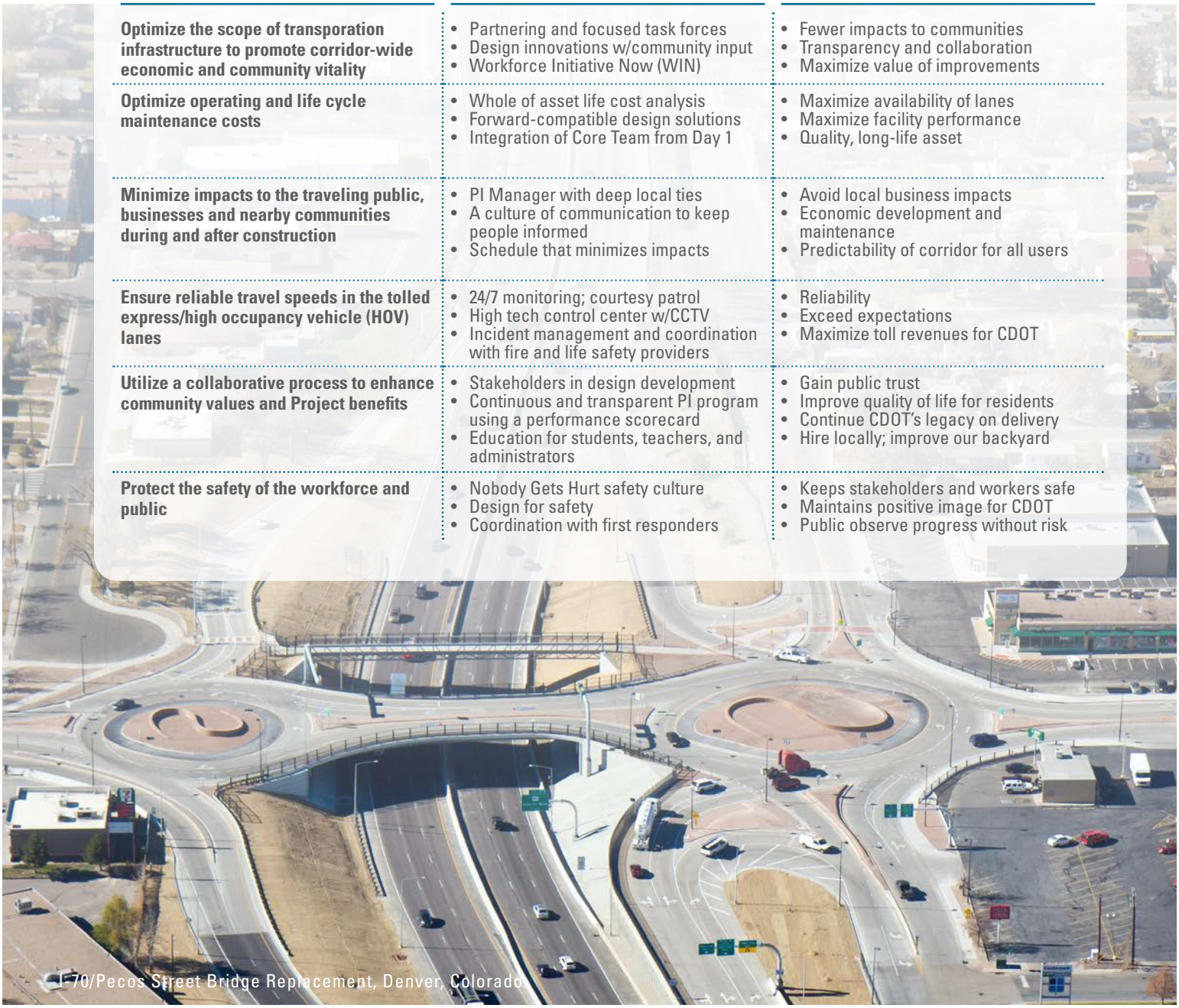
For more than 20 years Kevin Custy has been managing the utility interface on the Denver area's highest priority transportation projects, including T-REX and RTD's region-wide FasTracks program. Kevin is a proven utilities relocation expert and has established working relationships with the utility owners and local agency representatives in and around the Denver community. Further, he possesses in-depth knowledge of Colorado statutes, and the Code of Federal Regulations (CFR) with respect to transportation expansion projects.

Denver Union Station, Denver, Colorado

We Know the Project

Kiewit-Meridiam Partners has worked to develop a value strategy to respond to CDOT's goals for this corridor. We've been active in our analysis of the potential issues and have already leveraged proven strategies that work – strategies used on local projects such as I-25 T-REX, Denver Union Station, and I-225 Rail Line. These strategies stretch beyond the design and construction period and are reflected through a long-term maintenance and toll operations period. The methods we will use to mitigate these challenges and achieve your goals have been repeatedly practiced on local projects. These measures are realistic, achievable and moreover, we apply these practices with a high degree of predictable success.

CDOT Goal	Our Approach	Benefit to CDOT
Optimize the scope of transporation infrastructure to promote corridor-wide economic and community vitality	• Partnering and focused task forces • Design innovations w/community input • Workforce Initiative Now (WIN)	• Fewer impacts to communities • Transparency and collaboration • Maximize value of improvements
Optimize operating and life cycle maintenance costs	• Whole of asset life cost analysis • Forward-compatible design solutions • Integration of Core Team from Day 1	• Maximize availability of lanes • Maximize facility performance • Quality, long-life asset
Minimize impacts to the traveling public, businesses and nearby communities during and after construction	• PI Manager with deep local ties • A culture of communication to keep people informed • Schedule that minimizes impacts	• Avoid local business impacts • Economic development and maintenance • Predictability of corridor for all users
Ensure reliable travel speeds in the tolled express/high occupancy vehicle (HOV) lanes	• 24/7 monitoring; courtesy patrol • High tech control center w/CCTV • Incident management and coordination with fire and life safety providers	• Reliability • Exceed expectations • Maximize toll revenues for CDOT
Utilize a collaborative process to enhance community values and Project benefits	• Stakeholders in design development • Continuous and transparent PI program using a performance scorecard • Education for students, teachers, and administrators	• Gain public trust • Improve quality of life for residents • Continue CDOT's legacy on delivery • Hire locally; improve our backyard
Protect the safety of the workforce and public	• Nobody Gets Hurt safety culture • Design for safety • Coordination with first responders	• Keeps stakeholders and workers safe • Maintains positive image for CDOT • Public observe progress without risk



I-70/Pecos Street Bridge Replacement, Denver, Colorado

The I-70 East Project

Brighton Blvd to Quebec Pkwy

EXPERIENCE FOR DELIVERING

- Roadway Expansion
- Demolition of Viaduct
- Major Excavation
- Complex Traffic Mgmt
- Confined Spaces
- Structures w/Ventilation
- Coord. w/Railroad/Utility

Major Technical Aspects

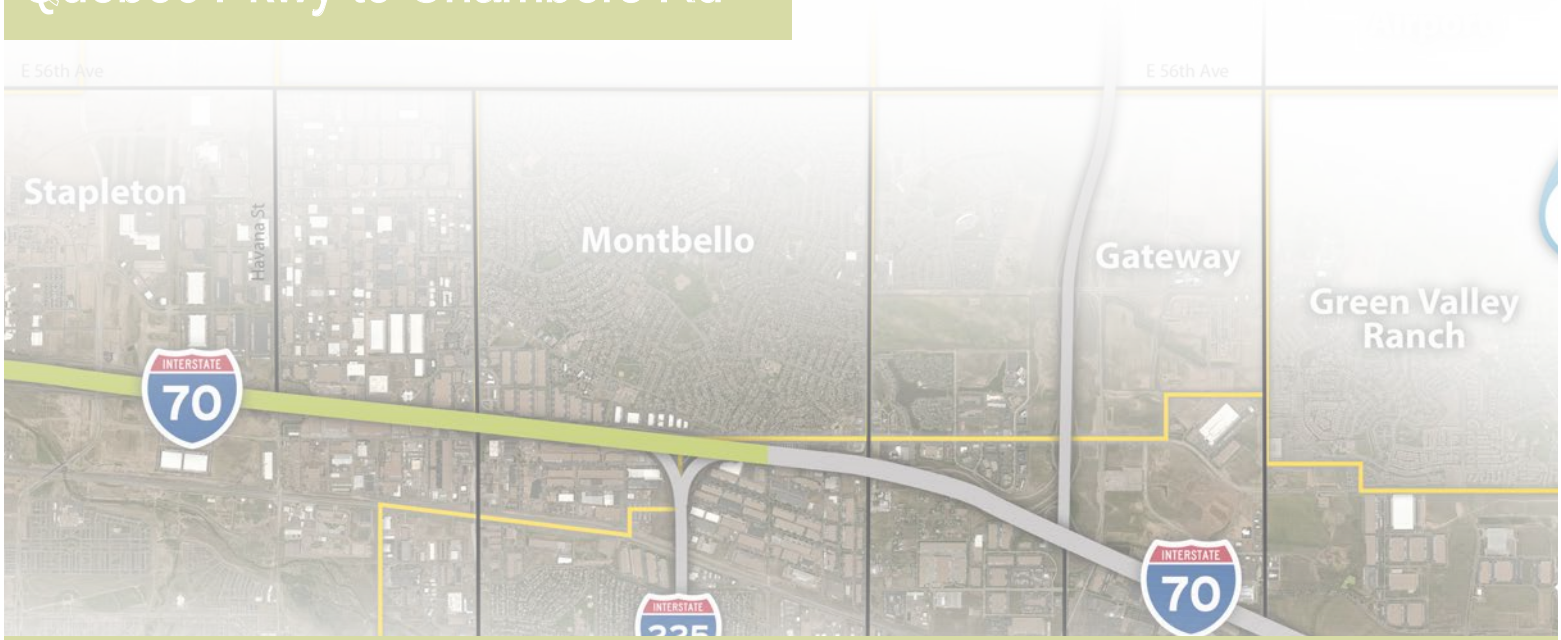
- Re-construct I-70 below grade
- Remove existing viaduct
- Urban landscaped freeway cover
- Reconstruction of 46th Ave. at grade
- Three new railroad bridges, seven new city street bridges
- Onsite/offsite stormwater drainage
- Hazardous material management and mitigation
- New interchanges at Dahlia, Holly, Monaco, and Quebec

Major Challenges Driving Design/Construction

- Dewatering groundwater
- Maintaining the existing viaduct during construction
- Improve drainage for the Montclair Basin
- Comprehensive and effective utility investigation and relocation
- Maintaining community connectivity
- Railroad coordination
- Delivering the connecting cover
- Improving north/south arterial connectivity

The map below offers a snapshot for some of the major technical attributes featured long the I-70 corridor. It illustrates the commonality between our team's body of work and the technical challenges identified along the I-70 corridor. CDOT will realize the benefits of no learning curve, shared best practices among our Core Team members, and an intuitive understanding of how to approach a project such as I-70 East.

Quebec Pkwy to Chambers Rd



EVERY PROJECT ELEMENT

- Similar Environment
- Interface with Operators
- Workforce Development
- Achieve D/SBE Goals
- Air Quality Mitigation
- Noise Quality Mitigation
- Continuous access to DIA

Major Technical Aspects

- At-grade widening of I-70 in both directions
- New I-270 SB to I-70 EB ramp flyover bridge
- New bridge over I-70 at Peoria St.
- Pavement rehabilitation and widening

Major Challenges Driving Design/Construction

- Commercial access during construction
- Pre-determined detour routes with local agencies
- MOT and construction phasing
- Continuous access to DIA

DFW Connector, Dallas, Texas

Best Practices and Innovative Approaches

Investment

We have a track record of successfully raising project finance on transportation P3 projects with notable innovations and full commitment. We will leverage that experience to obtain the lowest possible cost of capital for I-70 East, and we will deliver a competitive financing proposal. We aren't just investing funds, we are investing in Denver's future.

Partnering

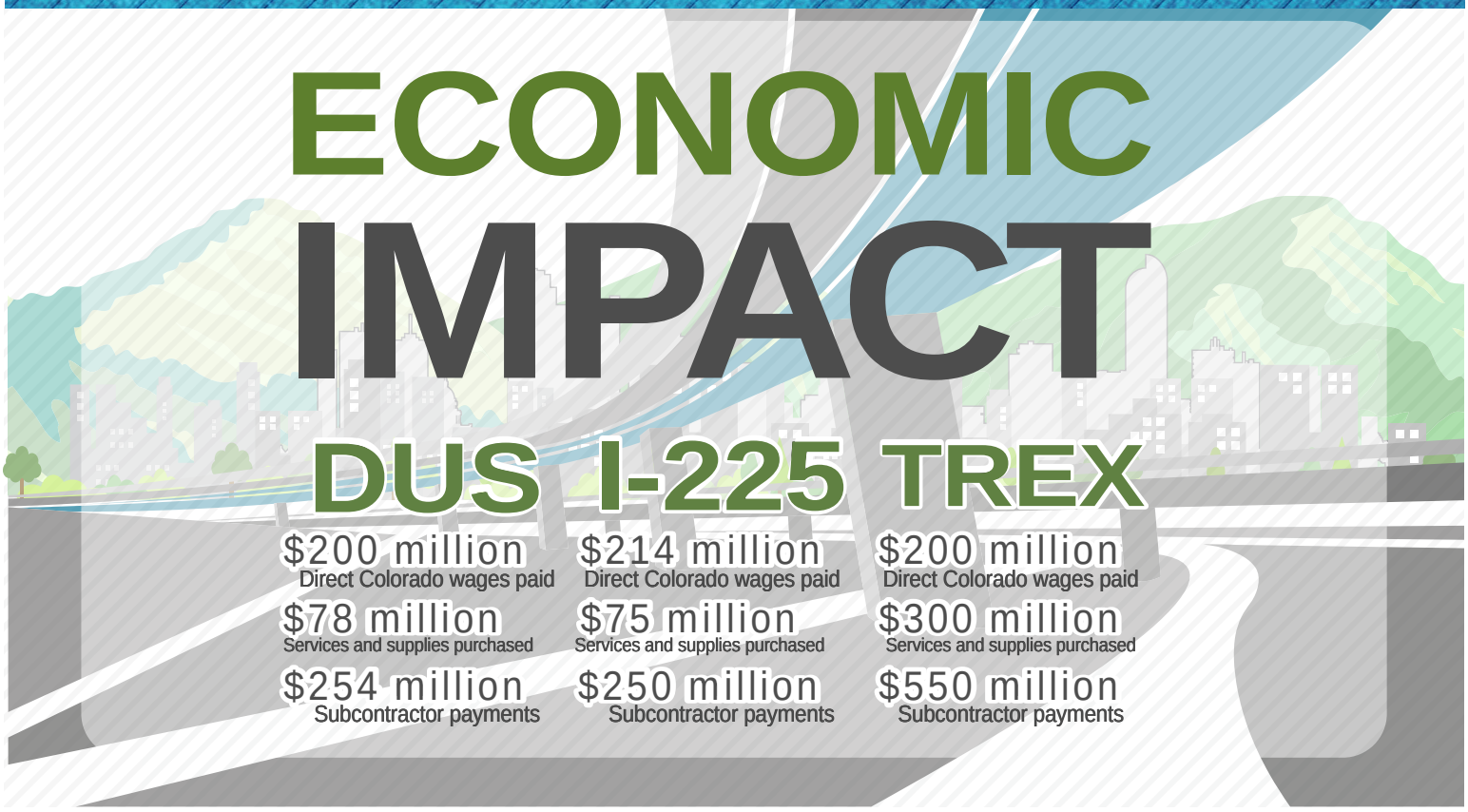
We commit to effective partnering with CDOT and other stakeholders. We will extend this collaborative partnering approach to local businesses, the workforce, and the community. Positive local relationships result in shared vested interests and wide-spread pride in delivering the Project.

Schedule

We will use input from CDOT and other stakeholders, subcontractors and team members to develop and update project schedules. Our process for controlling and updating the CPM baseline schedule includes the use of coordinated daily, weekly, monthly, yearly schedules. By knowing where we are, and where we are going, we will deliver with certainty. By tracking progress down to the day, we are able to react real-time to issues to ensure milestones are achieved.

> ***"Kiewit has stepped up to the plate to assure to CDOT and the public that the schedule will be met. It's an aggressive schedule and a demanding schedule..."***
>
> – Gray Currier, Project Engineer, Big Thompson Project
> Colorado Department of Transportation

ECONOMIC IMPACT



Safety

Our safety mission for the traveling public and all project personnel is simple: Nobody Gets Hurt. All employees working on the Project will receive site-specific hands-on safety training as part of their orientation. We will also implement our Craft Voice in Safety program, which encourages craft employees to make safety observations and provide interaction, recommendations and receive recognition and feedback. Craft have the authority to stop any work or operation they feel may pose a risk to someone's well-being. This safety culture extends to the public that are nearby or use the corridor. We will continuously inspect the Project for hazards; everyone, including the public will be empowered to enforce safety on this site.

Quality

Our quality program is based on the philosophy of "know it, build it, check it," and maximizes best practices for establishing, implementing, and maintaining quality. Gordon Peterson, our full-time quality manager, will provide 100% oversight of the Quality Program. We will ensure that the Project is consistently producing quality work, and that continuous improvements are made to confirm the highest level of services. The O&M team will be involved during all phases to ensure what gets designed, purchased, and built optimizes maintenance operations throughout the life cycle.

Resource Management

This team has an extensive subcontract resource pool, which will aid in selecting the right partners to help us achieve the Project goals. Key subcontractors will be co-located with our Key Personnel and will have access to the same processes and training. We will assign subcontractor monitors to disseminate Standard Operating Procedures for specific work and to support safety, schedule, and productivity performance. Our systems are proven, effective and known to the local subcontracting community. The illustration above offers a snapshot of the positive economic impact we have achieved through the usage of local subcontracting, consulting and services firms on I-25 T-Rex, I-225 Rail Line and Denver Union Station. We will all succeed together.

Denver Union Station, Denver, Colorado

Operations and Maintenance

We will develop and execute a performance-driven operations management program. The highlights of this program will include safe usage and operation of the facility, continuous observation and monitoring to remain current with facility activity, and a safety and response time-driven incident management plan. Our approach for routine maintenance will benefit from an intensive analysis of the life cycle cost and whole life considerations during design and construction to forecast the performance of facility design and anticipated maintenance cost.

Handback

Our team will institute a whole life cycle approach during the design of project elements with full participation from Equity, Lead Contractor, Lead Engineer and Lead Operator personnel to determine the most efficient approach to fulfilling the requirements over the term of the agreement. The road that we finance, design, build, operate and maintain will have a high level of service during the contract term and well beyond.

"The HCTRA system of roadways serves over 1 million patrons per day. With the help of Roy Jorgensen Associates and its many dedicated employees we are able to provide a cleaner, safer and more viable transportation alternative to the traveling public."

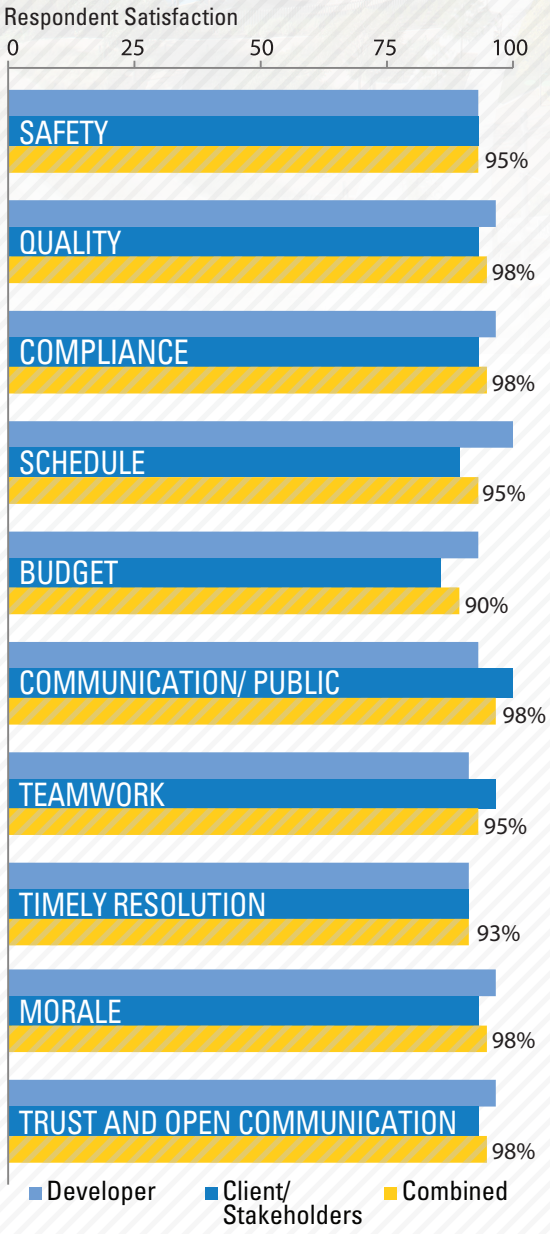
– David E. Goldberg, PE, RPLS, Project Facilities and Maintenance Engineer
Harris County Toll Road Authority


Klyde Warren Park, Dallas, Texas

I-70 East Satisfaction

Shown in the chart below is a client/stakeholder satisfaction survey taken during closeout of the DFW Connector project. We have provided detail on how we will draw from this performance for the I-70 East Project.

PERFORMANCE ON DFW CONNECTOR



COMMITMENT TO THE I-70 EAST PROJECT

Safety

- Nobody Gets Hurt: not motorists, pedestrians, visitors, construction workers or operators
- Everyone has a Voice in Safety

Quality

- Best investing practices from other privately financed concessions
- Superior design and construction technical expertise
- Handback of a high quality facility

Compliance

- 100% compliant 100% of the time
- Committed to environmental excellence

Trust / Open Communication

- Accountability and transparency
- Continuing a long-term partnership with CDOT and key stakeholders

Schedule

- Long-term management approach
- Proven, flexible systems that respond quickly to scope enhancements and unforeseen events (e.g. disruptive weather)

Budget

- Schedule efficiencies
- Optimal asset whole life cycle cost solutions
- Best value over the long term

Communication/Public

- Satisfy the expectations and priorities of the region
- Share your vision for economic growth and stability
- Handback of a high quality facility

Teamwork

- Integrated team stability
- Development to design and construction and through the operating period
- Handback of a high quality facility

Timely Resolution

- Partnering agreements to define responsibility parameters
- Process for resolution of issues across developer, project management, task force and field levels

Morale

- Local, equal opportunity employers
- Commitment to local subcontractors, consultants and service partners

Public Disclosure
Information

1.3.1. SOQ Submission Public Statement

Equity Members and Core Team Members

Kiewit Meridiam Partners have assembled a strong team of highly qualified companies to deliver a successful project to the community. The following is a list of our Equity Members and core team members, and their role on Colorado I-70 East Project.

Company Website	Role
Meridiam www.meridiam.com	Equity Member
Kiewit www.kiewit.com	Equity Member and Lead Contractor
Parsons Brinckerhoff www.pbworld.com **Jacobs** www.jacobs.com	Lead Engineer
Jorgensen www.royjorgensen.com	Lead Operator

OUR SHARED COMMITMENT

...to cultivate growth and independence in our communities

...to provide sustainable solutions that fit the community's needs

...to actively engage with the communities where we live and work

...to partner with local suppliers and contractors

OUR SHARED EXPERIENCE...

...Unparalleled financial strength and capacity

...Nearly 40 P3s ongoing globally

…Extensive design-build experience nationally and in Colorado

…A history of on time and on budget performance

...A RECORD OF CLIENT SATISFACTION

Relevant Experience

Kiewit-Meridiam Partners has the relevant experience to execute I-70 East safely for families and travelers, with minimal impacts to the traveling public, businesses, and nearby communities. Our materials and techniques enhance community values and ensure public interest is achieved. Kiewit-Meridiam Partners has the experience to best perform all phases of the Project.

Our team members have substantial experience with public-private partnerships (P3) in the US and around the world. Globally, Meridiam and Kiewit have successfully reached financial close on over 27 availability payment projects with over $17.5 billion in financing.

In particular, Meridiam and Kiewit's US P3 experience includes nine transportation projects with a combined Construction Value of over $9.2 billion. Many of these projects include managed lanes and general purpose lanes.

Our team's success in delivering some of Colorado's most challenging projects, includes I-25 Transportation Expansion Design Build (T-REX), the Pecos over I-70 Bridge Replacement, Denver International Airport South Terminal Redevelopment Program, Denver Union Station Transit Improvements, and I-225 Rail Line (LRT).

Our combined experience financing and delivering Colorado's challenging P3 projects will be valuable to help ensure that I-70 East is not only built on budget and is open to traffic on schedule, but is also efficiently maintained over the long term.

Provided below is information for each of our Core Propose Team Members.

Kiewit

Kiewit is one of the largest transportation contractors in North America and has been

an integral part of the Denver community for over 70 years. The organization successfully completed some of the nation's largest and most complex alternative delivery projects—interstates, highways and bridges; rail lines and rail yards; urban mass transit systems; and airport facilities. Kiewit's capabilities are reinforced by one of the largest privately owned fleets of construction equipment in North America. Kiewit continues to provide Denver with projects of all types and is a proud member of and contributor to the city's development as a place to work, play, and live.

Kiewit also has an experienced staff of development, financial, legal and asset management expertise supporting our proven design build credentials. As a recognized leader in P3s, Kiewit combines extraordinary financial credibility (highest rating in engineering and construction sector) and extensive resources with a creative, solution-oriented approach to make challenging projects a reality for the communities that they serve.

meridiam infrastructure

Meridiam is a lead P3 developer and investor focused on the development, investment, and management of public and community infrastructure. Since 2005, Meridiam has reached financial close on 35 P3s globally with a total project value of nearly $30 billion. A pioneer in the US P3 market, Meridiam has achieved a number of firsts including the first availability-based P3 and the first use of Public Activity Bonds to finance a P3. Meridiam developed and reached financial close on seven transportation infrastructure projects in North America in addition to 14 transportation projects developed across Europe. Each project presents its own technical challenges and complexities with solutions that showcase the schedule and cost benefits of P3s. Meridiam currently works with Kiewit on the delivery of the Waterloo Light Rail Transit P3 in Ontario, Canada, and on Presidio Parkway in San Francisco. In addition, Meridian's managed lane experience includes North Tarrant Express and LBJ Express in the Dallas/Fort Worth Metroplex.

PARSONS BRINCKERHOFF

Parsons Brinckerhoff, Inc., in Colorado since 1980, is a global consulting firm assisting public and private clients to plan, develop, design, construct, operate, and maintain critical infrastructure projects around the world. Parsons Brinckerhoff offers full-service engineering and construction support services to some of the most prolific and visible transportation and community development projects in the area including I-70 Twin Tunnels Widening, Denver Union Station, FasTracks, 14th Street Reconstruction, and DIA. Parsons Brinckerhoff's roadway expansion design experience includes I-275 in Tampa, and the substantially complete DFW Connector in the Dallas/Fort Worth Metroplex.

JACOBS

Jacobs is a one of the world's largest and most diverse providers of professional engineering services with 66,000 employees worldwide. Jacobs is committed to a relationship-based model with a focus on safety, quality, and ethics as a foundation. Jacobs has served the Colorado marketplace since 1972 with 240 Denver-based employees that support the infrastructure industry for cities, counties, and municipalities statewide. Experience relevant to roadway expansion design includes the ongoing work on I-4 in Florida and the successful I-15 South Corridor in Utah.

JORGENSEN
Roy Jorgensen Associates, Inc.

Jorgensen provides a diverse range of facility and highway infrastructure, consulting, maintenance and management services. Their professionals are in the forefront as facility managers, maintenance engineers, trainers, asset managers, and solution providers. Jorgensen's systematic approach to maintenance management is leading the industry. Jorgensen knows how to identify and implement innovative solutions for the toughest O&M challenges. Operation and maintenance experience on managed lanes for P3 projects includes I-495 Express in northern Virginia and I-595 Express in Florida.

Why We Have Submitted

Community is the "heart" of this project and Kiewit-Meridiam Partners is committed to the Colorado I-70 East Project communities. We are committed to support, serve, protect, and develop these communities in the delivery and long-term operations of I-70.

We are a project stakeholder. We live and work in the area.

With many of us living and working within 20 miles of the project location, our team is personally and professionally vested in successfully delivering I-70 East safely, on budget, and on or ahead of schedule. Because Kiewit-Meridiam Partners is a true project stakeholder, (that is, key members are already an integral part of the Denver community) and one that offers unprecedented full-service transportation experience, we will be the most responsive in delivering the Project.

This team has experienced, local resources of almost 2,200 employees in Colorado with varying expertise that can be called upon quickly. We have local offices less than 5 miles from the project footprint. Our team includes other locally based members and subcontractors that are stakeholders in the project with employees and residents living in the corridor. Our team and their family members are current and future I-70 travelers.

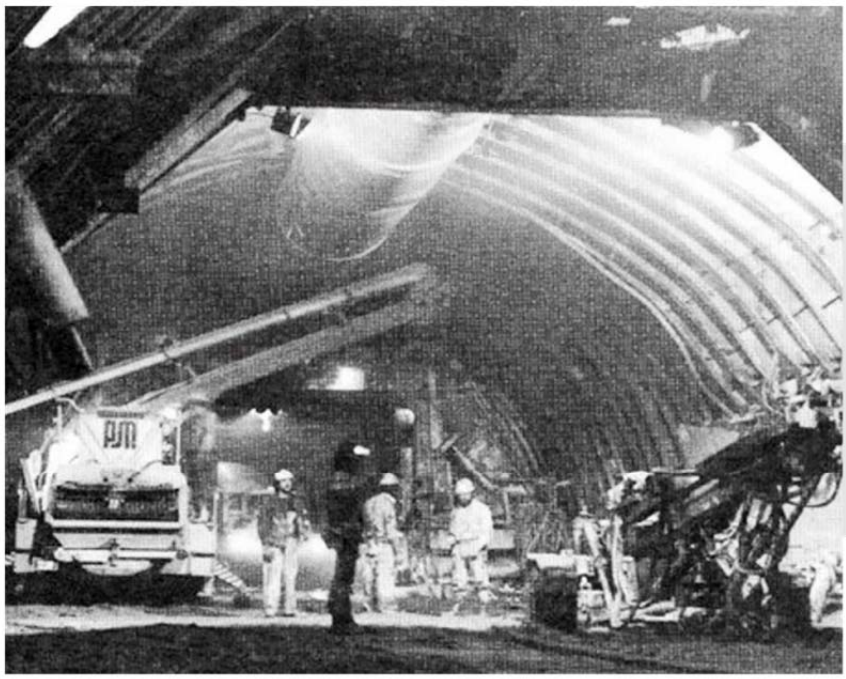
Our team has a 75 year history in the region and has completed several projects in the Denver area. As demonstrated by our long history in Denver (**Figure 4)**, we bring one of the largest general contractors and we have helped shape the skyline and deliver the infrastructure that is the backbone of the region. We want to continue to improve the Denver area.

One of our strategies to keep connected with the community is hosting "Meet the Staff" events. These events allow us to hear directly from the community and our neighbors about areas where we are doing well and where we could do better. Meet the staff allows us to provide the community with greater insight to operations — a behind-the-scenes look into what we do every day to keep our service running safely and on time. This gives the community a better appreciation of the complexities of operating and maintaining a world-class transportation experience.

We want to have a positive impact on our local community.

Our team will solicit feedback from the community to continuously improve our operation. We will seek input in many different ways that could include formal Mystery Shopper Surveys and community satisfaction reviews.

Figure 4 – Examples of our long history in the Denver area



Eisenhower Memorial Tunnel, Mid-1970's, two long-diameter highway tunnels were constructed at an elevation of 11,000 ft. to improve travel along interstate Highway 70 at Loveland Pass in Colorado.

We will review community comments and concerns and use this feedback as a valuable tool to get insight on travelers' needs. We will provide feedback to CDOT to ensure adequate action plans can be devised by all parties.

Our public engagement approach includes strategic coordination for the benefit of the communities. We propose to have joint meetings with CDOT to review all aspects of transportation policies and operations that could have an impact on the final objective of traveler satisfaction.

Our team has a long history of giving back in the region, and we give back to the communities in which we work. On the Denver Union Station Transit Improvement project, our team held a turkey drive each year to give to the Denver Rescue Mission, located just a few blocks from the project site. We volunteered to serve breakfast over 10 times during the project and held a canned food drive at Christmas.

This giving tradition carried over to the I-225 Light Rail project where the team held a turkey drive, a canned food drive, and made monetary donations. Many of these activities and the generous responses to them have gone to support the Comitis Crisis Center, an organization for the homeless in Aurora.

FORM B: CONFIDENTIAL CONTENTS INDEX

Proposer Name: Kiewit-Meridiam Partners

Form B: Confidential Contents Index

Volume 1:

No.	SOQ Heading(s)	SOQ Section(s)	SOQ Page(s)	Other Identifying Information (if any)	Relevant CORA Exemption(s)	Duration of Exemption
(1)	General Requirements	1.1	2	Section 4 (Official Representative), Phone, email and fax number	Personally Identifiable Information	Permanent
(2)	Capacity and Resources	2.2	65	Figure 7 (Summary Workload/ Backlog/ Capacity) and associated footnotes 1 – 5	C.R.S. §§ 24-72-204(3)(a)(IV) – Confidential financial data	Permanent
(3)	Capacity and Resources	2.2	66	Equity Members and Financially Responsible Parties: Meridiam Equity Member: Current and Expected Workloads: 2nd to last sentence	C.R.S. §§ 24-72-204(3)(a)(IV) – Confidential financial data	Permanent
(4)	Capacity and Resources	2.2	67	Equity Members and Financially Responsible Parties: Kiewit Equity Member: Current and Expected Workloads: 2nd to last sentence	C.R.S. §§ 24-72-204(3)(a)(IV) – Confidential financial data	Permanent
(5)	Capacity and Resources	2.2	67	Lead Contractor and Financially Responsible Party: Current and Expected Workloads: 4th sentence	C.R.S. §§ 24-72-204(3)(a)(IV) – Confidential financial data	Permanent
(6)	Capacity and Resources	2.2	70	Lead Engineer: Current and Expected Workloads: 2nd to last sentence of first paragraph	C.R.S. §§ 24-72-204(3)(a)(IV) – Confidential financial data	Permanent
(7)	Capacity and Resources	2.2	71	Lead Operator: Current and Expected Workloads: 2nd to last sentence	C.R.S. §§ 24-72-204(3)(a)(IV) – Confidential financial data	Permanent
(8)	Legal Disclosures and Certifications	3.2	77-108	Entirety of Form D (Legal Disclosures) and Form E (Certifications)	C.R.S. §§ 24-72-204(3)(a)(IV) – Privileged information	Permanent

(9)	Form F (Project Experience)	4.1	117-118, 130, 142, 152-153, 165-166, 180, 193, 204, 216, 228, 240, 252, 263, 271-272, 279, 288, 295, 306-307, 317, 325, 333	Entirety of Section III of each Form F	Personally Identifiable Information	Permanent
(10)	Form F (Project Experience)	4.1	307, 317	For two Form F projects, in Section IV, Item (20) labeled O&M Value	C.R.S. §§ 24-72-204(3)(a)(IV) – Confidential financial data	Permanent
(11)	Form F (Project Experience)	4.1	314-315	In Section I, Item (8), other relevant criteria labeled "Life cycle analysis and risk management" along with picture and caption	C.R.S. §§ 24-72-204(3)(a)(IV) – Trade secrets and privileged information	Permanent
(12)	Annex A to Form I (Form for Key Personnel References)	4.4	399, 403, 407, 411, 415, 419, 423	All rows except Project /Transaction name for Annex A of each Resume	Personally Identifiable Information	Permanent
(13)	Statement of Technical Approach	5.0	427-430	In Figure 15, the entirety of the column labeled "Innovation/ Techniques and Mitigation"	C.R.S. §§ 24-72-204(3)(a)(IV) – Trade secrets and privileged information	Permanent

Volume 2:

No.	SOQ Heading(s)	SOQ Section(s)	SOQ Page(s)	Other Identifying Information (if any)	Relevant CORA Exemption(s)	Duration of Exemption
(1)	Available Financial Capacity	1.2	3	Equity Members and Financially Responsible Parties: Meridiam Equity Member: 2nd and 3rd Paragraphs in their entirety	C.R.S. §§ 24-72-204(3)(a)(IV) – Confidential financial data	Permanent
(2)	Project Financing Experience	1.3	9	Figure 5 (Kiewit-Meridiam Partners Project Finance Experience – Other Projects), the entirety of the column labeled "Private finance amount (millions)"	C.R.S. §§ 24-72-204(3)(a)(IV) – Confidential financial data	Permanent

(3)	Letters of Support	3.		Financially Responsible Party Letters of Support; Surety, Bank, and Financial Institution Letters; and Equity Funding Support Letters	C.R.S. §§ 24-72-204(3)(a)(IV) – Confidential commercial data	Permanent

Volume 2, Sub-Volume for Meridiam

No.	SOQ Heading(s)	SOQ Section(s)	SOQ Page(s)	Other Identifying Information (if any)	Relevant CORA Exemption(s)	Duration of Exemption
(1)	Financial Information	4.		Financial Statements, Material Changes in Financial Condition, Off Balance Sheet Liabilities, and Credit Ratings	C.R.S. §§ 24-72-204(3)(a)(IV) – Confidential financial data	Permanent

Volume 2, Sub-Volume for Kiewit

No.	SOQ Heading(s)	SOQ Section(s)	SOQ Page(s)	Other Identifying Information (if any)	Relevant CORA Exemption(s)	Duration of Exemption
(1)	Financial Information	4.		Financial Statements, Material Changes in Financial Condition, Off Balance Sheet Liabilities, and Credit Ratings	C.R.S. §§ 24-72-204(3)(a)(IV) – Confidential financial data	Permanent

Volume 2, Sub-Volume for Parsons Brinckerhoff

No.	SOQ Heading(s)	SOQ Section(s)	SOQ Page(s)	Other Identifying Information (if any)	Relevant CORA Exemption(s)	Duration of Exemption
(1)	Financial Information	4.		Financial Statements, Material Changes in Financial Condition, Off Balance Sheet Liabilities, and Credit Ratings	C.R.S. §§ 24-72-204(3)(a)(IV) – Confidential financial data	Permanent

Volume 2, Sub-Volume for Jorgensen

No.	SOQ Heading(s)	SOQ Section(s)	SOQ Page(s)	Other Identifying Information (if any)	Relevant CORA Exemption(s)	Duration of Exemption
(1)	Financial Information	4.		Financial Statements, Material Changes in Financial Condition, Off Balance Sheet Liabilities, and Credit Ratings	C.R.S. §§ 24-72-204(3)(a)(IV) – Confidential financial data	Permanent

EAST
INTERSTATE
70
Central
Park
Blvd
NPT

Corporate Information
Form C

FORM C: INFORMATION REGARDING PROPOSER

Proposer Name: Kiewit-Meridiam Partners

Form C: Core Proposer Team Member Information

A. Team Member and Role	
(1) Name of Team Member:	Meridiam I-70 E CO, LLC
(2) Role:	☒ Equity Member ☐ Lead Contractor ☐ Lead Engineer ☐ Lead Operator ☒ Joint venturer in Lead Operator ☐ Financially Responsible Party for
B. Legal Information	
(1) Type of Legal Entity:	☐ Corporation ☒ Limited Liability Company ☐ Joint Venture ☐ Partnership ☐ Other:
(2) Year Established:	2013
(3) Country of Organization or Formation (and, if US or Canada, state or Province of Organization or Formation):	Delaware, USA
(4) Federal Tax ID:	46-2964810
(5) Authorized to do Business in Colorado:	☐ Yes (ID No.: ☒ No
(6) North American Industry Classification Code:	523999
(7) Prior Name(s) (past five years):	Meridiam Infrastructure I-69, LLC
(8) Successor in Interest to Entity/Entities (if any, past five years):	Not applicable

FORM C: INFORMATION REGARDING PROPOSER

Proposer Name: Kiewit-Meridiam Partners

Form C: Core Proposer Team Member Information

A. Team Member and Role	
(1) Name of Team Member:	Meridiam Infrastructure North America Fund II
(2) Role:	☐ Equity Member ☐ Lead Contractor ☐ Lead Engineer ☐ Lead Operator ☐ Joint venturer in Lead ☒ Financially Responsible Party for Meridiam I-70 E CO, LLC
B. Legal Information	
(1) Type of Legal Entity:	☐ Corporation ☐ Limited Liability Company ☐ Joint Venture ☒ Partnership ☐ Other:
(2) Year Established:	2009 (Meridiam Infrastructure North America Fund II, LP & Meridiam Infrastructure North America Fund II (Domestic), LP) 2011 (Meridiam Infrastructure North America Fund II AIV, LP) 2012 (Meridiam Infrastructure North America Fund II AIV II, LP)
(3) Country of Organization or Formation (and, if US or Canada, state or Province of Organization or Formation):	Delaware, USA
(4) Federal Tax ID:	EIN 27-1219655 (Meridiam Infrastructure North America Fund II, LP) EIN 27-1219613 (Meridiam Infrastructure North America Fund II (Domestic), LP) EIN 45-1645674 (Meridiam Infrastructure North America Fund II AIV, LP) EIN 38-3879602 (Meridiam Infrastructure North America Fund II AIV II, LP)
(5) Authorized to do Business in Colorado:	☐ Yes (ID No.: ☒ No
(6) North American Industry Classification Code:	523999
(7) Prior Name(s) (past five years):	Not applicable
(8) Successor in Interest to Entity/Entities (if any, past five years):	Not applicable

FORM C: INFORMATION REGARDING PROPOSER

Proposer Name: Kiewit-Meridiam Partners

Form C: Core Proposer Team Member Information

A. Team Member and Role	
(1) Name of Team Member:	Kiewit Development Company
(2) Role:	☒ Equity Member ☐ Lead Contractor ☐ Lead Engineer ☐ Lead Operator ☒ Joint venturer in Lead Operator: Kiewit Development Company ☐ Financially Responsible Party for
B. Legal Information	
(1) Type of Legal Entity:	☒ Corporation ☐ Limited Liability Company ☐ Joint Venture ☐ Partnership ☐ Other:
(2) Year Established:	2003
(3) Country of Organization or Formation (and, if US or Canada, state or Province of Organization or Formation):	Delaware, USA
(4) Federal Tax ID:	20-0248074
(5) Authorized to do Business in Colorado:	☒ Yes (ID No.: 20151314266) ☐ No
(6) North American Industry Classification Code:	237310
(7) Prior Name(s) (past five years):	Not applicable
(8) Successor in Interest to Entity/Entities (if any, past five years):	Not applicable

FORM C: INFORMATION REGARDING PROPOSER

Proposer Name: Kiewit-Meridiam Partners

Form C: Core Proposer Team Member Information

A. Team Member and Role	
(1) Name of Team Member:	Kiewit Infrastructure Co.
(2) Role:	☐ Equity Member ☒ Lead Contractor ☐ Lead Engineer ☐ Lead Operator ☐ Joint venturer in Lead ☐ Financially Responsible Party for
B. Legal Information	
(1) Type of Legal Entity:	☒ Corporation ☐ Limited Liability Company ☐ Joint Venture ☐ Partnership ☐ Other:
(2) Year Established:	1981
(3) Country of Organization or Formation (and, if US or Canada, state or Province of Organization or Formation):	Delaware, USA
(4) Federal Tax ID:	47-0640263
(5) Authorized to do Business in Colorado:	☒ Yes (ID No.: 19871479179) ☐ No
(6) North American Industry Classification Code:	237310 and 237990
(7) Prior Name(s) (past five years):	Kiewit Construction Company 1981-2010
(8) Successor in Interest to Entity/Entities (if any, past five years):	Not applicable

FORM C: INFORMATION REGARDING PROPOSER

Proposer Name: Kiewit-Meridiam Partners

Form C: Core Proposer Team Member Information

A. Team Member and Role	
(1) Name of Team Member:	Kiewit Infrastructure Group Inc.
(2) Role:	☐ Equity Member ☐ Lead Contractor ☐ Lead Engineer ☐ Lead Operator ☐ Joint venturer in Lead ☒ Financially Responsible Party for Kiewit Development Company and Kiewit Infrastructure Co.
B. Legal Information	
(1) Type of Legal Entity:	☒ Corporation ☐ Limited Liability Company ☐ Joint Venture ☐ Partnership ☐ Other:
(2) Year Established:	2009
(3) Country of Organization or Formation (and, if US or Canada, state or Province of Organization or Formation):	Delaware, USA
(4) Federal Tax ID:	27-1477775
(5) Authorized to do Business in Colorado:	☐ Yes (ID No.: ☒ No
(6) North American Industry Classification Code:	237310
(7) Prior Name(s) (past five years):	Not applicable
(8) Successor in Interest to Entity/Entities (if any, past five years):	Not applicable

FORM C: INFORMATION REGARDING PROPOSER

Proposer Name: Kiewit-Meridiam Partners

Form C: Core Proposer Team Member Information

A. Team Member and Role	
(1) Name of Team Member:	Parsons Brinckerhoff, Inc.
(2) Role:	☐ Equity Member ☐ Lead Contractor ☐ Lead Engineer ☐ Lead Operator ☒ Joint venturer in Lead Engineer ☐ Financially Responsible Party for
B. Legal Information	
(1) Type of Legal Entity:	☒ Corporation ☐ Limited Liability Company ☐ Joint Venture ☐ Partnership ☐ Other:
(2) Year Established:	1933
(3) Country of Organization or Formation (and, if US or Canada, state or Province of Organization or Formation):	New York, USA
(4) Federal Tax ID:	11-1531569
(5) Authorized to do Business in Colorado:	☒ Yes (ID No.: 19871048057) ☐ No
(6) North American Industry Classification Code:	541330
(7) Prior Name(s) (past five years):	PB Americas, Inc.
(8) Successor in Interest to Entity/Entities (if any, past five years):	Parsons Brinckerhoff, Inc. On October 31, 2014, Parsons Brinckerhoff Group LLC and its subsidiaries, including Parsons Brinckerhoff, Inc., were acquired by WSP Global, Inc. Parsons Brinckerhoff, Inc. will continue to provide professional services to its clients without any disruption.

FORM C: INFORMATION REGARDING PROPOSER

Proposer Name: Kiewit-Meridiam Partners

Form C: Core Proposer Team Member Information

A. Team Member and Role	
(1) Name of Team Member:	Jacobs Engineering Group Inc.
(2) Role:	☐ Equity Member ☐ Lead Contractor ☐ Lead Engineer ☐ Lead Operator ☒ Joint venturer in Lead Engineer ☐ Financially Responsible Party for
B. Legal Information	
(1) Type of Legal Entity:	☒ Corporation ☐ Limited Liability Company ☐ Joint Venture ☐ Partnership ☐ Other:
(2) Year Established:	1947 (Denver, 1972)
(3) Country of Organization or Formation (and, if US or Canada, state or Province of Organization or Formation):	Delaware, USA
(4) Federal Tax ID:	95-4081636
(5) Authorized to do Business in Colorado:	☒ Yes (ID No.: 4N4U9 [CAGE Code]) ☐ No
(6) North American Industry Classification Code:	541330, 541310, 541611, 541618
(7) Prior Name(s) (past five years):	Not applicable
(8) Successor in Interest to Entity/Entities (if any, past five years):	Not applicable

FORM C: INFORMATION REGARDING PROPOSER

Proposer Name: Kiewit-Meridiam Partners

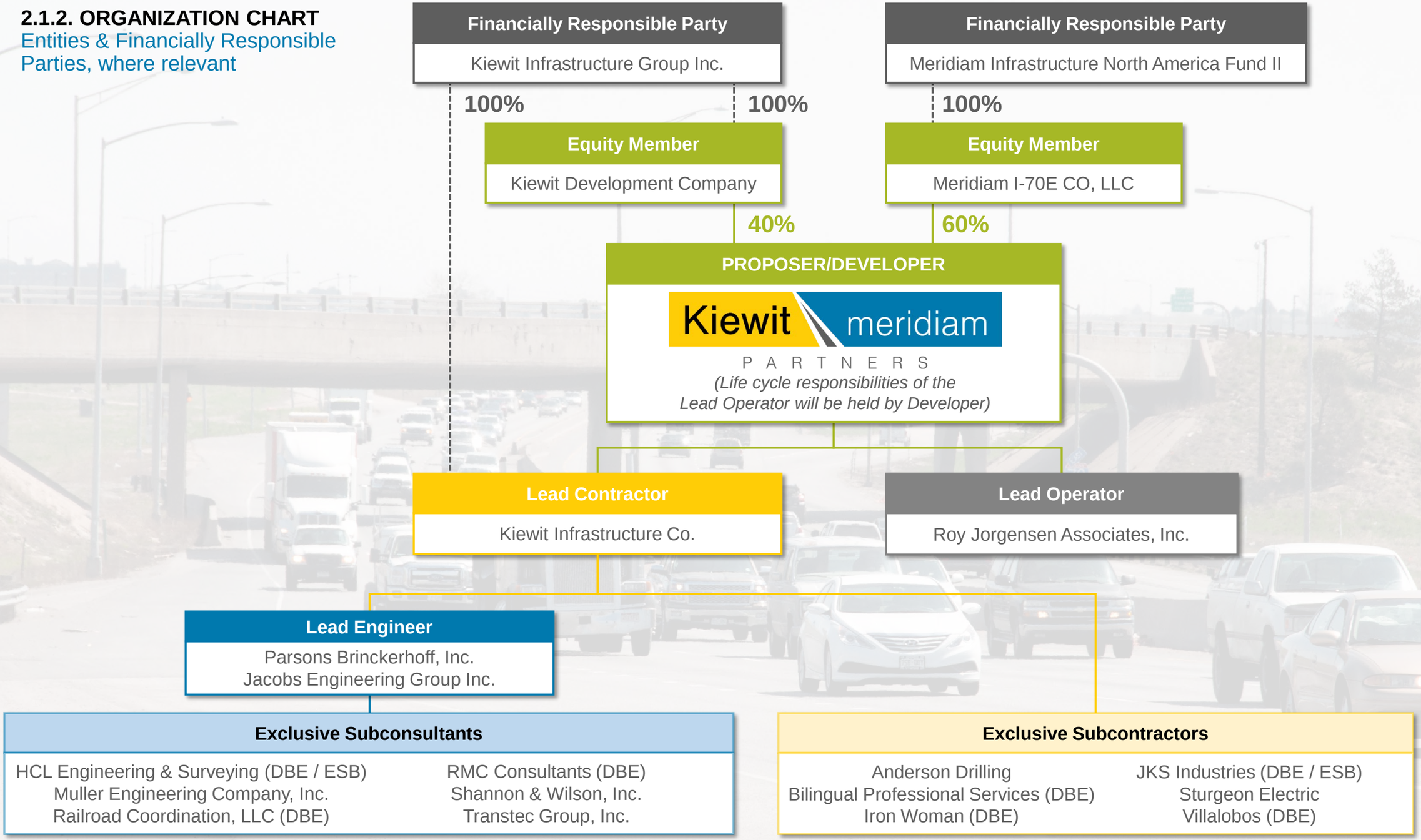
Form C: Core Proposer Team Member Information

A. Team Member and Role	
(1) Name of Team Member:	Roy Jorgensen Associates, Inc.
(2) Role:	☐ Equity Member ☐ Lead Contractor ☐ Lead Engineer ☐ Lead Operator ☒ Joint venturer in Lead Operator: Roy Jorgensen Associates, Inc. ☐ Financially Responsible Party for
B. Legal Information	
(1) Type of Legal Entity:	☒ Corporation ☐ Limited Liability Company ☐ Joint Venture ☐ Partnership ☐ Other:
(2) Year Established:	1969
(3) Country of Organization or Formation (and, if US or Canada, state or Province of Organization or Formation):	Delaware, USA
(4) Federal Tax ID:	520850711
(5) Authorized to do Business in Colorado:	☒ Yes (ID No. 20001187300) ☐ No
(6) North American Industry Classification Code:	23710
(7) Prior Name(s) (past five years):	Not applicable
(8) Successor in Interest to Entity/Entities (if any, past five years):	Not applicable

Organizational / Management Info
Org Charts and Notes

2.1.2. ORGANIZATION CHART

Entities & Financially Responsible Parties, where relevant



2.1.2. ORGANIZATION CHART NOTES

Entities & Financially Responsible Parties, where relevant

PROPOSER/DEVELOPER

- Kiewit-Meridiam Partners is the Proposer / Developer.
- Prior to commercial close, the Equity Members will establish a special purpose project company, the Developer, to enter into the Project Agreement with the Procuring Authorities.
- Kiewit-Meridiam Partners will be the single point of contact for the Procuring Authorities and CDOT.
- The Developer will self-perform life cycle O&M responsibilities – as such for RFQ evaluation purposes Equity Members are also deemed Lead Operators and therefore we have submitted their credentials and required information.
- The Developer, Lead Contractor, and Lead Operator will coordinate design and construction with operations and maintenance to optimize life cycle cost savings and asset performance.

Lead Contractor

Kiewit Infrastructure Co. (KIC)

- The Developer will enter into a contract with KIC to design and construct the Project.
- KIG will be the Financially Responsible Party for Lead Contractor KIC.
- KIC will enter into a design contract with the Lead Engineer to design the Project.
- Kiewit has engaged an initial group of local subcontractors/contractors familiar with the Project and its stakeholders.
- Additional subcontractors will be included during the RFP and Project delivery phases.

Lead Engineer

Parsons Brinckerhoff, Inc.
Jacobs Engineering Group Inc.

- Parsons Brinkerhoff's Financial Information is provided in their respective Vol. 2 Sub-Volume.
- Jacobs Engineering's Financial Information is provided in their respective Vol. 2 Sub-Volume.
- Our Lead Engineer is complemented with a group of local subconsultants familiar with the Project and its stakeholders.
- Additional subconsultants will be included during the RFP and Project delivery phases.

Equity Member

Meridiam I-70E CO, LLC

- Meridiam Infrastructure North America Fund II (MNII) will be the Financially Responsible Party for Equity Member Meridiam I-70E CO, LLC.
- MNII and Meridiam I-70E CO, LLC are collectively referred to as Meridiam.
- Meridiam's Financial Information and Support Letters are found in Vol. 2 Sections 3.1 and 3.3 as well as their respective Vol. 2 Sub-Volume.

Equity Member

Kiewit Development Company (KDC)

- Kiewit Infrastructure Group, Inc. (KIG) will be the Financially Responsible Party for Equity Member Kiewit Development Company (KDC).
- KIG, KDC, and KIC are collectively referred to as Kiewit.
- Kiewit's Financial Information and Support Letters are found in Vol. 2 Sections 3.1 and 3.3 as well as their respective Vol. 2 Sub-Volume.

Lead Operator

Roy Jorgensen Associates, Inc.

- The Developer will enter into a contract with Jorgensen for routine operations and maintenance of the Project.
- Jorgensen's Financial Information is provided in their respective Vol. 2 Sub-Volume.

Exclusive Subconsultants | **Exclusive Subcontractors**

- Although not Core Proposer Team Members, we have provided our exclusive subcontractors and design subconsultants.
- Each of these firms has executed Non-Disclosure Agreements/Confidentiality Agreements.
- Additional information regarding our specialist advisors, subcontractors, and subconsultants is provided in SOQ Vol. 1 Sec. 2.1.5.

2.1.3.a. ORGANIZATION CHART

Key Personnel and Management Structure
prior to commercial close (during RFQ/RFP process)

Legend
JE: Jacobs
Jorg: Jorgensen
K: Kiewit
M: Meridiam
PB: Parsons Brinckerhoff
Key Personnel

See SOQ Vol. 1 Sec. 2.1.5 for further detail for Value-Added Personnel

Proposer Steering Committee
Jane Garvey (M)
Thilo Tecklenburg (M)
David Miles (K)
John McArthur (K)

Proposer: Kiewit-Meridiam Partners
Official Representative
Lead: John Dionisio (M)
Co-lead: James Geer (K)

Specialist Advisors & Providers of Financing

Equity Members	Lenders
Legal: Norton Rose Fulbright Michael Pikiel **Financial: Agentis, Barclays** Robert Van Belle, Stephen Howard **Insurance: In Tech** Sarah Roberts **Tax & Accounting: PwC** Darin Siders **Financial Model Auditor: Corality** Eugene Moshan	**Legal: Nixon Peabody** Vincent Casey **Technical: Turner & Townsend** Dominic Leadsom **Insurance: In Tech** Sarah Roberts **Underwriters: Barclays, RBC** Stephen Howard, Jon Moellenberg

Quality Manager
Gordon Peterson (K)

Communications & Public Relations Manager
Hunter Sydnor (K)

Environmental Manager
Jenn Bradtmueller (K)

DB Steering Committee
Randy Sanman (K)
Craig Briggs (K)
Joe Wingerter (K)
Van Groves (K)
Len Rattigan (PB)
Randy Pierce (JE)

Design & Build
Design-Build Manager
Tom Howell (K)
Design Manager
Doug Andrew (PB)
Utilities Manager
Kevin Custy (JE)

O&M and Life Cycle
O&M Manager
Abraham Henningsgaard (Jorg)
Charles E. Henningsgaard (Jorg)
Sara Henningsgaard (Jorg)
Jean-Michel Martinez (M)
Gray Kite (K)

Finance & Commercial
Sven Kottwitz (M)
Sam Chai (K)
Sam Gilmore (K)

Interface Task Forces

Safety	Traffic & MOT	Operations & Maintenance	Commercial/Risk Management
Quality	Utilities	Life Cycle	Partnering
Environmental	Drainage	Tolling & ITS	Public Engagement
Landscaping & Aesthetics	Structures	Incident Management	Stakeholder Coordination
	Geotech		

2.1.3.a. ORGANIZATION CHART NOTES

Key Personnel and Management Structure prior to commercial close (during RFQ/RFP process)

Details on Key Personnel Experience provided in Form I and Resumes

Kiewit meridiam PARTNERS

Proposer: Kiewit-Meridiam Partners

- **John Dionisio**, a Senior Investment Director with Meridiam, leads the development of complex P3 projects throughout the U.S with a total value of more than $3 billion.
- **James Geer,** Vice President of KDC, has 23 years of experience in leading alternative project delivery transactions including development, finance, construction, O&M, and life cycle.
- Our bid team is composed of 3 functional subteams: Design & Build, O&M and Life Cycle, and Finance & Commercial.
- John and James will help to ensure that quality requirements, environmental obligations, and communications responsibilities are appropriately incorporated across the functional subteams.

Proposer Steering Committee

- Our Proposer Steering Committee will provide senior leadership and direction throughout the procurement and will continue as the Developer Board of Directors after commercial close.
- **Jane Garvey** is Meridiam's North American Chairman whose distinguished public service career includes serving as the head of the FAA, deputy administrator of the FHWA, as well as senior private sector roles.
- **Thilo Tecklenburg** is Meridiam's North American COO and has led P3 projects with a total committed finance volume of over $5 billion.
- **David Miles** is an Executive Vice President with KIG with over 30 years of infrastructure construction experience including leadership roles and alternate project delivery models.
- **John McArthur** is President of KDC and has decades of experience in P3 development, finance, and asset management.

DB Steering Committee

- Our DB Steering Committee will provide senior leadership and direction throughout the procurement and after commercial close.
- **Randy Sanman** is a Senior Vice President with over 33 years of construction experience, including oversight of over $5 billion in design build contract value.
- **Craig Briggs** is a Senior Vice President and locally based district manager with over 30 years infrastructure construction experience.
- **Joe Wingerter** is a Vice President with over 30 years of experience supporting the development and delivery of mega transportation projects across North America.
- **Van Groves** is a Vice President of Estimating Operations and has more than 35 years with Kiewit including such iconic projects as I-70 Glenwood Canyon, the Big I in Albuquerque, and T-REX.
- **Len Rattigan** is a Senior Vice President with over 40 years of experience in the design and management of major infrastructure projects globally.
- **Randy Pierce** is a Group Vice President and has significant P3 and Colorado experience including I-4 Ultimate, Ohio River Bridges – East End Crossing, T-REX and Northwest Parkway.

Specialist Advisors & Providers of Financing

- Our Specialist Advisors and Providers of Financing will support our bid team across various functional areas.
- **Michael Pikiel** has been involved in 8 North American P3 projects including US 36 and Long Beach Courthouse (for Meridiam), advising sponsors and lenders.
- **Robert Van Belle** has completed transactions with a total aggregate value of committed financing of more than $6 billion.
- **Stephen Howard** has 30 years of experience financing various infrastructure projects, including Eagle P3.
- **Vincent Casey** has been involved in 13 North American P3 projects in recent years.
- **Jon Moellenberg** is responsible for leading RBC's Denver public finance team, which ranks first by number of issues and par amount for the State of Colorado.

O&M and Life Cycle

- Our O&M and Life Cycle Team includes 4 value-added personnel to focus on the operations and maintenance and handback responsibilities.
- **Chuck Henningsgaard**, Senior Vice President, is responsible for Jorgensen's Infrastructure Division**,** and has more than 40 years of O&M experience.
- **Sara Henningsgaard** leads Jorgensen's P3 initiatives and has worked on over 15 P3 projects.
- **Jean-Michel Martinez**, Senior Investment Director, has over 34 years of experience running P3 companies and O&M operations worldwide.
- **Gray Kite**, Vice President of O&M, has over 35 years of roadway construction experience, with more than 20 years of experience in the Colorado market.

Finance & Commercial

- Our Finance & Commercial Team is led by 3 value-added personnel to focus on finance and provide commercial support.
- **Sven Kottwitz**, Senior Investment Director, has over 15 years experience on over $10 billion of projects across three continents.
- **Sam Chai,** Vice President of Finance, has nearly a decade of experience in financing large P3 projects across North America.
- **Sam Gilmore,** General Counsel and Vice President, has decades of experience in commercial structuring and legal support with alternative project delivery models.

Interface Task Forces

- Our Interface Task Forces will serve as conduits for communicating and coordinating across the functional subteams to ensure optimal solutions are developed.

2.1.3.b. ORGANIZATION CHART

Key Personnel and Management Structure after commercial close

COLORADO Department of Transportation

Legend

JE:	Jacobs	M:	Meridiam
Jorg:	Jorgensen	PB:	Parsons Brinckerhoff
K:	Kiewit	S&W:	Shannon & Wilson

Key Personnel
See SOQ Vol. 1 Sec. 2.1.5 for further detail on Value-Added Personnel

Developer

CEO
Freddy Rayes (M)

Developer Board of Directors
Jane Garvey (M)
Thilo Tecklenburg (M)
David Miles (K)
John McArthur (K)

CFO
Christophe Couallier (M)

Community & Public Relations Manager
Hunter Sydnor (K)

Environmental Manager
Jenn Bradtmueller (K)

Quality Manager
Gordon Peterson (K)

Life Cycle & Asset Management Director
Jean-Michel Martinez (M)

Lead Contractor / Lead Engineer

DB Steering Committee
Randy Sanman (K)
Joe Wingerter (K)
Len Rattigan (PB)
Craig Briggs (K)
Van Groves (K)
Randy Pierce (JE)

Design-Build Manager
Tom Howell (K)

Commercial Manager
Tim Mackin (K)

Construction Manager
Barry Thoendal (K)

Design Integration Manager
Tim Nelson (K)

DB Quality Manager
Chris Otto (K)

DB Safety Manager
Larry Parks (K)

Segment 1 CM
Chet Haptonstall (K)

Segment 2 CM
Pete Remington (K)

Design Manager
Doug Andrew (PB)

Project Controls
Jamie Harvey (K)

DBE Compliance Manager
Lee Skiles (K)

Utilities Manager
Kevin Custy (JE)

MOT
Landon Beard (K)

Engineering Functional Leads

Roadway Engineer
Andy Garton, PE (PB)

Geotech Engineer
Greg Fischer, PE (S&W)

Traffic Engineer
Larry Sutherland, PE (PB)

Structures Engineer
Tom Cooper, PE (PB)

Drainage Engineer
Mike Butters, PE (JE)

ITS/Toll Systems Integrator
David Ungemah (PB)

Segment 1 DM
Mark Talvitie (JE)

Segment 2 DM
Lori Hesprich, PE (PB)

INTERFACE TASK FORCES

O&M Manager
Abraham Henningsgaard (Jorg)

O&M Planning & Support
Sara Henningsgaard (Jorg)
Bruce Bartoe (Jorg)

O&M Safety Manager
O&M Quality Manager

Routine Maintenance

Roadway Operations

Lead Operator

2.1.3.b. ORGANIZATION CHART NOTES

Key Personnel and Management Structure after commercial close

Details on Key Personnel Experience provided in Form I and Resumes

Developer

- To ensure continuity, the Board of Directors comprises the same members as the Proposer Steering Committee (see Org Chart and Notes provided in SOQ Section 2.1.3.a.).
- **Freddy Rayes** has over 30 years of experience in delivering infrastructure projects. His role is to be the CEO on Meridiam projects, dedicated to successfully leading these from close to operations.
- **Christophe Couallier** has over 15 years of experience and is currently serving as CFO for Port of Miami Tunnel (POMT). He has directed over $2 billion worth of development and financial planning projects across three continents.
- The Community & Public Relations Manager will ensure that media relations, crisis management and community engagement activities are appropriately incorporated in our construction and O&M plans.
- The Quality Manager will interface with the DB Quality Manager and O&M Quality Manager.
- The Environmental Manager will interface with the Construction Manager, O&M Manager and Lifecycle & Asset Management Director.
- The Life Cycle and Asset Management Director will interface with our Design Integration Manager during the Construction Phase and coordinate with our O&M Manager throughout the Project term.

Lead Contractor/Lead Engineer

- To ensure continuity, the DB Steering Committee comprises the same members as the DB Steering Committee (see Org Chart and Notes provided in SOQ Section 2.1.3.a.).
- **Chris Otto** is a quality manager with Kiewit covering the western U.S. (including Colorado) totaling over 1,000 employees and leads the Quality Programs for DFW Connector and DART Orange Line Expansion projects in North Texas.
- **Larry Parks** has provided safety leadership on projects including the DFW Connector and Los Angeles County MTA Gold Line. He has taken 6 OSHA courses including OSHA #500-level courses that qualify him as an OSHA Trainer.
- **Tim Nelson** has 23 years of construction experience—16 of which have been in alternative delivery. He was structures design build coordinator on T-REX and the design build coordination manager on DFW Connector.
- **Mark Talvitie** has 30 years of experience in design and management for transportation projects including complex mountain terrain projects, urban roadway improvement projects, complex interchanges, major highway design build projects, and airports.
- **Lori Hesprich** is a senior project manager experienced in the planning, design, and engineering support during construction of multimillion-dollar transportation projects. She has played a major role in developing award-winning projects, and has been involved in all phases, from conceptual and preliminary design to final design to construction support.
- **Lee Skiles** has 44 years of experience serving as a project business manager, area business manager, project compliance manager, and most recently, district compliance manager.
- **Landon Beard** has 13 years of construction experience serving in various roles, which include general foreman, superintendent, safety manager and, most recently, MOT manager.
- **Chet Haptonstall** has 26 years of diversified experience on large-scale and complex projects, including T-REX, Denver Union Station and 225 LRT.
- **Pete Remington** has 12 years of construction experience serving as project manager, project superintendent, craft superintendent, grading engineer, project engineer, and estimator.
- **Jamie Harvey** brings more than 30 years of experience on heavy civil and transportation projects using alternative delivery methods including design build projects in Colorado.
- **Tim Mackin** brings 34 years of experience in managing complex transportation and heavy civil design build projects involving multiple stakeholders in metropolitan areas.

Lead Operator

- **Bruce Bartoe**, a regional manager, has 35 years of experience and is currently providing oversight for Jorgensen's O&M contracts including I-495.
- Our O&M Safety and Quality Managers as well as Routine Maintenance and Roadway Operations teams for the O&M phase will be appointed at the appropriate time during Project delivery.
- Prior to Substantial Completion, we will complete our O&M organization with the addition of O&M Safety and Quality Managers as well as Routine Maintenance and Roadway Operations subteams.

2.1.4 Organizational and Management Structure

(a) Constructively integrating and delivering collective experience

Kiewit-Meridiam Partners has specifically tailored our organization and management approach for I-70 East based on CDOT's goals and objectives and on our experience delivering successful P3 projects in North America. From NTE and DFW Connector in Texas, to Goethals Bridge in New York, and Midtown Tunnel in Virginia, our unparalleled P3 delivery experience (many together) gives us an in-depth understanding of how to: ***efficiently and effectively deliver projects; optimize long-term life cycle benefits; minimize impacts to surrounding communities and the environment*** and ***maximize the safety of workers and the public*** throughout the life of the project.

Our organizational structure (Vol. 1, Sec. 2.1.2 and 2.1.3) is based on three key P3 elements: design and build (DB); O&M and life cycle; and finance and commercial. Kiewit-Meridiam Partners is the Developer and will have overall responsibility for project delivery of all phases and elements of the Project through the Project Agreement with the Procuring Authorities. Kiewit-Meridiam Partners intend to execute the work primarily through two subcontract relationships, one with Kiewit for DB work and one with Jorgensen for routine O&M. The asset management work and the responsibility for the life cycle work will be self-performed by the Developer. These contractual arrangements will provide:

- **Clear accountability.** Kiewit-Meridiam Partners will be the single point of contact with CDOT from the start of development through design and construction, long-term O&M to handback, and will be responsible for the performance of its subcontracting partners.
- **Clearly articulated scope, schedule, and responsibility requirements.** The DB and O&M contracts will set out responsibilities for delivery to ensure that I-70 East is delivered on time and is operated and maintained at optimal levels.
- **Committed key staff.** Highly experienced managers have been assigned to manage each contractual entity and will be supported with the relevant technical experts to successfully deliver, operate, and maintain I-70 East throughout the full contract term.

Clear accountability and committed key staff provide the contractual framework for carrying out the work. However, it is our management approach, used throughout all project phases, that differentiates our team and enables us to deliver I-70 East in a manner consistent with CDOT goals. Our management approach, built upon the significant delivery experience of our team members as well as working together as demonstrated in our Form F projects, includes:

- **A collaborative working environment that emphasizes and enhances communications** amongst our team and between our team members, the Procuring Authorities, CDOT, and key stakeholders.
- **A focus on integration that optimizes life cycle benefits** and includes a Life Cycle and Asset Management Director and a Design Interface Manager.
- **Shared values** developed from key staff successfully working together on past projects, which promotes teamwork and eliminates any learning curves.
- **A team ethic of strong partnering** (with the Procuring Authorities, CDOT and key stakeholders, and also within Kiewit-Meridiam Partners) which will provide a formal process for resolving issues before they become problems.
- **A focus on understanding local issues, being part of the community,** and **engaging the public and key stakeholders** in all aspects of the project to provide the best

value for the residents of Denver and surrounding areas over the long term.

Our team knows that close coordination of disciplines and groups from all project phases is critical to the successful delivery of a P3 project. Therefore, from day one, we have established cross-discipline Interface Task Forces to identify and address challenges, opportunities, and project issues. These task forces, staffed by individuals from our Equity Members, Lead Contractor, Lead Engineers, and Lead Operator, begin in the proposal phase and continue ultimately through the construction and O&M phases. The benefit of this approach is threefold:

1. Life cycle and constructability are discussed from the beginning and are incorporated into the design, construction, and O&M phases.
2. Greater efficiencies and innovations are achieved and are initiated during the proposal process through alternative technical concepts (ATCs).
3. Communication amongst the entire team is enhanced by approaching I-70 East with interdisciplinary teams from the beginning and throughout all project phases.

Initially during the proposal phase, the task forces will identify, evaluate, and propose potential ATCs and look for life cycle efficiencies. During the construction period, we will invite the Procuring Authorities, CDOT, key agencies, and other stakeholders to participate in subject-specific task forces and constructability reviews to communicate status, address schedule critical elements, and accelerate decision making. The task forces will continue through construction, start-up, and into O&M to ensure integration at every phase of delivery.

(b) Facilitating project implementation

Developer

Kiewit-Meridiam Partners, the **Developer,** will be responsible to the Procuring Authorities and CDOT for all aspects of project delivery and is the single point of contact. The Kiewit-Meridiam partnership combines two market-leading and pioneering developers in the US P3 market. We bring deep expertise in the development, long-term asset management and delivery of critical infrastructure P3s. Kiewit-Meridiam Partners will be supported by KIC as the Lead Contractor, Parsons Brinckerhoff and Jacobs as the Lead Engineers and Jorgenson as the Lead Operator. The entire team including each firm's management has been working together preparing this SOQ and these relationships will carry through the life of the project providing continuity at every phase of delivery.

The Kiewit-Meridiam Partners organization is focused on providing the systems, controls, expertise, and project-wide elements including quality, environmental, community and public information management that are required for overall project delivery. Kiewit-Meridiam Partners is also responsible for project financing. The organizational and management structure for both initial financing and ongoing financial management is presented in Vol. 2, Sec. 1.1.

The DB and O&M and life cycle teams will be accountable to Kiewit-Meridiam Partners for their respective project delivery contract obligations. There will be continuous team wide interaction and communication reinforcing a spirit of partnership and mutual commitment throughout the project delivery. The Developer team will be responsible for managing the full scope delivery, being the integrator of the delivery, and ensuring that "nothing falls between the cracks".

The Kiewit-Meridiam Partners organization has been built upon three key aspects:

1. Our emphasis on and commitment to positive working relationships with the Procuring Authorities, CDOT, and other key stakeholders.
2. Inclusion of an affiliate of KIC as an Equity Member. This participation aligns team

incentives and strengthens Kiewit-Meridiam Partners through the inclusion of an experienced P3 contractor who knows and understands the requirements and expectations (contractual, financial, and public sector management) of this complex delivery model.

3. Being staffed with seasoned personnel such as our **Life Cycle and Asset Management Director, Jean-Michel Martinez**, who will focus on life cycle optimization of design, construction, and O&M throughout all project phases.

Design-Build

The DB team will be led by **Kiewit** as the **Lead Contractor**. Since 1938, Kiewit has been involved in building Denver's infrastructure. Projects have ranged from the on-time and on-budget completion of facilities and runways for Lowry and Buckley Air Force Bases in the 1940s, to the successful delivery of the $1 billion T-REX completed in 2006, and the transformation of Denver Union Station into a vital transportation and activity hub that opened in 2014. Through these and other local projects, Kiewit has achieved valuable insights and construction lessons-learned specific to Denver. We have developed long-standing positive relationships with CDOT, area stakeholders, and local contractors and consultants.

Kiewit's local experience and 1,400 local staff and craft, combined with North American expertise in heavy civil construction and P3 delivery has led to the formation of a streamlined DB team composed of dedicated local people who are passionate about contributing to the continuing vitality of the Denver region. Because our DB team understands how important I-70 East is to Denver's economy, our team structure leaves ample room to offer meaningful roles to local contractors and sub-consultants, including DBE/SBEs. An overview of our initial list of committed sub-consultants and subcontractors is included in Vol. 1, Sec. 2.1.5. We anticipate that this list will continue to grow as we define additional opportunities as I-70 East progresses.

Kiewit selected a **Lead Engineer team** composed of **Parsons Brinckerhoff** and **Jacobs** because of successful past working relationships and their directly relevant experience designing managed lanes and transportation projects similar to I-70 East (see Form Fs for DFW Connector and I-4, and Reference Projects such as SH 183, I-77, and SH 288). With combined resources of over 700 people located in Colorado, Parsons Brinckerhoff and Jacobs have a long and successful record of excellence in design and program management. Signature projects in the Denver region include Denver Union Station, I-25, T-REX, the RTD FasTrack projects, and CDOT Flood Recovery.

Our DB organization will be led by Design-Build Manager **Tom Howell** who will work closely with the Developer CEO. Reporting directly to Tom are our Commercial Manager, Construction Manager and Design Integration Manager. The basic organization is a matrix that will maximize technical expertise and minimize handoff. We have identified engineering and construction technical leads who have project-wide responsibilities, and geographic design and construction segment leads.

As Commercial Manager, **Tim Mackin** will provide senior-level oversight over activities including but not limited to safety, quality, environmental, project controls, S/DBE compliance, and subcontract monitoring. Directly reporting to Tom Howell, Tim's responsibilities include 1) ensuring that the methods we will use to track, measure, and/or audit field operations are optimized and 2) report the results of operational method analysis and performance monitoring to Tom on a periodic basis. We will develop information that is compatible with the

requirements of the Project Agreement's reporting requirements.

As the Construction Manager, **Barry Thoendal** will manage the construction segment managers who will be in place during both the design and construction phases. The benefit of this approach is that our construction segment managers will be intimately familiar with the design, construction planning and staging and previous decision making before they go into the field for construction. Our construction organization will also have technical leads for select project-wide activities such as MOT and Utilities to ensure consistency and integration across segments and with the design.

Within the DB organization, we have assigned **Tim Nelson** as the Design Integration Manager (DIM) who will report directly to Tom Howell. Tim has two primary responsibilities: 1) to facilitate design integration between the Lead Contractor and Lead Engineering teams through work stream meetings between the relevant functional leads and segments leads and 2) to coordinate operating and long-term life cycle maintenance implications into design and construction. **Doug Andrew**, our Design Manager, will report to Tim, and will lead all design efforts. Tim will coordinate closely with **Jean-Michel Martinez**, our Life Cycle and Asset Management Director, and **Abraham Henningsgaard**, our O&M Manager.

To enhance the effectiveness of our approach, our Lead Contractor, Lead Engineer and Lead Operator will co-locate with Kiewit-Meridiam Partners near the project site. Our experience on similar projects has shown that in the fast-paced P3 environment, communications are enhanced and time is optimized when the entire team is co-located.

Operations & Maintenance

The responsibilities of the Lead Operator will be carried out by Kiewit-Meridiam Partners as the Developer and Jorgensen. Kiewit-Meridiam Partners will be responsible for the asset management work and will have the responsibility for the long-term life cycle work. Jorgensen will be responsible for routine O&M. Jean-Michel Martinez will lead overall coordination of the Lead Operator work.

Our approach to O&M and life cycle has been developed from successful experience on other projects (See SOQ Vol. 1, Sec. 4.1 for our O&M experience). O&M team members will be actively involved in all phases of I-70 East beginning in procurement and continuing throughout the full contract term. Key elements of our O&M and life cycle approach include:

- Participation in the task force process to ensure that long-term maintenance of the asset and life cycle analyses are incorporated in the design and construction from day one.
- Active engagement with stakeholders, jurisdictions, and educational institutions so that the scope is delivered in a manner that includes local participation and is sensitive to the surrounding communities.
- Incorporating our team's experience in operating and maintaining managed lanes across the US.
- Construction phase O&M plan that supports construction activity and MOT. Kiewit's work during the construction of T-REX will provide valuable lessons-learned that are directly applicable to I-70 East.
- A proactive, preventative, and corrective approach for long-term maintenance that incorporates continuous improvement and routine compliance monitoring.
- Apply proven O&M framework based on our extensive experience in asset management and project-specific quality management to ensure that CDOT and user expectations are met.

Prior to Substantial Completion, we will complete our O&M organization with the addition of O&M Safety and Quality Managers as well as Routine Maintenance and Roadway Operations teams.

2.1.5 ADDITIONAL TEAM RESOURCES

Kiewit-Meridiam Partners has already assembled a select number of key specialist advisors and providers of financing, each with global and North American (in particular US) P3 experience, which will benefit the Procuring Authorities and CDOT.

Specialist Advisors and Providers of Financing

Figure 5 summarizes our team of specialist advisors and providers of financing. We have experience working together with the members of the specialist advisor team (including the underwriters) and have indicated such successful working relationships in our Form F Reference Projects.

Kiewit, Meridiam and its specialist advisor team have closed more than 29 P3 projects in the US (often partnering together) employing a range of financing and procurement structures including TIFIA, PABs, bank debt, private placements, public taxable bonds, monoline-wrapped and unwrapped debt. Our extended team brings a multitude of project references and ideas to the I-70 East Project to ensure an efficient and robust project.

In addition, we have provided letters of support from a small sample of financial institutions who could be providers of finance which highlights Meridiam's and Kiewit's banking

Figure 5 – Specialist Advisors and Providers of Financing

Firm	Role	Exclusive	Senior Personnel	Title
Norton Rose Fulbright US LLP (NRF)	Legal Advisor to Equity Members	Yes	Michael Pikiel	Partner
Agentis Capital Partners (Agentis)	Co-Financial Advisor to Equity Members	Yes	Robert Van Belle	Partner
Barclays Capital Inc. (Barclays)	Co-Financial Advisor to Equity Members & Potential Provider of Financing	Yes	Stephen Howard	Director
In Tech Risk Management GmbH (ITech)	Insurance Advisor to Equity Members and Lenders	Yes	Sarah Roberts	President
PricewaterhouseCoopers LLP (PwC)	Tax and Accounting Advisor to Equity Members	No[1]	Darin Siders	Partner
Corality Financial Group (Corality)	Financial Model Auditor	Yes	Eugene Moshan	Director
Nixon Peabody LLP (NP)	Legal Advisor to Lenders	Yes	Vincent Casey	Partner
Turner & Townsend (T&T)	Technical Advisor to Lenders	Yes	Dominic Leadsom	Director
RBC Capital Markets, LLC (RBC)	Potential Provider of Financing	Yes	Jon Moellenberg	Managing Director
Sumitomo Mitsui Banking Corporation (SMBC)	Potential Provider of Financing	No[2]	Adam Sherman	Executive Director
KeyBank N.A. / KeyBanc Capital Markets (KB)	Potential Provider of Financing	No[2]	Jose Herrera	Senior Vice President
SunLife Financial	Potential Provider of Financing	No[2]	Andrew Bloom	Managing Director
MetLife	Potential Provider of Financing	No[2]	Nancy Doyle	Director

[1] PwC has an Information Barrier in place and the dedicated PwC team will not provide services to any other client or counterparty in connection with the Project.

[2] SMBC, KeyBank, SunLife Financial, and MetLife are not currently engaged by Kiewit-Meridiam Partners.

and funding relationships (see Vol. 2 Sec. 3.2). These providers of finance are not yet engaged by us for the I-70 East Project. These are a sample of local and international P3 lending institutions, as well as key debt investor relationships. When they are included in the finance evaluation process, we will require them to institute Information Barriers with respect to this Project.

Subcontractors/Sub-consultants

Kiewit-Meridiam Partners is committed to fostering growth and independence in our communities. Our team has a demonstrated track record of utilizing small businesses prior to and during the delivery of projects. We emphasize the development of small businesses through active participation as an integral component of our team. Further, from our experience delivering projects in the Denver area, we are aware of the firms available to partner with to successfully deliver the I-70 East Project.

Kiewit Infrastructure Co. has secured mutual commitments with the subcontractors shown in **Figure 6**. These local firms represent the initial subcontracting partners we have engaged at this time. Rather than bringing on a lead contractor joint venture partner, we are committed to a robust subcontracting plan to maximize the expertise of local firms. As design is advanced and more definitive work packages are developed, subcontractor participation will substantially expand. We

Figure 6 – Subcontractors and Sub-consultants

Firm	Role	Exclusive	Senior Personnel	Title
Anderson Drilling	Drilled Shafts and Drilling	Yes	Mike Waldren	President
Bilingual Professional Services	DBE/Outreach support	Yes	Ana Mostaccero	Principal
Iron Woman Construction and Environmental Services	DBE/Trucking, drainage, utility relocation	Yes	Shawn Eagen	Vice President
JKS Industries	DBE/ESB/ Demolition	Yes	Jeff Knight	President
Sturgeon Electric	Electrical, Lighting, Signals, ITS	Yes	Jim Bushnell	Transportation Dept. Division Manager
Villalobos Concrete Paving Co.	DBE/Concrete and paving	Yes	Carmen Villalobos	Owner
Apex Design	DBE/ESB/ITS, traffic engineering	No[3]	Melissa Rosas, PE	Principal
Clanton & Associates, Inc.	DBE/Lighting design	No[3]	Nancy Clanton	President
Entitlement & Engineering Solutions, Inc.	DBE/ESB/Civil engineering	No[3]	Amanda O'Connor	President
HCL Engineering & Surveying, LLC	DBE/ESB/land surveying	Yes	Lloyd Herrera, PE	President
Muller Engineering Company, Inc.	Drainage Design	Yes	A. Gray Clark, PE	President
Railroad Coordination, LLC	DBE/Railroad engineering and coordination	Yes	Susan Grabler	Consultant
RMC Consultants	DBE/ Geotechnical and environmental	Yes	David Groy, PG	Senior Vice President
Shannon & Wilson, Inc.	Geotechnical and environmental	Yes	Gregory Fischer, PE	Senior Vice President
The Transtec Group, Inc.	Pavement engineering and design	Yes	Dr. Robert Rasmussen, PE	Vice President & Chief Engineer

[3] Apex Design, Clanton & Associates, Inc., and Entitlement & Engineering Solutions, Inc. have Information Barriers in place.

have a long history working with the local subcontracting community, including DBEs and SBEs, and are committed to continuing to grow these local partnerships to support the successful delivery of the I-70 East Project.

A similar approach has been taken by the Lead Engineer to augment the expertise of a strong sub-consultant team with unique knowledge and expertise of the Project and its area of influence. These initial commitments are also shown in the **Figure 6**.

Value-Added Personnel

Our organizational structure (as set out in Vol. 1, Sec. 2.1.3) includes management resources (Value-Added Personnel) in addition to Key Personnel. These value-added personnel, in combination with our Key Personnel, have the experience to deliver the Project and meet the CDOT's Goals.

Developer Team (Equity Members/Lead Operator)

Developer Leads

John Dionisio is a Senior Investment Director with Meridiam actively engaged across a variety of infrastructure investment disciplines, including project development, project finance, fundraising, and corporate finance. John played active roles in the development of major North American and European P3s, including LBJ Express, NTE, and POMT. John's knowledge and expertise in financial structuring and capital markets includes the successful utilization of the TIFIA credit program and PABs on various competitive financing solutions on P3 deals in the US market. Most recently he led the team that was appointed Preferred Bidder for the Indianapolis Justice Project, using a pioneering fully committed private placement funding structure.

James Geer is a Vice President of Development for Kiewit Development Company (KDC). He is responsible for leading the development and execution of P3 opportunities in the western US market. James has more than 23 years of experience in the transportation industry and has worked in the P3 market from its early use in the US during the mid-1990s. His background includes leading the successful pursuit and close of numerous transactions across all spectrums of alternate project delivery, including toll and availability payment concessions, municipal financing, design-build, and long-term maintenance agreements.

Freddy Rayes has over 30 years of infrastructure project development and delivery experience. He is a CEO for Meridiam project companies, having most recently delivered the groundbreaking Long Beach Courthouse, the US's only social P3 to date. Freddy serves as CEO of project companies leading up to commercial close continuing through construction and into operations.

Christophe Couallier is one of the senior and most experienced CFOs in Meridiam's project company portfolio. He has over 15 years of project experience and has served as CFO for Meridiam's POMT. He is a senior finance professional with demonstrated experience in managing P3 projects including TIFIA, banks, and rating agencies. He has been instrumental in managing POMT's various financing sources and responsibilities, including TIFIA and bank financing, in addition to administrating the milestone drawdowns and repayments.

Proposer Steering Committee

Jane Garvey serves as Meridiam's North American Chairman. Jane has served on the Transition Team for President Obama with a focus on transportation policies and previously as Administrator of the Federal Aviation Administration (FAA) under President Bush. She served as Deputy Administrator of the Federal Highway Administration (FHWA), as Director of Boston's Logan International Airport, and as Commissioner of the Massachusetts Department of Public Works.

Thilo Tecklenburg currently serves as Meridiam's Chief Operating Officer in North America. Thilo has extensive experience with availability type P3 projects and has led consortia for projects in several US states and Canadian provinces totaling a committed finance volume of over $5 billion. Thilo was previously North American head of business development for Bilfinger Berger Project Investments.

David Miles is an Executive Vice President for Kiewit Infrastructure Group and has been with Kiewit for 30 years. He currently serves on Kiewit's Board of Directors and has executive responsibilities over infrastructure operations in the western US market as well as KDC. His past experience includes executive oversight for Denver Union Station and the 225 LRT Project.

John McArthur is the President of KDC with responsibility for all facets of the P3 business. He has almost 40 years of experience in the infrastructure, development, and engineering/design and construction businesses. His experience includes development, finance, design and construction of major infrastructure projects ranging in size from $100 million to over $1 billion. John is currently a Director of the Canadian Council of Public Private Partnerships. Previously John served as President and CEO of Bilfinger Berger Project Investments where he established one of North America's most successful infrastructure investor and asset manager.

Finance & Commercial

Sven Kottwitz is a Senior Investment Director with Meridiam focusing on the development of North American P3 projects in all sectors of interest to Meridiam. With more than 15 years' experience across three continents he is currently leading teams for projects in the transportation and social infrastructure sectors, covering both demand risk and availability-based revenue models. He has acted across the finance spectrum of senior and mezzanine lender and as equity principal for HSBC. His most recent project experiences include the LaGuardia Central Terminal Replacement Project and closing the NTE 3A3B phase.

Sam Chai is Vice President of Finance for KDC. He brings extensive experience from financing large P3 projects for almost 10 years. Sam has bid and closed P3 transactions in various jurisdictions under a number of models, including the US, Canada, and Australia. He led detailed negotiations with Lender groups on Term Sheet and other related financing documents on numerous deals, including bank, bond, and hybrid deals. This experience includes his work on SH 183, Goethals Bridge Replacement, Waterloo Stage 1 Light Rail, and East Rail Maintenance Facility.

Sam Gilmore is Vice President & General Counsel for KDC. He has overall legal responsibility for Kiewit's alternative delivery projects. Sam has worked on virtually all of Kiewit's P3 projects and has experience in all aspects of Kiewit's design build program. Sam's responsibilities involve legal and commercial structuring and negotiations of Kiewit's alternative contract program and for monitoring such projects from inception to financial close. He was a key member of the team on Denver Union Station and T-REX.

O&M and Lifecycle

Charles (Chuck) Henningsgaard, PE, is the Senior Vice President for Roy Jorgensen Associates Inc. (Jorgensen) responsible for the firm's infrastructure division. He has over 40 years of O&M experience. Chuck will serve as Jorgensen's project principal for the Project, providing overall executive oversight. He will contribute his direct relevant experience from the I-495 and I-595 managed lanes projects to I-70 East.

Sara Henningsgaard, PE, is a Senior Associate for Jorgensen. Since 2005, she has provided technical support, supervision,

training, consulting services, quality assurance, and project management for Jorgensen projects nationwide. Sara leads the company's P3 initiatives and will serve as Jorgensen's project manager during the Project development phase.

Jean-Michel Martinez is an internationally recognized expert in O&M for P3 transportation concessions and providers of toll services. He has extensive experience gained over 34 years managing operating companies tasked with the delivery of O&M services under stringent P3 contract performance standards. He specializes in highway construction and O&M, performance-based O&M contracts, concession O&M management, and transportation P3s.

Gray Kite is a Vice President of O&M for KDC and has 35 years of construction experience with current focus on the operations, maintenance, and renewal work on transportation projects across North America. He has oversight for the maintenance contract of the DFW Connector and SH 183 in Dallas.

Bruce Bartoe is a Regional Manager for Jorgensen. Bruce has 35 years of experience and currently provides oversight management to project managers and superintendents for Jorgensen's contracts in the mid-Atlantic including I-495 Express managed lanes. He is the firm's subject matter expert for labor agreements and equipment contracts. He will serve as technical support for the I-70 East Project with his operational experience from I-495, and will provide project support in direct, interface, and labor agreements, equipment, negotiate purchase, and lease agreements.

Design Build Team (Lead Contractor/Lead Engineer)

DB Steering Committee

Randy Sanman, a Senior Vice President for Kiewit Infrastructure Group, has 33 years of construction experience, and has management responsibility for construction operations throughout the South Central, Midwest, and Rocky Mountain regions. During his career, he has had executive oversight for the I-15 Reconstruction in Salt Lake City, T-REX, Denver Union Station, DFW Connector, and a host of other infrastructure projects.

Craig Briggs is a Senior Vice President and District Manager for Kiewit Infrastructure Co. For nearly 30 years he has been a key manager on transportation projects throughout the Western US. From his Englewood base, he has executive oversight and P&L responsibility for a 14-state region and ensures that personnel and resources are available and that all contract requirements are satisfied.

Joe Wingerter is a Vice President for Kiewit Infrastructure Group and has been with Kiewit for 30 years supporting the development and delivery of mega-transportation projects across North America including T-REX, DFW Connector, Denver Union Station, and 225 LRT. His background in construction management, design build, and project finance supports an inter-disciplinary platform for innovation, communication, and exceeding client goals.

Van Groves is a Vice President of Estimating Operations in the Rocky Mountain region and has more than 35 years with Kiewit including such iconic projects as I-70 Glenwood Canyon, the Big I, and T-REX. Van will bring his lessons learned for safety, quality, partnering, and issue resolution on high profile projects, including the US-34 Big Thompson Canyon Emergency Flood Repairs with CDOT to I-70 East.

Len Rattigan, PE, has over 40 years of experience in the design and management of major infrastructure projects globally. Len has participated in the alternative delivery market for over 25 years on projects that include Dulles Greenway in Virginia, SR 125 in California, Intercounty Connector in Maryland, Largo Extension of the Washington Metro in Maryland, and Midtown Tunnel/Martin Luther King Freeway project in Virginia.

Randy Pierce, PE, is the Group Vice President of Jacobs North American Infrastructure business and oversees all of the business lines focused on delivering infrastructure projects across the US. Randy has served as the Project Principal on several P3 projects including Eagle P3, Florida DOT's I-4 Ultimate P3, Ohio River Bridge East End Crossing P3, and TxDOT's LBJ Express. He worked on several local alternative deliveries, including T-REX and Northwest Parkway design build projects.

Design-Build Leads

Chris Otto is Kiewit's Central and South Central District Quality Manager, an area with over 1,000 employees. He provides oversight for project quality programs and conducting assessments to determine compliance with Kiewit quality standards and client requirements. Chris has provided leadership to the quality programs for the DFW Connector and DART Orange Line Expansion.

Larry Parks has provided safety leadership on projects including the DFW Connector and LACMTA Gold Line projects. He has taken six OSHA courses—including OSHA #500-level courses—that qualify him as an OSHA trainer.

Tim Nelson has 23 years of construction experience—16 of which have been in design build delivery. Tim contributed specialized experience in innovative bridgework on T-REX and the DFW Connector Project where he served as the Design Build Interface Manager. Tim currently serves as the Regional Manager for Kiewit Infrastructure Engineers.

Construction Leads

Lee Skiles has more than 40 years of industry experience serving as a project business manager, area business manager, project compliance manager and, most recently, district compliance manager. In Lee's current role, he oversees compliance for Kiewit's Central and South Central districts, an area with over 1,000 employees.

Landon Beard has 13 years of construction experience serving in various roles, which include general foreman, superintendent, safety manager and, most recently, MOT manager for the Paseo Del Norte/I-25 Interchange project. Landon was an MOT manager on T-REX.

Chet Haptonstall has 26 years of experience on large-scale and complex projects. Most recently, Chet was the Project Manager for Denver Union Station. Chet was also a key manager on T-REX in the Narrows section.

Pete Remington has 12 years of construction experience serving as project manager, project superintendent, craft superintendent, grading engineer, project engineer, and estimator. He is currently the construction manager on 225 LRT.

Jamie Harvey, PE, brings more than 30 years of experience on heavy civil and transportation projects using alternative delivery methods including design build projects in Colorado. He has completed several CDOT projects such as the recent US-34 Big Thompson Canyon Emergency Repairs and Pecos Street over I-70 Bridge Replacement.

Tim Mackin brings 34 years of experience in managing complex transportation and heavy civil design build projects involving multiple stakeholders in metropolitan areas. This includes managing the light rail construction on T-REX, project manager on Denver Union Station, and sponsor on 225 LRT.

Design Leads

Mark Talvitie, PE, has 30 years of experience in design management for transportation projects. His experience includes urban roadway improvement projects, complex interchanges, major highway design build projects, and airports. Mark has been involved from the planning and environmental phases to final design and construction. He managed and coordinated efforts on many large, high-profile projects including US 36 Phase 1 and 2; E-470 Segments II, III and IV; I-15; and SH 128.

Lori Hesprich, PE, is a Senior Project Manager experienced in the planning, design, and engineering of large transportation projects. She has played a major role in developing award-winning projects, and has been involved from conceptual and preliminary design to final design to construction support. Lori has served on several complex projects including Admiral Clarey Bridge (Pearl Harbor), Honolulu Rail Transit (Oahu), and Cooper River Bridge (Charleston, SC).


DENVER PARKS
RECREATION
DUNHAM PARK
NPT

2.2 CAPACITY AND RESOURCES

Member firms of Kiewit-Meridiam Partners have the capacity, procurement experience, qualified personnel, equipment and facilities to not only develop a competitive and bankable proposal, but also to deliver and ultimately operate and maintain the I-70 East Project to meet the Procurement Schedule and in accordance with the anticipated Project Agreement Provisions.

Figure 7 summarizes our current workload, backlog and capacity.

Figure 7 – Summary Workload/ Backlog/Capacity

The commitment and capability of our Key Personnel is evidenced in Form I. We have identified additional management resources which will be critical for the development and delivery of I-70 East. These value-added personnel are included in the organizational

charts provided in Vol. 1 Sec. 2.1.3 and additional information for these value-add personnel are provided in Vol. 1 Sec. 2.1.5.

Our team's knowledge gained from designing and building projects in the City and County of Denver, combined with our knowledge gained from bidding, closing, delivering, and operating transportation P3 projects across North America, will be valuable in assisting the Procuring Authorities and CDOT to meet the Project Goals.

Equity Members and Financially Responsible Parties

Kiewit-Meridiam Partners has two Equity Members, each member's Financially Responsible Party in parentheses: Meridiam I-70E CO, LLC (Meridiam Infrastructure North America Fund II) and Kiewit Development Company (Kiewit Infrastructure Group Inc.). Kiewit-Meridiam Partners will self-perform life cycle O&M responsibilities.

Meridiam Equity Member

Meridiam I-70E CO, LLC and its Financially Responsible Party Meridiam Infrastructure North America Fund II ("MNII Fund" and together "Meridiam"), share the resources, capacity, and procurement experience necessary to perform the work on this Project as an Equity Member, and as a member of the Lead Operator Joint Venture for the purposes of the SOQ. MNII Fund's letter of support is provided in Vol. 2 Sec. 3.1 in accordance with Section 2.4 of the Financial Requirements.

Current and Expected Workloads

Meridiam is an active participant in the North American P3 market, having invested in and currently executing 8 other P3 projects through the end of 2016, the expected date of financial close under the

Figure 8 – Meridiam's North American P3 projects in addition to I-70 East

Project	Type	Location	Financial Close	Current Equity %	Project Phase
POMT[Form F]	Availability Payment	Florida, USA	Oct 2009	93%	Operations
NTE[Form F]	Revenue Risk	Texas, USA	1-2: Dec 2009 3A3B: Sep 2013	33% 40%	Operations Construction
Montreal University Hospital Research Centre	Availability Payment	Quebec, Canada	May 2010	40%	Operations
LBJ[Form F]	Revenue Risk	Texas, USA	Jun 2010	42%	Construction
Long Beach Courthouse	Availability Payment	California, USA	Dec 2010	100%	Operations
Northeast Anthony Henday[Form F]	Availability Payment	Alberta, Canada	May 2012	50%	Construction
Presidio Parkway[RP]	Availability Payment	California, USA	Jun 2012	50%	Construction
Waterloo LRT[Form F]	Availability Payment	Ontario, Canada	May 2014	35%	Construction
Indianapolis Courthouse	Availability Payment	Indiana, USA	Anticipated 2015	70%	Preferred Proponent
LaGuardia Airport Central Terminal Building Replacement	Limited Revenue Risk	New York, USA	Anticipated 2016		Preferred Proponent
UMass Dormitory	Limited Revenue Risk	Massachusetts, USA	Anticipated 2015		Shortlisted Proponent
Saint John City Water System	Availability Payment	New Brunswick, Canada	Anticipated 2016		Shortlisted Proponent
Edmonton LRT	Availability Payment	Alberta, Canada	Anticipated 2016		Shortlisted Proponent
Purple Line	Availability Payment	Maryland, USA	Anticipated 2016		Shortlisted Proponent

Reference Projects are noted with a superscript RP

Procurement Schedule. [redacted] **Figure 8** summarizes these projects.

Availability of Non-Financial Resources

Meridiam is able to draw on the diversity of its staffs' varied cultural and professional backgrounds. With 110 employees, Meridiam's multinational team delivers a full range of expertise in financing and management of infrastructure projects. In addition to the global expertise within Meridiam, a staff of over 20 professionals is solely dedicated to the development and management of projects in the North American P3 market.

Meridiam has sufficient resources available throughout not only the Procurement Schedule but also through Financial Close and ultimately management of the Project through the anticipated Contract Term.

Meridiam's value-added personnel, Jane Garvey, Thilo Tecklenburg, Jean-Michel Martinez, John Dionisio, and Sven Kottwitz, will be available to provide leadership to the Project (additional information in Vol. 1

Sec. 2.1.5). They have experience collaborating with owners, lenders, contractors, and operators on projects similar to the size and scope of I-70 East.

Kiewit Equity Member

Kiewit Development Company (KDC) and its Financially Responsible Party Kiewit Infrastructure Group Inc. share the resources, capacity, and procurement experience necessary to perform the work on this Project as an Equity Member, and a member of the Lead Operator Joint Venture for the purposes of the SOQ. KIG's letter of support is provided in Vol. 1 Sec. 3.1 in accordance with Section 2.4 of the Financial Requirements.

Current and Expected Workloads

KIG, KDC, and Kiewit Infrastructure Co., our Lead Contractor, (together Kiewit) are an active participant in the North American P3 market, pursuing three other transactions in North America through the end of 2016, the expected date of financial close under the Procurement Schedule. [redacted] **Figure 9** summarizes these projects.

Availability of Non-Financial Resources

Staffed with over 35 people, KDC has one of the largest P3 teams dedicated to the North American P3 market. KDC has sufficient resources available through the Procurement Schedule but also through Financial Close.

Kiewit's value-added personnel includes David Miles, John McArthur, James Geer, Sam Chai, Sam Gilmore and Gray Kite, will be available to provide leadership to the Project (Vol. 1 Sec. 2.1.5. provides additional information). They also have experience collaborating with all stakeholders involved in a project as complex and critical as I-70 East.

Lead Contractor and Financially Responsible Party

Our Lead Contractor's, Kiewit Infrastructure Co. (KIC), Financially Responsible Party is KIG. KIC and KIG provide the resources, capacity and procurement experience necessary to perform the work on this Project as Lead Contractor. KIG's letter of support is provided in Vol. 1 Sec. 3.1 in accordance with Section 2.4 of the Financial Requirements.

As an established member of the Colorado construction landscape since 1938, Kiewit has earned the trust of the many public agencies serving the state and has developed strong relationships working with its many business partners with through the years.

Additionally, the construction team includes a number of exclusive subconcontractors. Each of these firms was selected based on their experience with CDOT projects and their history of success working with Kiewit. See Vol. 1 Sec. 2.1.5 for a detailed list of subcontractors.

Current and Expected Workloads

Kiewit is one of the largest and most trusted contracting organizations in North America with more than 130 years of construction experience and extensive background in building complex infrastructure projects involving expansion of roads, interchanges, and bridge work in urban environments. Our infrastructure group has been in Colorado for over 75 years and has successfully completed numerous signature projects across the state. Although KIC and KIG are active participants in the North American market (**Figure 7**), the I-70 East Project is a high priority project. [redacted] **Figure 9** summarizes Kiewit's P3 projects. Kiewit has a deep

Figure 9 – Kiewit's North American P3 projects in addition to I-70 East

Project	Type	Location	Financial Close	Role	Project Phase
DFW Connector[Form F]	Design-Build-Maintain	Texas, USA	Oct 2009	Developer, OMR, Contractor: 65%	Operations
Midtown Tunnel[Form F]	Revenue Risk	Virginia, USA	Apr 2012	Equity: 0% Contractor: 40%	Construction
Presidio Parkway[RP]	Availability Payment	California, USA	Jun 2012	Equity: 0% Contractor: 35%	Construction
Carlsbad Seawater Desalination Plant	Water Purchase Agreement	California, USA	Dec 2012	Equity: 0% Contractor: 60%	Construction
Goethals Bridge[Form F]	Availability Payment	New York, USA	Oct 2013	Equity & Operator: 10% Contractor: 70%	Construction
Waterloo LRT[Form F]	Availability Payment	Ontario, Canada	May 2014	Equity: 10% Contractor: 49%	Construction
Loop 375[RP]	Design-Build-Maintain	Texas, USA	Aug 2014	Developer, OMR, Contractor: 40%	Construction
SH 183[RP]	Gap Financing / Design-Build-Maintain	Texas, USA	Nov 2014	Developer, OMR: 100% Contractor: 70%	Construction
East Rail Maintenance Facility[RP]	Availability Payment	Ontario, Canada	Mar 2015	Equity: 10% Contractor: 40%	Construction
South Mountain/ Loop 202	Design-Build-Maintain	Arizona, USA	Anticipated 2015	Developer, Contractor & OMR	Shortlisted Proponent
Edmonton LRT	Availability Payment	Alberta, Canada	Anticipated 2016	Equity Member & Contractor	Shortlisted Proponent
Purple Line	Availability Payment	Maryland, USA	Anticipated 2016	Equity Member & Contractor	Shortlisted Proponent

Reference Projects are noted with a superscript RP

understanding of design and construction performance in Colorado and has the knowledge and expertise to deploy the requisite resources to deliver a mega project such as I-70 East. Kiewit's history working in this state has allowed it to establish strong working relationships with CDOT, RTD, City and County of Denver, City of Aurora and Adams County, and other local jurisdictions as well as private industry. Kiewit has strong working relationships with the local subcontractor community including DBE firms and material suppliers.

Availability of Non-Financial Resources

Kiewit has access to an employee base of over 11,350 staff and 14,350 craft.

Kiewit's ability to self-perform and manage a robust subcontracting program to efficiently deliver work is a fundamental differentiator for many of its clients. On I-70 East, the Procuring Authorities and CDOT will benefit from Kiewit's privately owned equipment fleet, the largest and most modern in North America with 25,000 units and a replacement value of $2.6 billion. Kiewit has the ability to mobilize equipment from anywhere within its fleet from ongoing projects throughout Colorado and neighboring states to support the I-70 East Project.

Kiewit will complete two independent estimates and determine construction means and methods to identify specific equipment

types and sizes required. The equipment quantity and type will be identified in a resource-loaded schedule to provide accurate equipment utilization requirements to meet the schedule requirements in an efficient manner. If required, additional equipment will be purchased or leased during peak capacity demand to meet our project schedule commitment.

Kiewit has several Affiliates located in its two Englewood, Colorado offices. As part of its company culture, it is a common practice to borrow skills and specific services from members of the "One Kiewit" team. Kiewit plans to fully utilize skills of its employees in the Denver area and as needed from Kiewit's North American operations, many of which will include personnel and resources from our Form F Reference Projects, and partner to assure not only the Equity Members and Lenders, but also the Procuring Authorities, that the I-70 East Project will be built on-schedule, on-budget, and with quality as it transitions from the Construction Phase to the Operations and Maintenance Phase.

In addition to KIC, Kiewit Affiliates located in Englewood specialize in the following areas which we may utilize to supplement the project team:

- Engineering and design services, including constructability reviews
- Electrical construction and maintenance services
- Building services
- Industrial construction including power mining, industrial process and renewable energy
- Environmental construction with respect to municipal and industrial water and wastewater facilities and associated pipelines
- Fire protection consultation, design, installation, maintenance, testing, and inspections.

Kiewit's value-added personnel includes Randy Sanman, Craig Briggs, Joe Wingerter, Chris Otto, Larry Parks, Tim Nelson, and Barry Thoendal will be available to provide leadership to the Project during the Construction Phase (Vol. 1 Sec. 2.1.5. provides additional information).

Lead Engineer

Kiewit-Meridiam Partners includes two firms which together form the Lead Engineer: Parsons Brinckerhoff, Inc. (PB) and Jacobs Engineering Group Inc. (Jacobs). This structure takes advantage of both firms' local resources and ability to mobilize quickly. Both firms have been active in Colorado supporting CDOT and other local clients for over 35 years offering full-service engineering and construction support services on some of the most visible transportation and community development projects in the region. Their knowledge of CDOT processes, design practices, and standards will be vital to the success of the Project. Their combined Colorado staff of almost 400 local employees will provide a very strong design team.

Our local design capabilities are substantially reinforced by both the national and global presence of both PB and Jacobs. Both firms contribute the ability to draw regional and national staff to Colorado for such a high profile project.

PB and Jacobs have collaborated on numerous local and national projects. In some instances, like the US 36 Flood Recovery project for CDOT, Jacobs and PB worked directly to provide owners with solutions. For other projects, like the multi-billion dollar Intercounty Connector Project where PB was the Owner's Engineer and Jacobs the Lead Designer, our staffs

partnered to provide a successful outcome. PB and Jacobs will use common approaches and software to follow CDOT's and Kiewit's standards and policies to deliver a quality project.

Additionally, the design team includes a number of exclusive and non-exclusive subconsultants. Each of these firms was selected based on their ability to enhance the skills of the design team, their experience with CDOT projects and their history of success working with PB and Jacobs. See Figure 5, Vol. 1, Sec. 2.1.5 for a detailed list of subconsultants.

Current and Expected Workloads

Our design team brings an exceptionally robust resume in the design of transportation projects for clients in Colorado, the western US and throughout the world. PB's and Jacobs' staff have been involved in design and construction with numerous CDOT projects over the last 10 years, a number of which were delivered using the design build process. [redacted] **Figure 10** summarizes PB's and Jacob's current P3 projects.

Our design team has a comprehensive understanding of CDOT's approach to design and has the knowledge and expertise necessary to successfully develop a constructible, maintainable design for the I-70 East Project. Their collective history supporting local and regional clients from RTD and the City and County of Denver to the National Western Complex gives them the knowledge, experienced personnel, and established working relationships with local stakeholders to lead the design effort and support on-time completion of I-70 East.

Availability of Non-Financial Resources

In addition to the diversity and experiences of the design team's numerous staff, their designers are provided with a wide range of tools to support their work. They routinely use desktop applications to aid in collaboration; Internet-based tools which serve as a portal for document management and project history, and CADD management software, allowing multiple users in any location to see the current design in real time, instantly creating an environment of internal coordination among disciplines. Our design team's capability for modeling projects in 3D, 4D (schedule) and 5D (schedule and cost) will be essential as the design progresses.

PB and Jacobs' value-added personnel, Len Rattigan, Randy Pierce, Mark Talvitie, and Lori Hesprich, will be available to provide leadership to the Project during the Construction Phase (Vol. 1 Sec. 2.1.5. provides additional information).

Lead Operator

Kiewit-Meridiam Partners will self-perform life cycle O&M responsibilities of the Lead Operator. The Equity Member subsection above provides information with respect to available resources for Kiewit and Meridiam. Routine maintenance will be performed by the Lead Operator Roy Jorgensen Associates, Inc. (Jorgensen).

Roy Jorgensen Associates, Inc.

Jorgensen is a privately owned company with over 50 years of expertise in highway operations and maintenance management both in the US and internationally.

Figure 10 – Parsons Brinckerhoff & Jacobs' North American P3 projects in addition to I-70 East

Project	Type	Location	Financial Close	Role	Project Phase
Eagle P3[RF]	Availability Payment	Colorado, USA	Aug 2010	PB: Lead Engineer	Construction
Midtown Tunnel[Form F]	Revenue Risk	Virginia, USA	Apr 2012	PB: Lead Engineer	Construction
Presidio Parkway[RP]	Availability Payment	California, USA	Jun 2012	PB: Owner's Engineer	Construction
Evergreen Line Rapid Transit Project[RP]	Availability Payment	British Columbia, Canada	Jan 2013	Jacobs: Lead Engineer	Construction
ORB – EEC[Form F]	Availability Payment	Indiana, USA	Mar 2013	Jacobs: Lead Engineer	Construction
I-4 Ultimate[Form F]	Availability Payment	Florida, USA	Sep 2014	Jacobs: Lead Engineer	Construction
I-77 HOT Lanes[RP]	Revenue Risk	North Carolina, USA	May 2015	PB: Owner's Engineer	Construction
SH 288	Revenue Risk	Texas, USA	Anticipated 2015	Jacobs: Owner's Engineer	Preferred Proponent
Michigan DOT Freeway Lighting[RP]	Availability Payment	Michigan, USA	Anticipated 2015	PB: Lead Engineer	Preferred Proponent
LaGuardia Airport Central Terminal Building Replacement	Limited Revenue Risk	New York, USA	Anticipated 2016	PB: Aviation Planning & Engineering	Preferred Proponent
South Mountain / Loop 202	Design-Build-Maintain	Arizona, USA	Anticipated 2015	Jacobs: Owner's Engineer PB: Lead Engineer	Shortlisted Proponent
Purple Line	Availability Payment	Maryland, USA	Anticipated 2016	PB: Owner's Engineer	Shortlisted Proponents

Reference Projects are noted with a superscript RP

Jorgensen has worked extensively with developers on several P3s providing a variety of operations and maintenance services, including during the design and construction phases.

Current and Expected Workloads

Jorgensen has a stable backlog of O&M work with between 25 to 30 performance-based O&M contracts including asset maintenance, program management, total maintenance, and unit-priced contracts. These contracts encompass a variety of delivery models of which four are P3s. Total assets under Jorgensen operations include over 12,500 lane miles of arterial, controlled access, and tolled highways, with 945 bridges, 350 major interchanges, multiple rest areas, and other highway-related facilities. [redacted] **Figure 11** summarizes Jorgensen's current P3 projects.

Availability of Non-Financial Resources

Jorgensen's senior leadership team, all of whom have been solely focused on the highway infrastructure market for many years, are committed to ensuring the engineers and technicians in the field are trained and motivated to perform at the highest level. Jorgensen has leveraged its experience developing training programs for

Figure 11 – Jorgensen's North American P3 projects in addition to I-70 East

Project	Type	Location	Financial Close	Role	Project Phase
I-495[Form F]	Revenue Risk	Virginia, USA	Dec 2007	O&M Contractor	Operations
I-595[Form F]	Availability Payment	Florida, USA	Mar 2009	O&M Contractor	Operations
I-95 HOV/HOT Lanes[RP]	Revenue Risk	Virginia, USA	Jul 2012	O&M Service Provider	Operations
Loop 375[RP]	Design-Build-Maintain	Texas, USA	Aug 2014	Lead Maintenance	Construction
SH 288	Revenue Risk	Texas, USA	Anticipated 2015	O&M Technical Advisor	Preferred Proponent
Mid-Currituck Bridge	Pre-Development Agreement	North Carolina, USA	TBD – On Hold	O&M Technical Advisor	Pre-development

Reference Projects are noted with a superscript RP

highway agencies to its own staff with the most extensive in-house O&M training program in the industry. This highly trained staff provides Jorgensen with the capability to perform a full range of O&M activities.

Jorgensen currently has over 480 employees led by a strong core of professional, technical, and administrative staff. The in-house crews are supported with a vehicle and equipment fleet that includes over 850 pickups, flatbeds, courtesy patrols, crash trucks, heavy trucks, loaders, graders, bobcats, mowers, plows, and snow and ice distributors.

Jorgensen's alternative delivery team has been active in the North American P3 market since the late 1990s. The key members of this team include Sara Henningsgaard and Bruce Bartoe, led by Charles Henningsgaard, Senior Vice President, Jorgensen's value-added personnel. They will be available to provide leadership to the Project during the Construction Phase and continuing into the Operations Phase (Vol. 1 Sec. 2.1.5. provides additional information) to assure that an effective O&M program is developed and ultimately implemented.

Key Personnel

All of our Core Proposer Team Members currently have in-house management resources and will not need to rely on hiring specifically for the I-70 East Project. **Figure 12** summarizes the current workload of our Key Personnel. See Vol. 1 Sec. 4.4 for Form I and resumes.

Figure 12 – Key Personnel

Role	Name	Current & Expected Workload	Experience	Availability
Design-Build Manager	Tom Howell	80% on 225 LRT until Sep 2015, 20% afterwards	Over 34 years of experience	80% from Sep 2015 to commercial close, 100% from commercial close to construction completion
Design Manager	Doug Andrew	50% on I-95 Express Lanes until Sep 2015, 50% afterwards	Professional Engineer with over 33 years of experience	50% from Sep 2015 to commercial close, 100% from commercial close to construction completion
O&M Manager	Abraham Henningsgaard	40% on Contract Operations and 30% on Development until Sept 2015, 40% afterwards	Professional Engineer with over 12 years of experience	60% from Sep 2015 to commercial close, 100% from commercial close to construction completion
Quality Manager	Gordon Peterson	90% on SH183 and DFW Connector until Sept 2015, 75% afterwards	Professional Engineer with over 30 years of experience	25% from Sep 2015 to commercial close, 100% from commercial close to construction completion
Environmental Manager	Jenn Bradtmueller	90% on 225 LRT, US34 and Administration until Sept 2015, 65% afterwards	Professional Engineer with over 12 years of experience	35% from Sep 2015 to commercial close, 100% from commercial close to construction completion
Utilities Manager	Kevin Custy	100% on RTD FasTracks until Sept 2015, 50% afterwards	Over 35 years of experience	50% from Sep 2015 to commercial close, 100% from commercial close to construction completion
Community and Public Relations Manager	Hunter Sydnor	80% on 225 LRT and US34 until Sept 2015, 75% afterwards	Over 14 years of experience	25% from Sep 2015 to commercial close, 100% from commercial close to construction completion

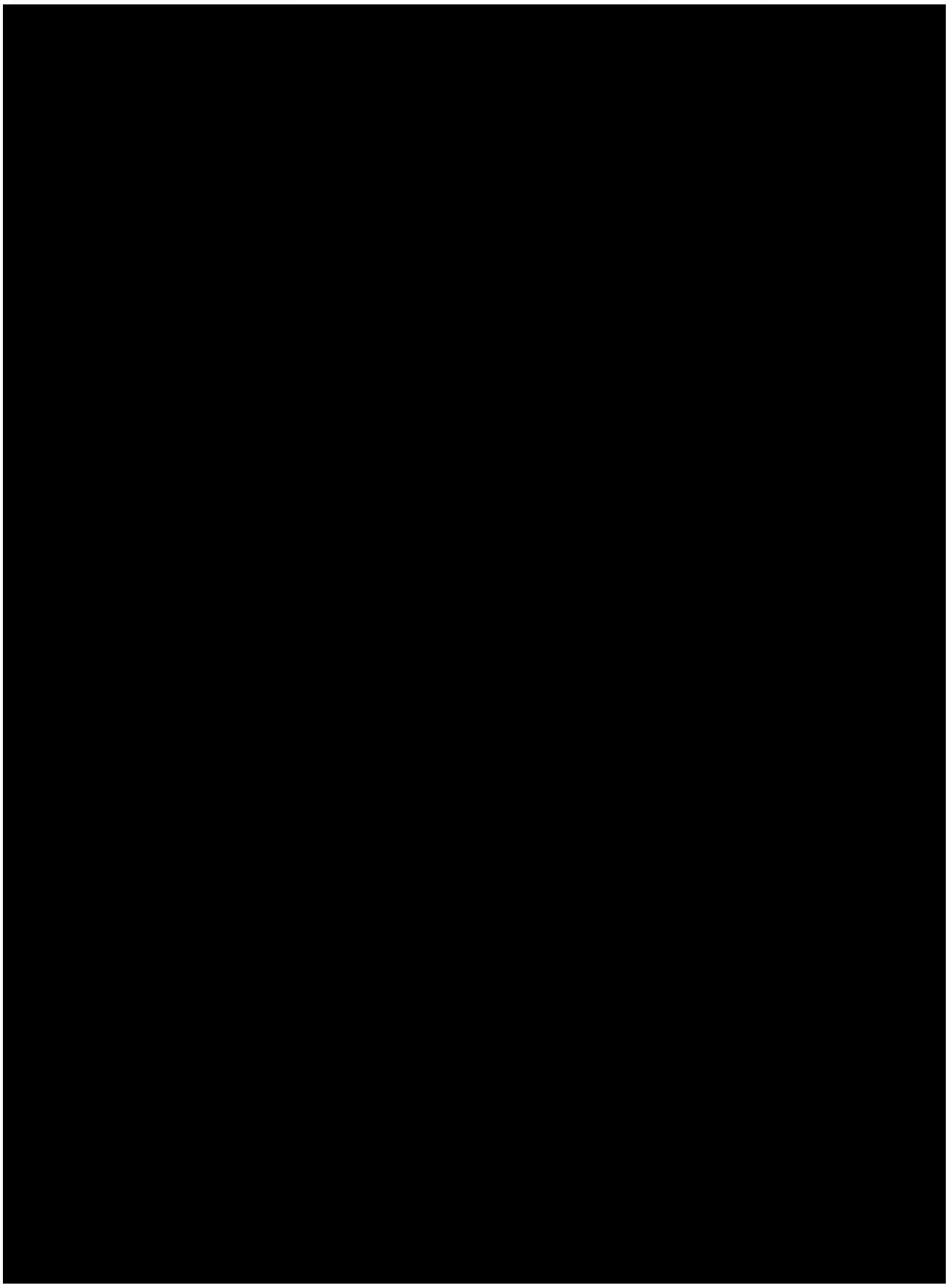
3. Legal Matters

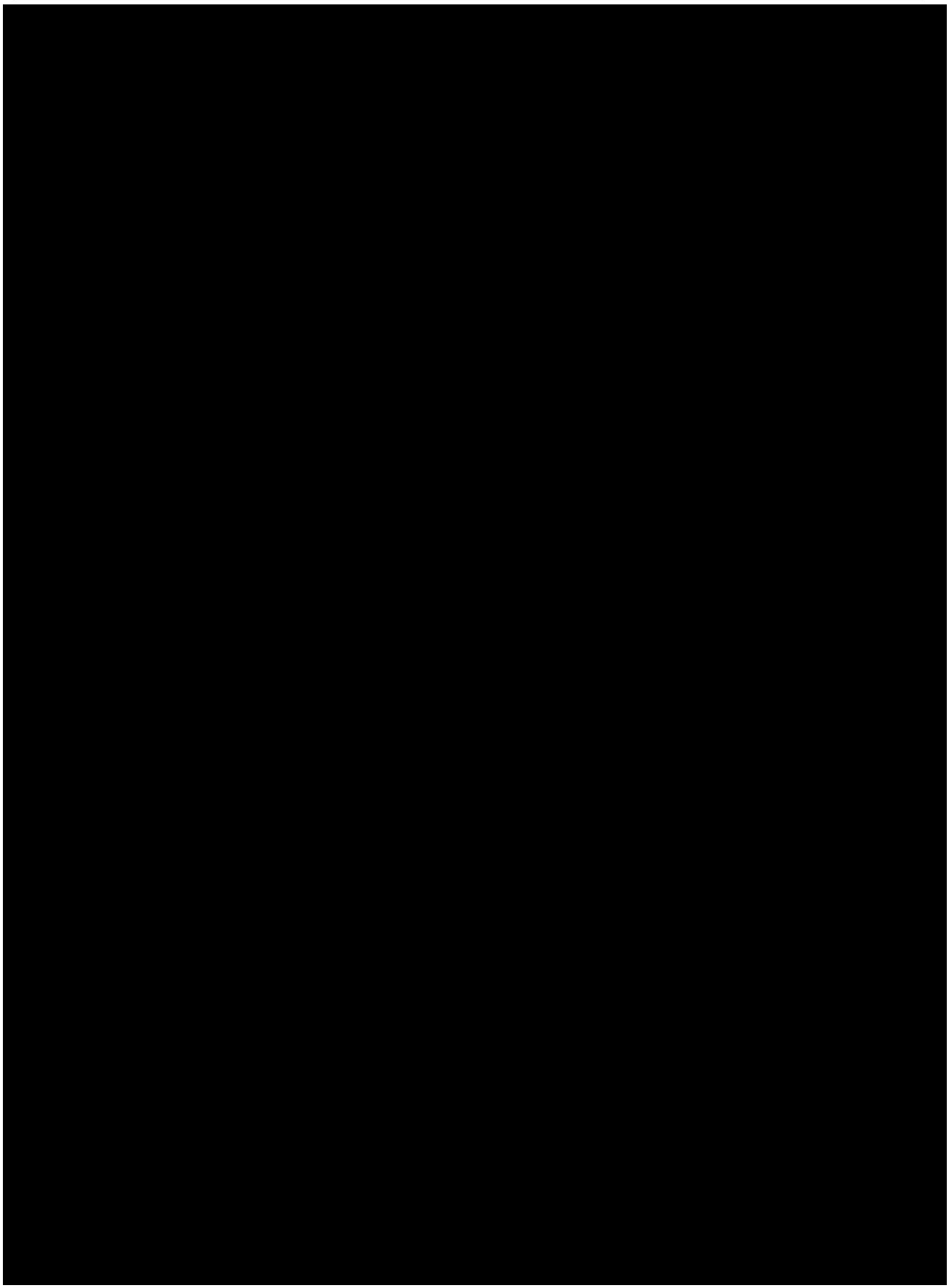
Organizational Conflicts of Interest

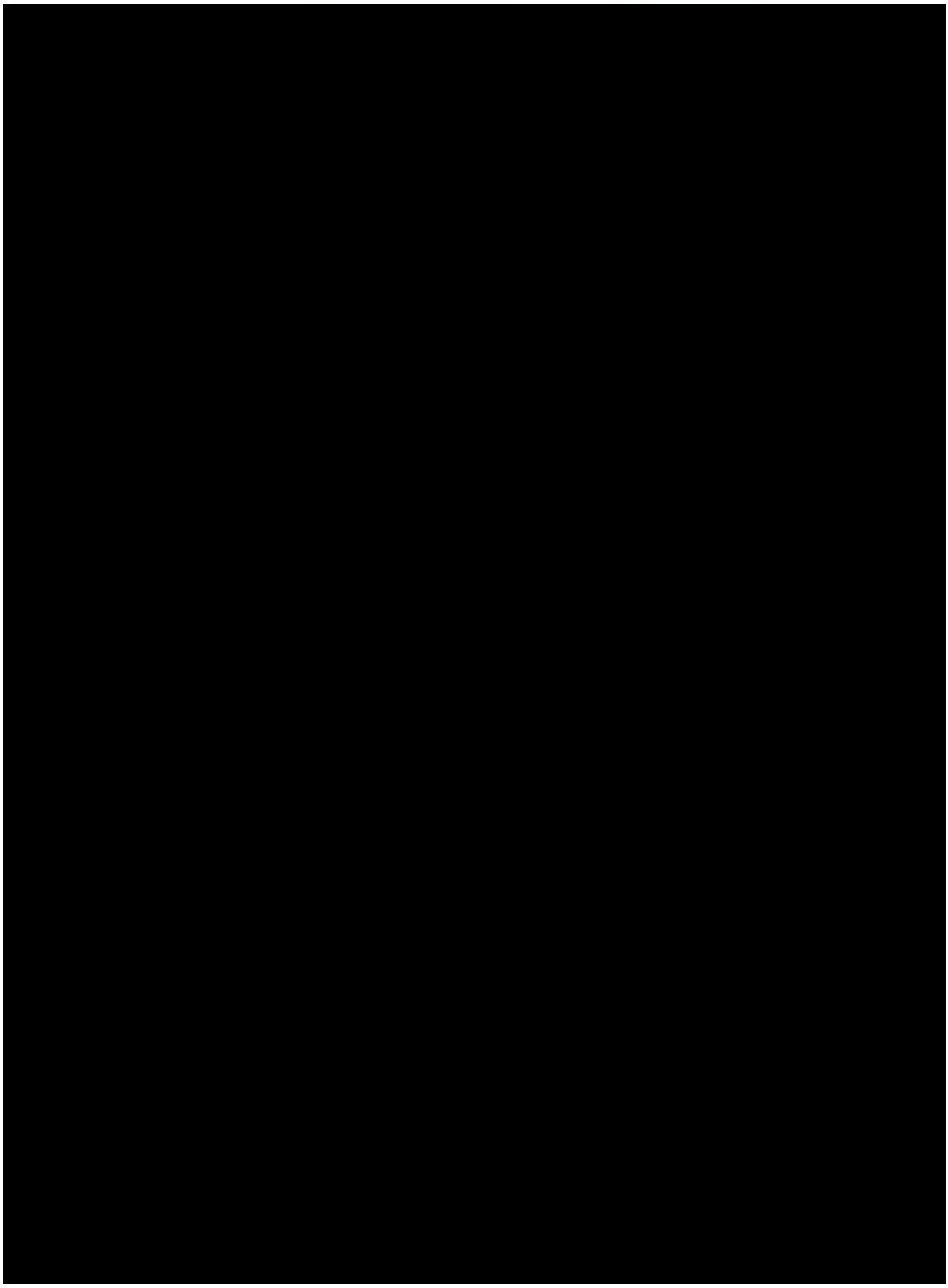
3.1 Organizational Conflicts of Interest

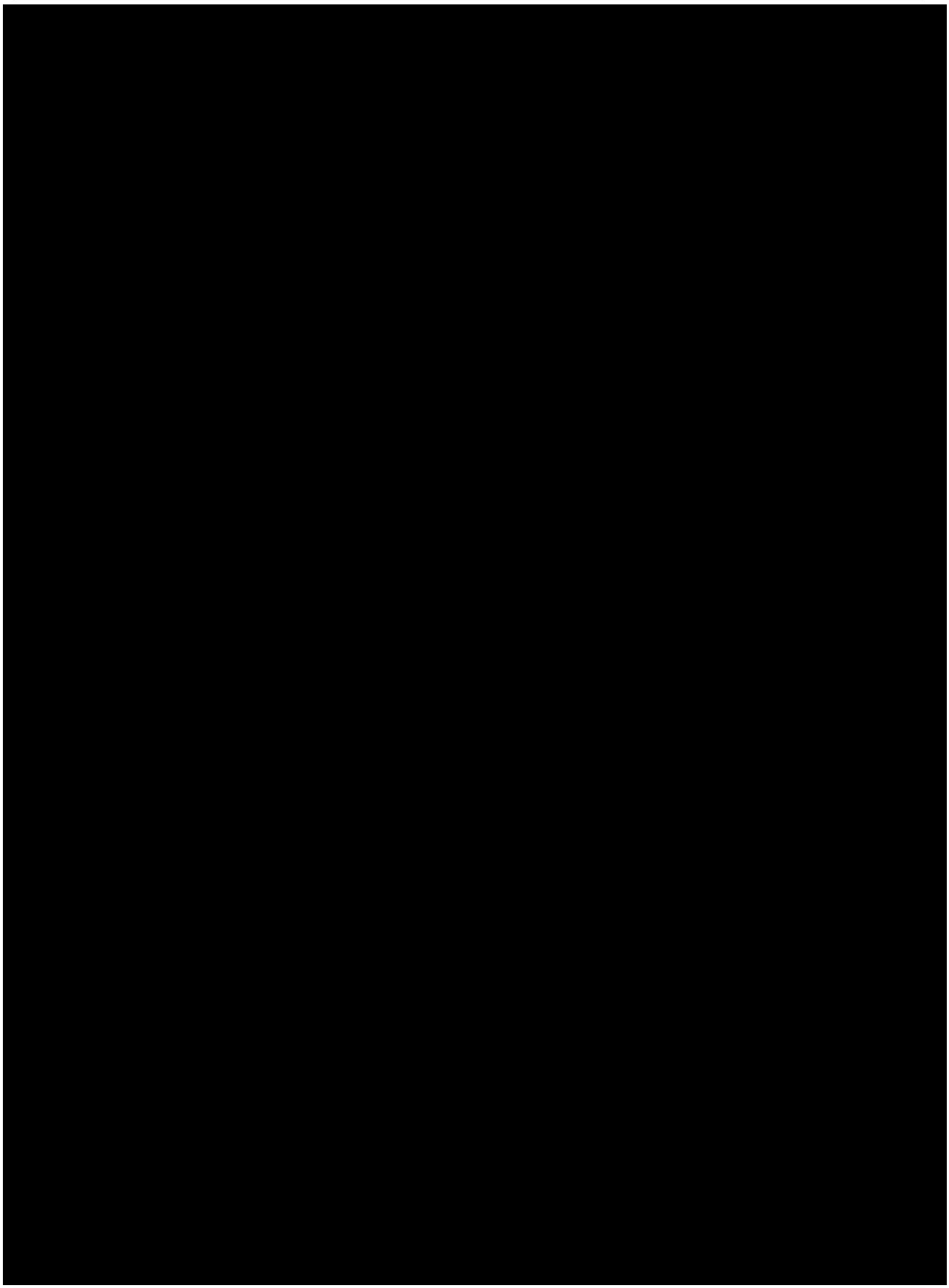
Kiewit-Meridiam Partners confirms the absence of any organizational conflicts of interest as defined in Section 5.3.1a of Part B of the Request for Qualifications, as amended by Addendum No. 1 thereto dated May 29, 2015. On April 23, 2015, in order to ensure compliance with the conflict of interest rules applying to this procurement, Kiewit-Meridiam Partners submitted letters provided by Parsons Brinckerhoff and Jacobs to the Procuring Authorities. The letters describe past business and employment relationships that, for the reasons cited therein, do not create any conflict per the guidelines set forth in the RFQ.

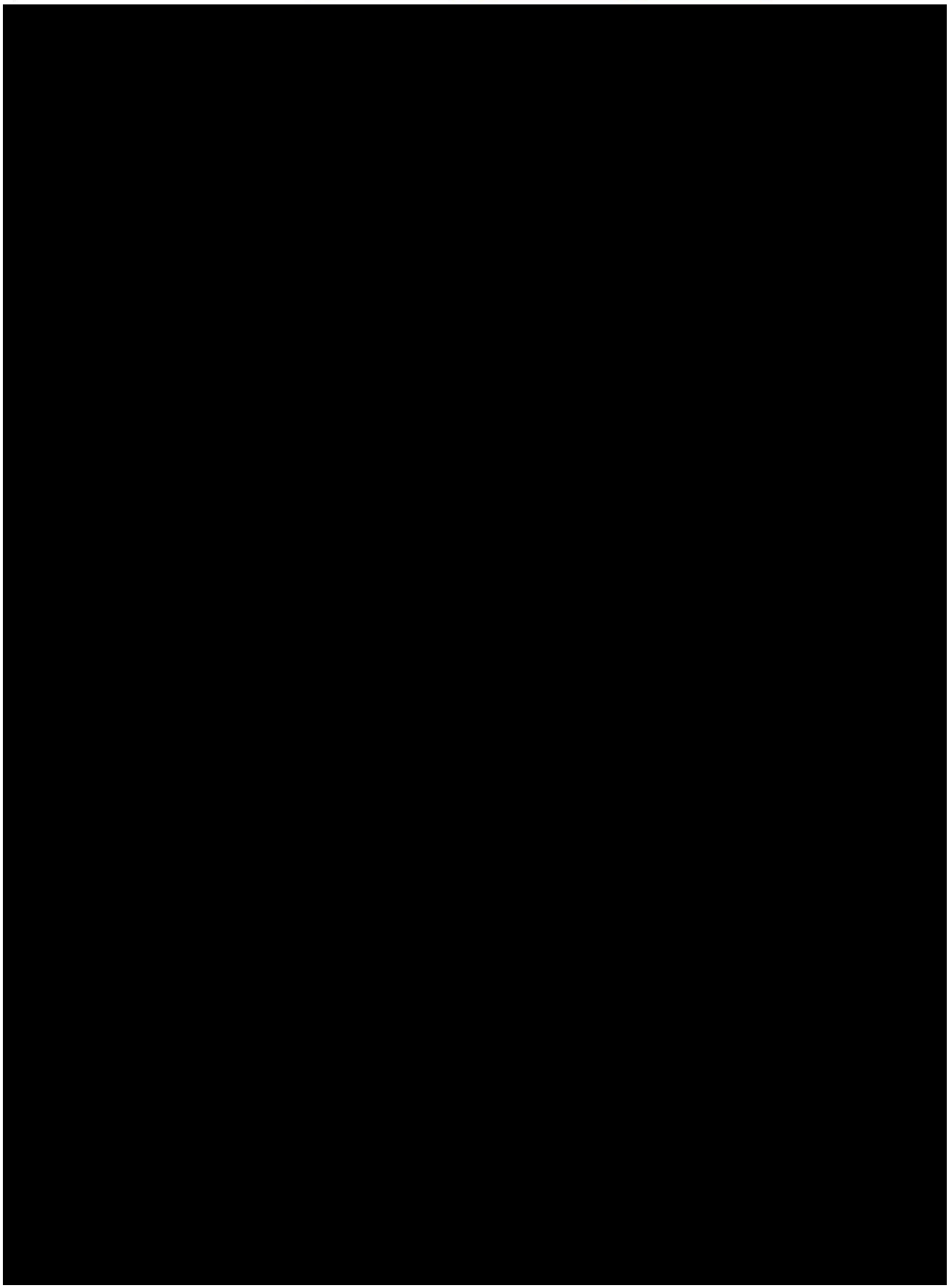
Legal Disclosures and Certifications

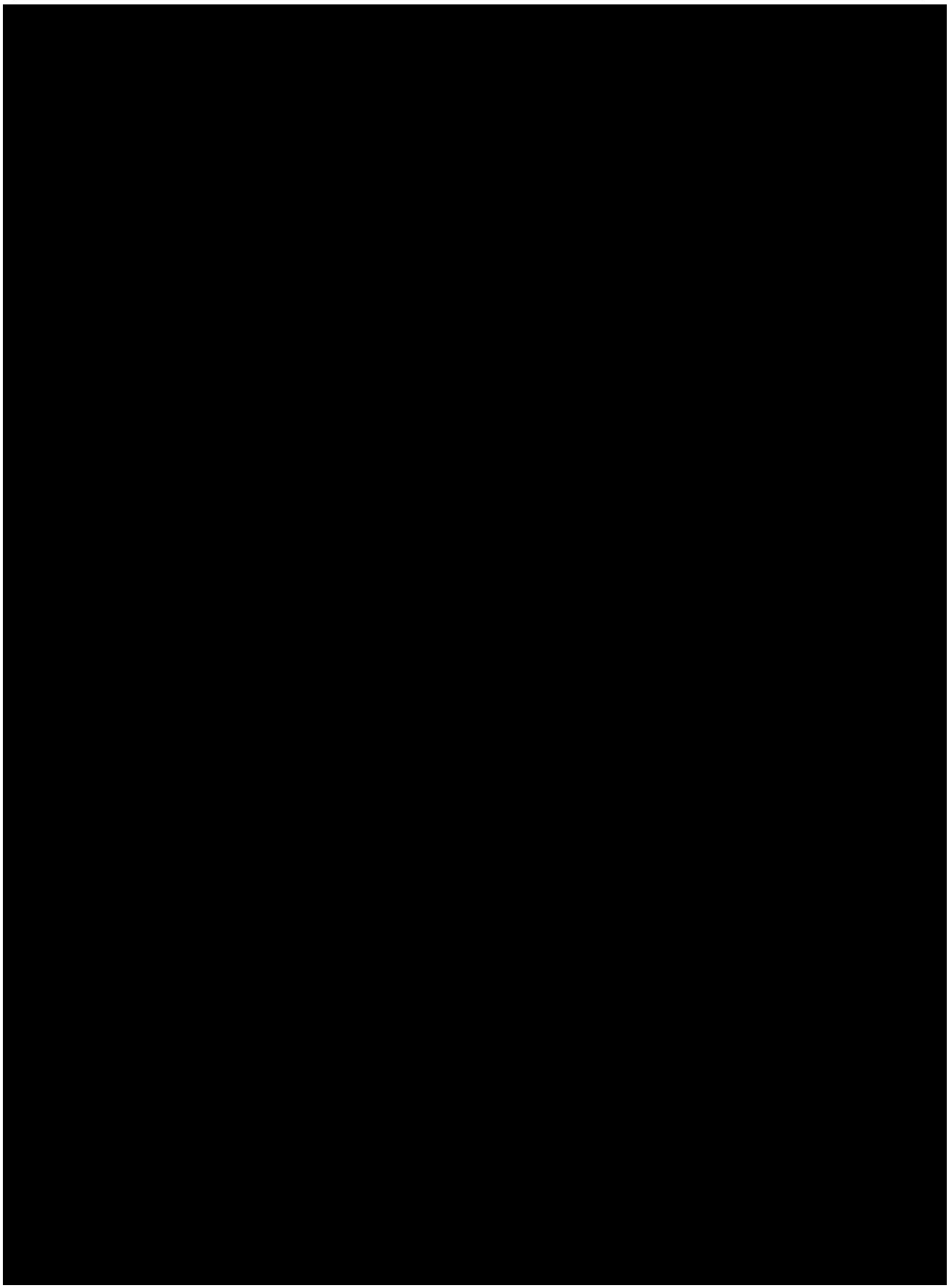


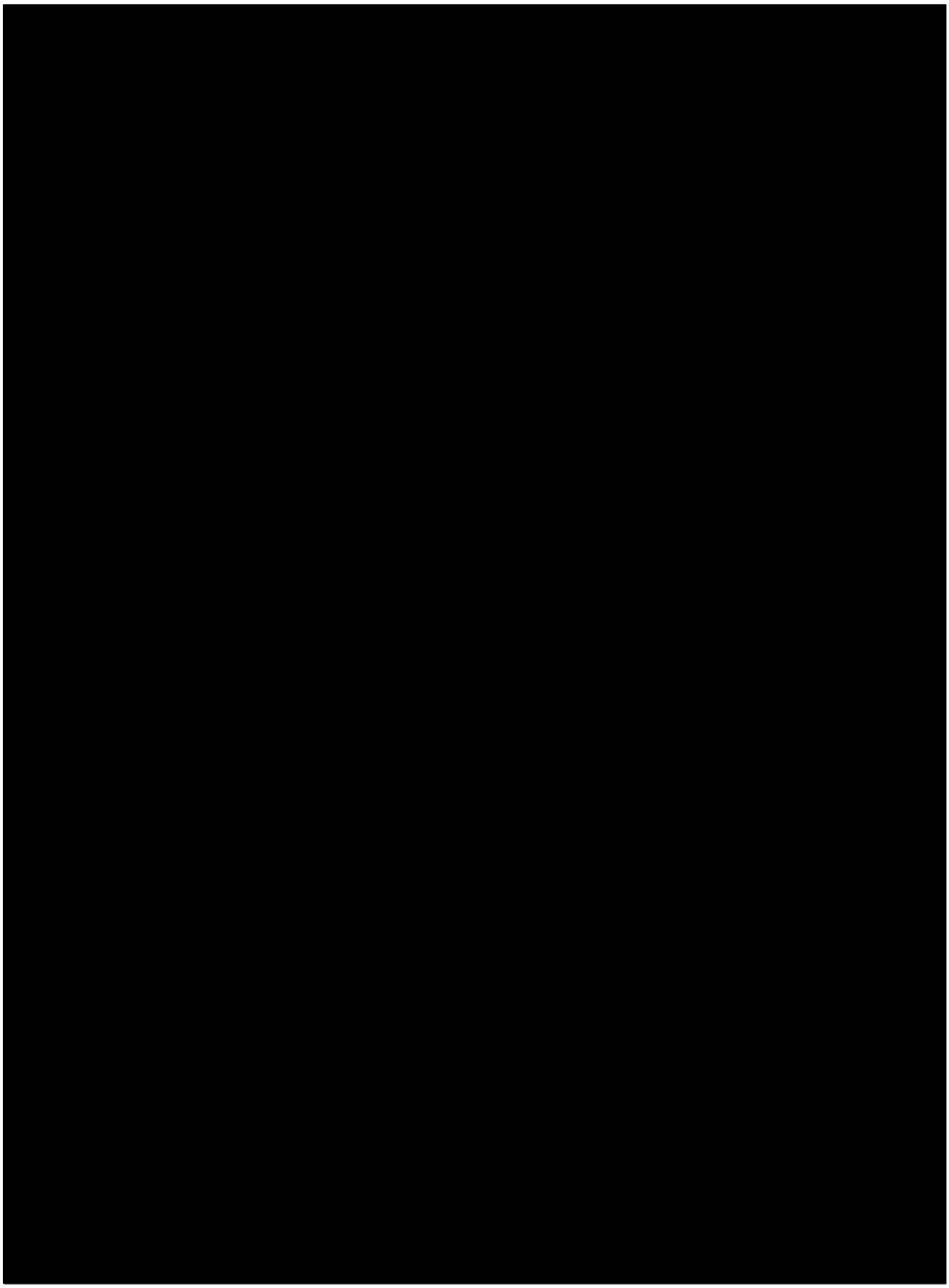


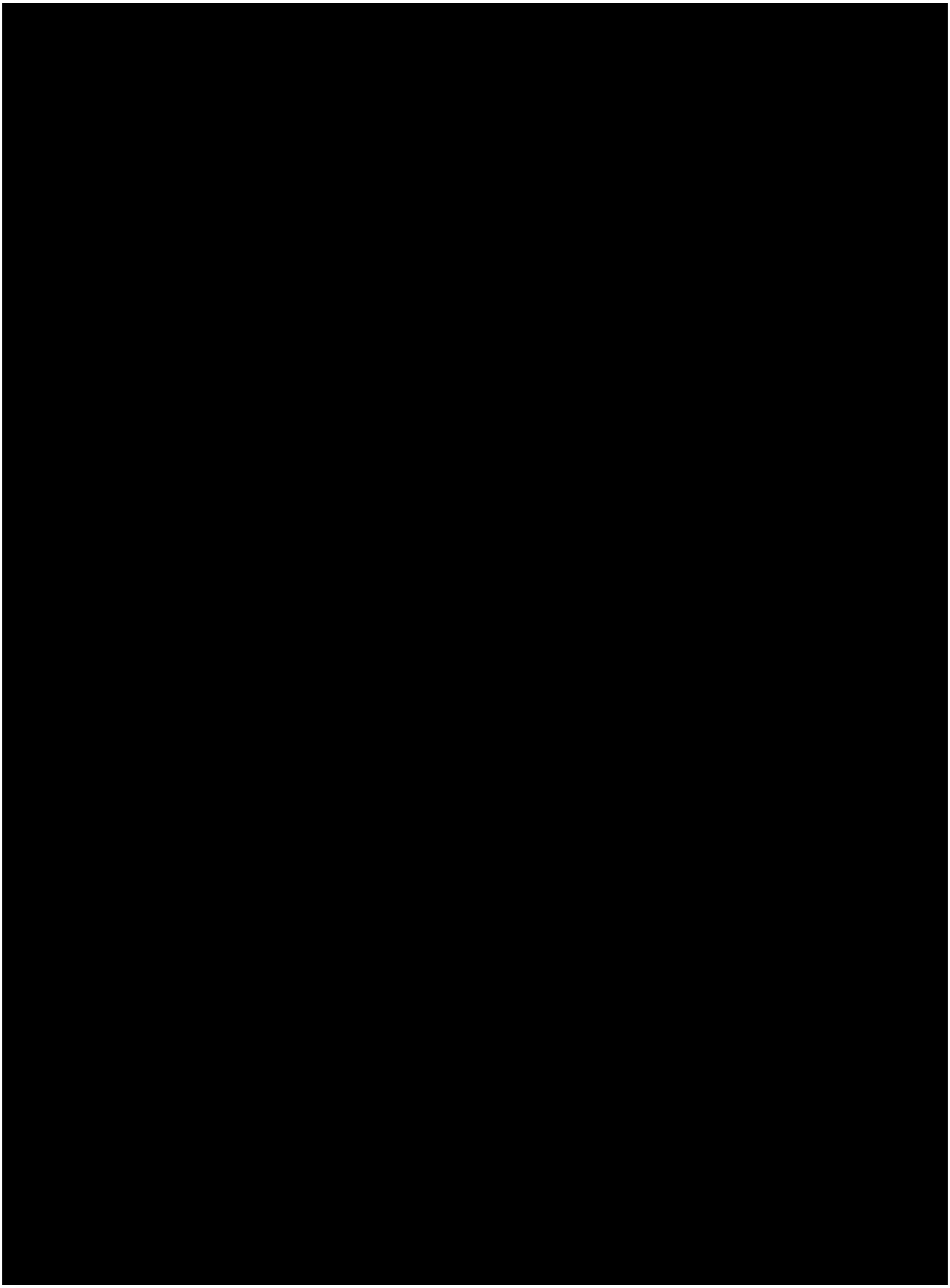


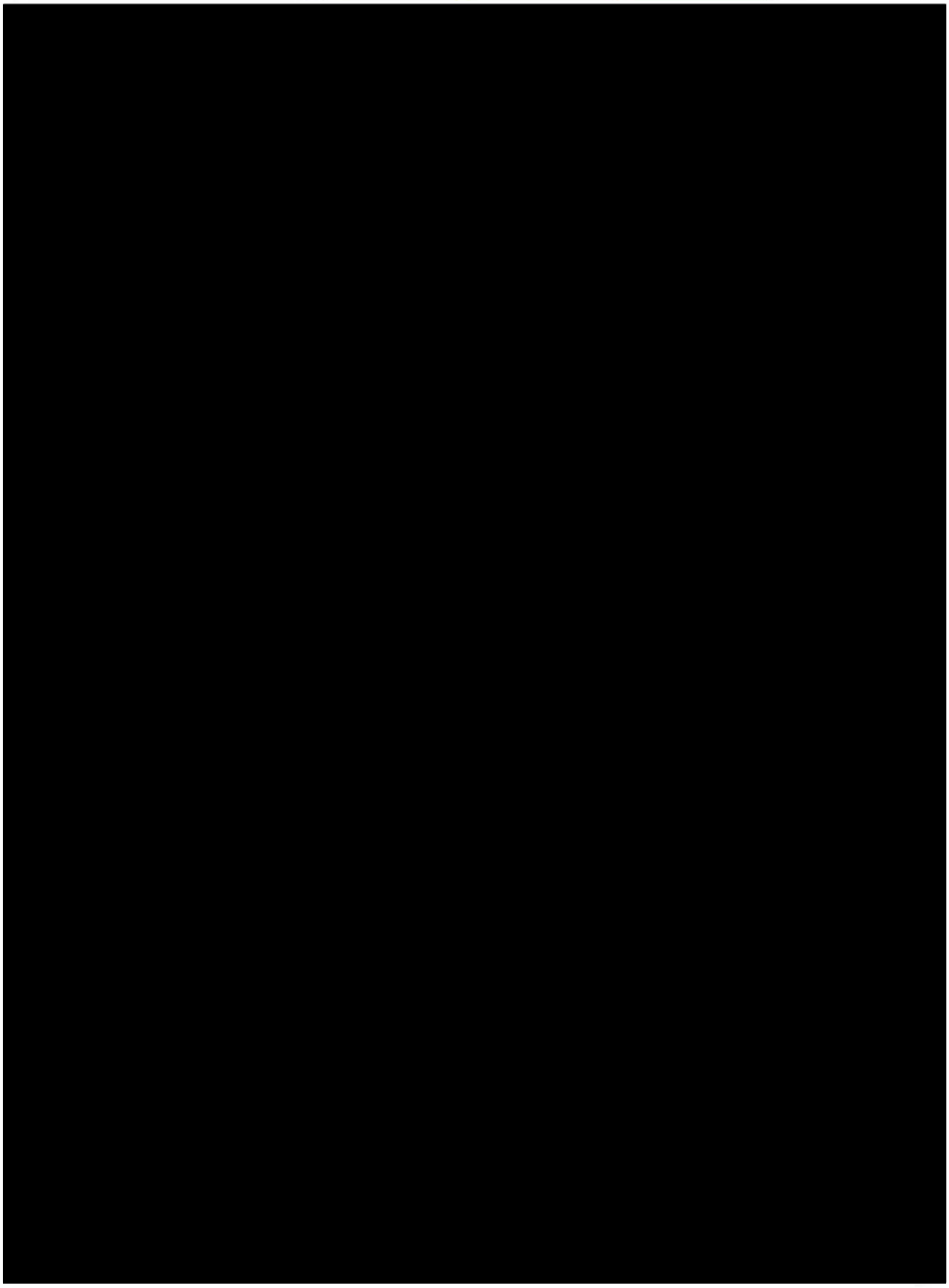


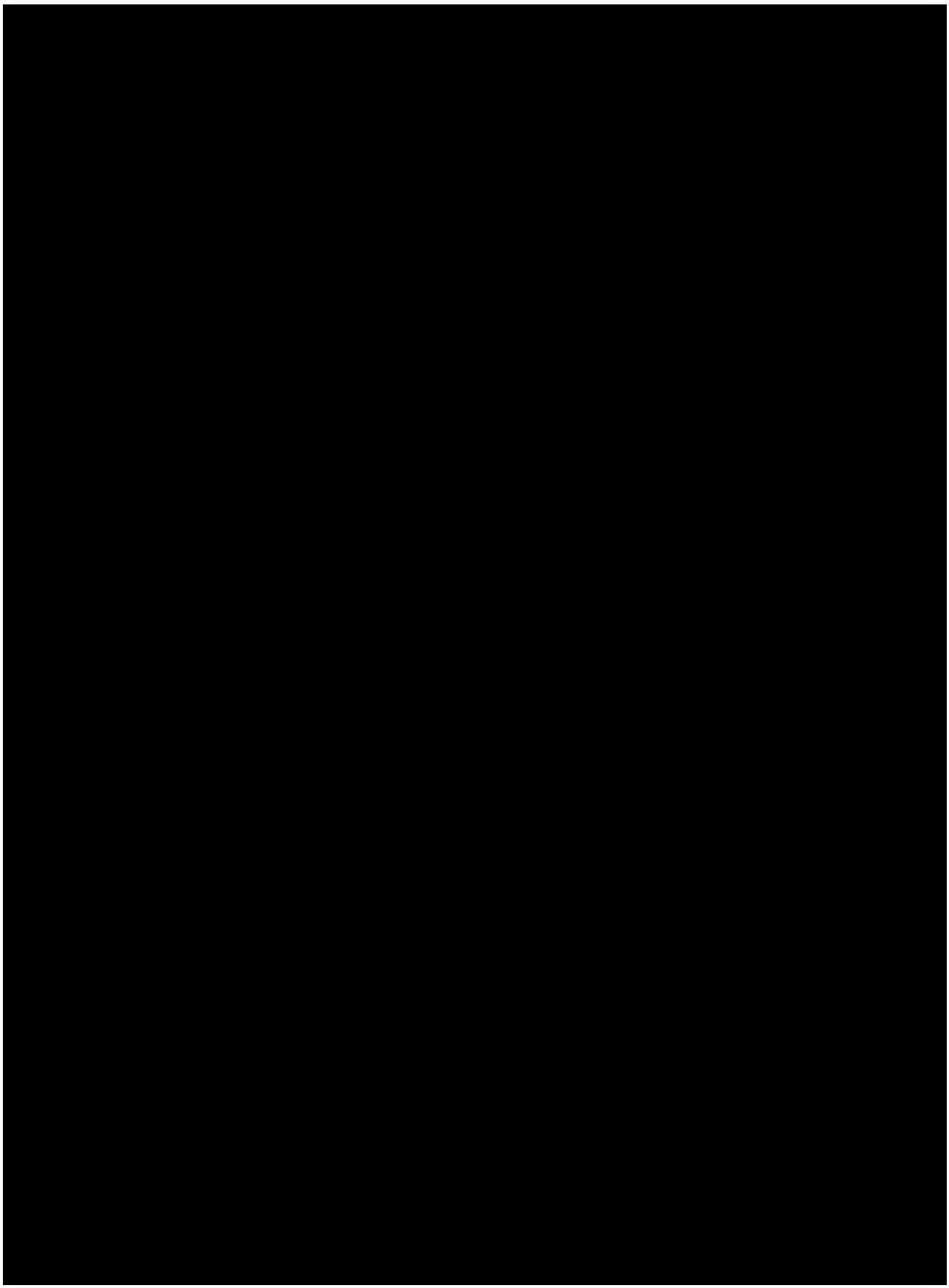


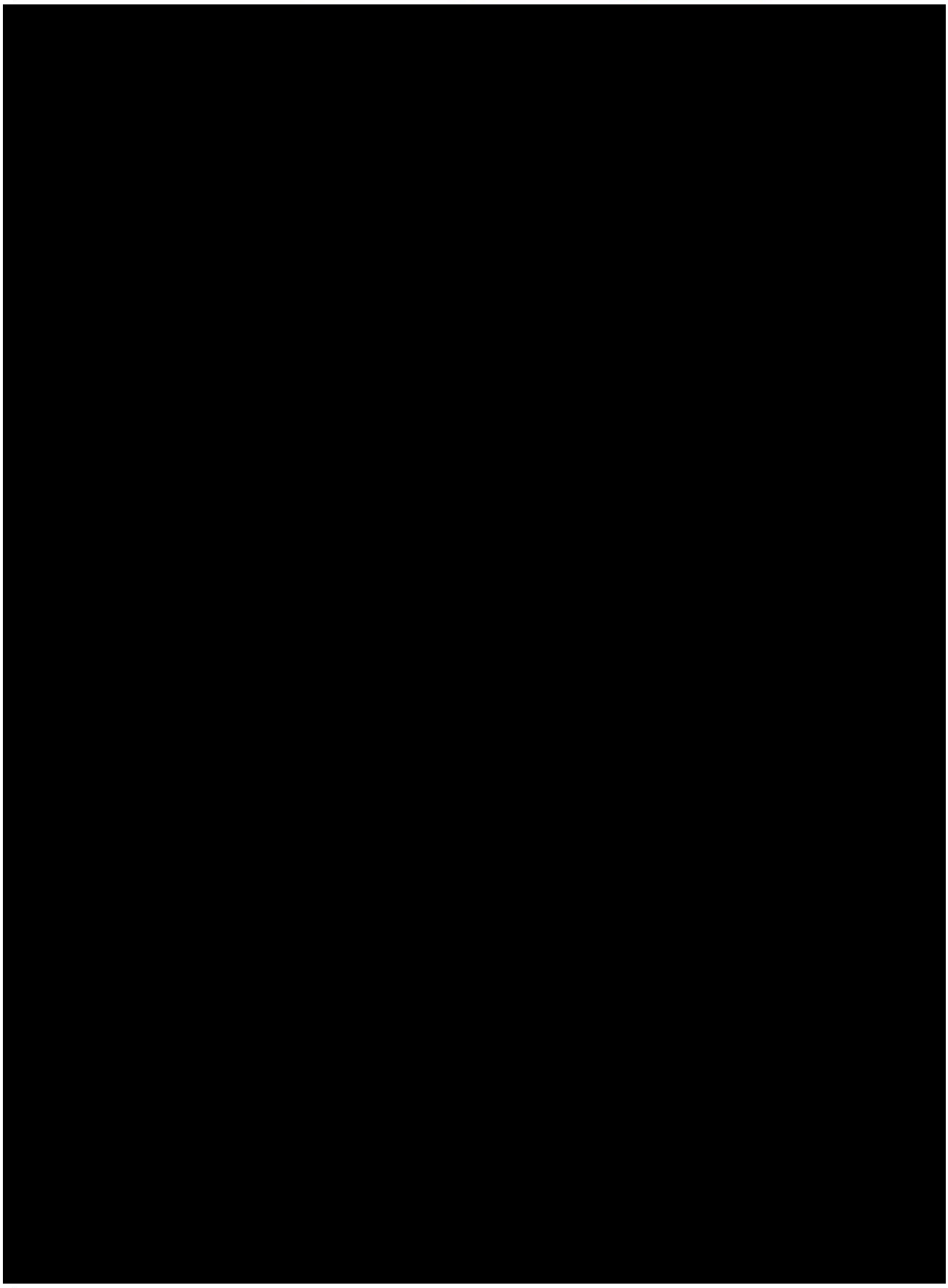


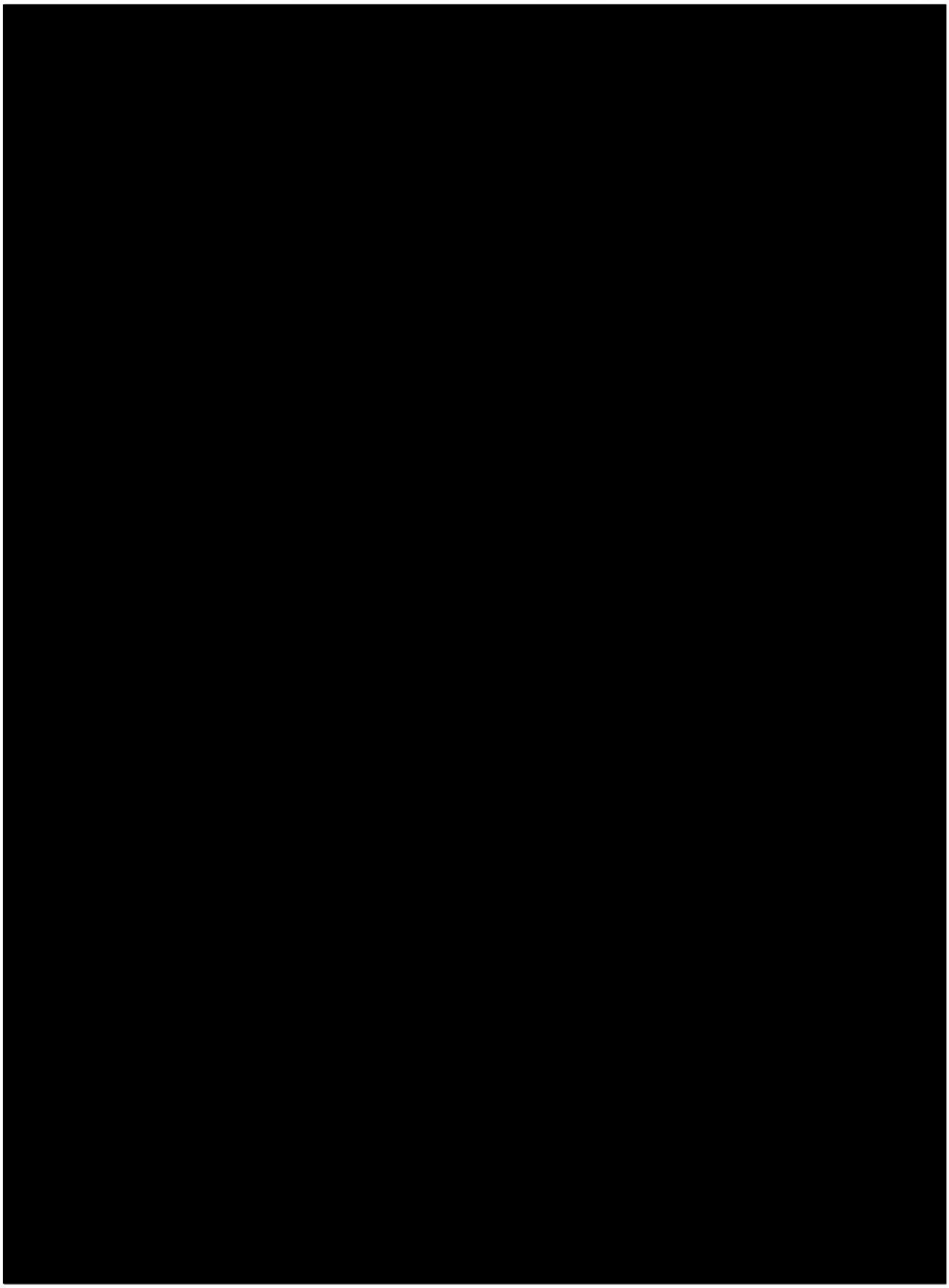


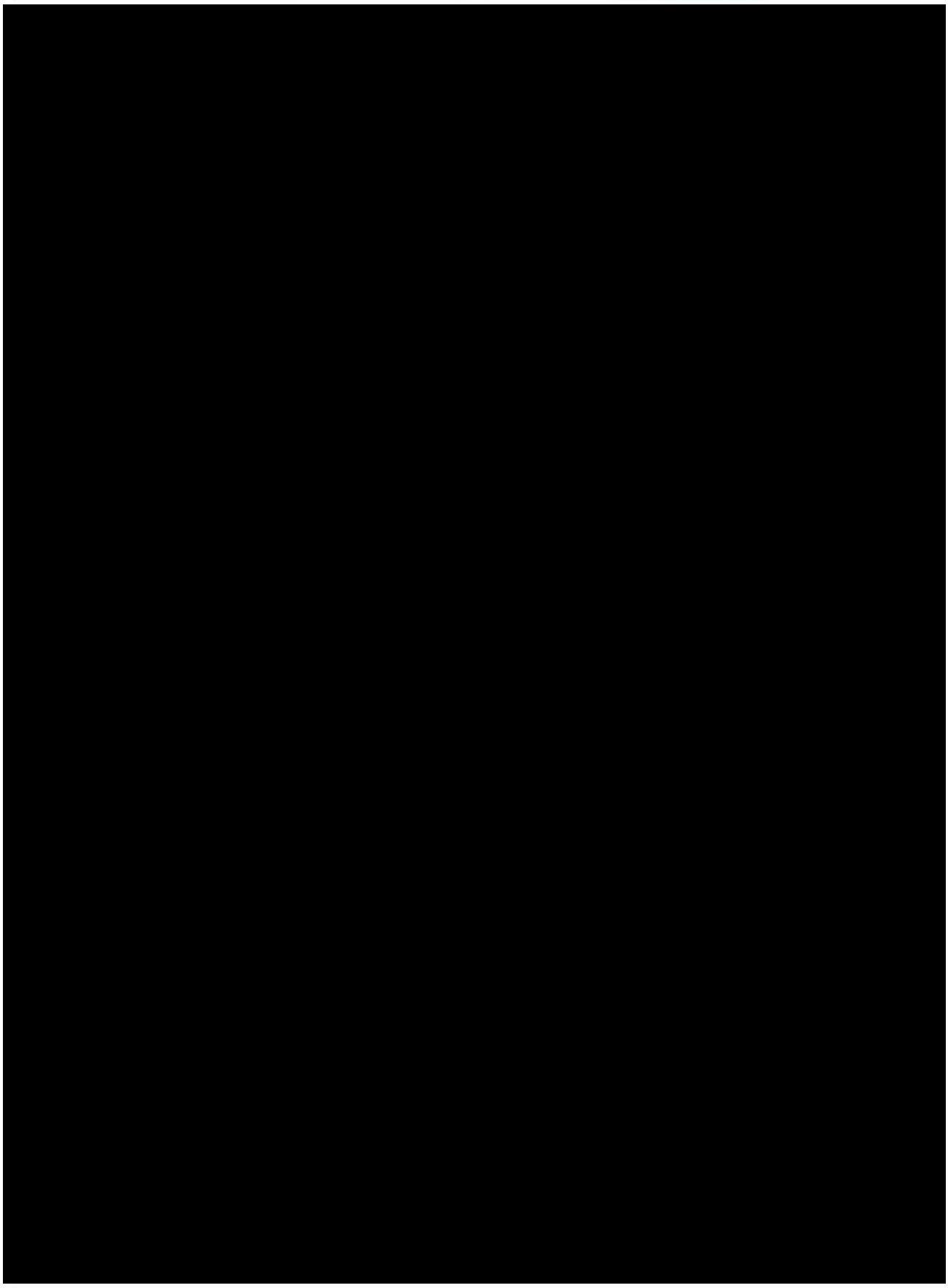


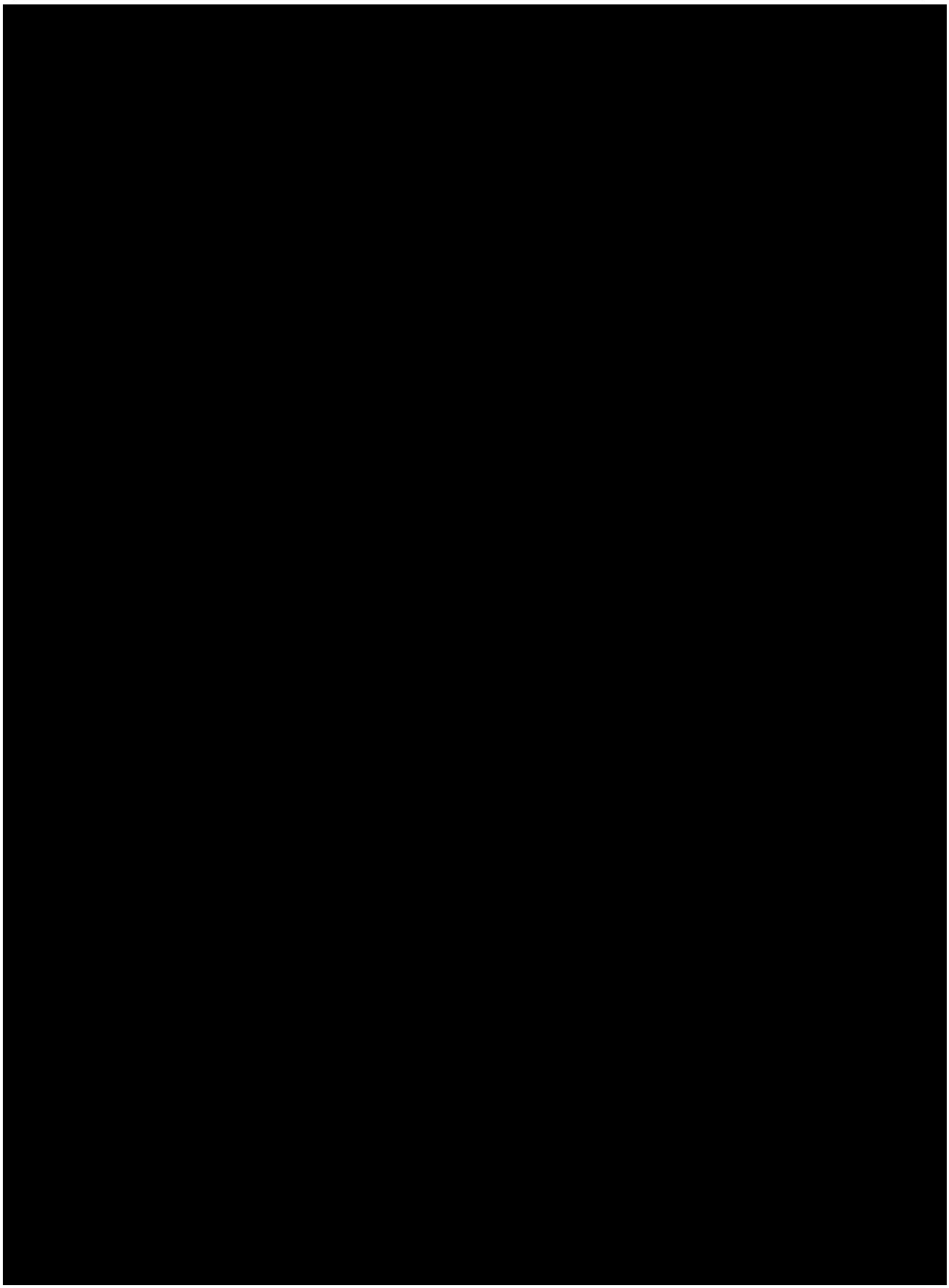


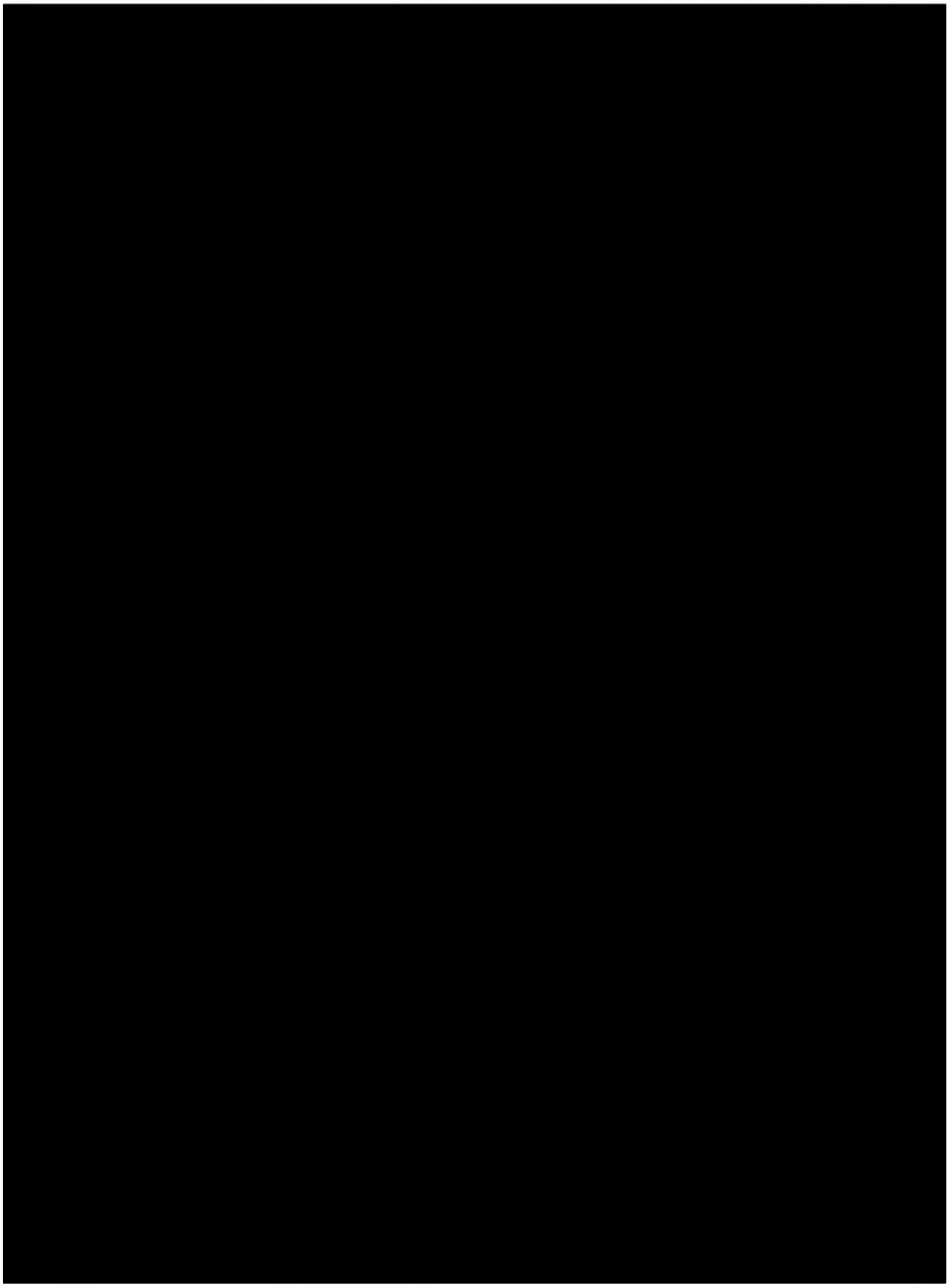


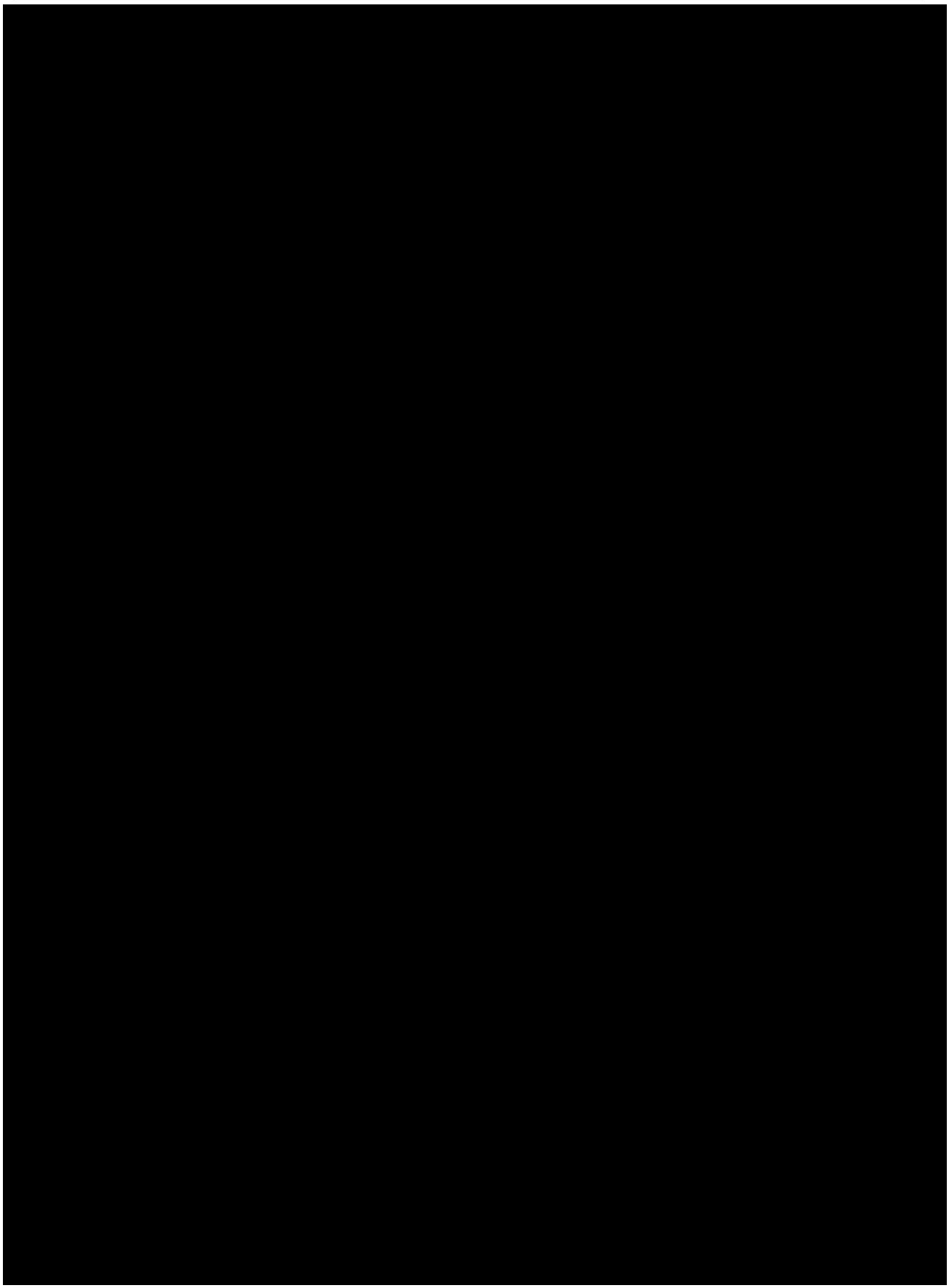


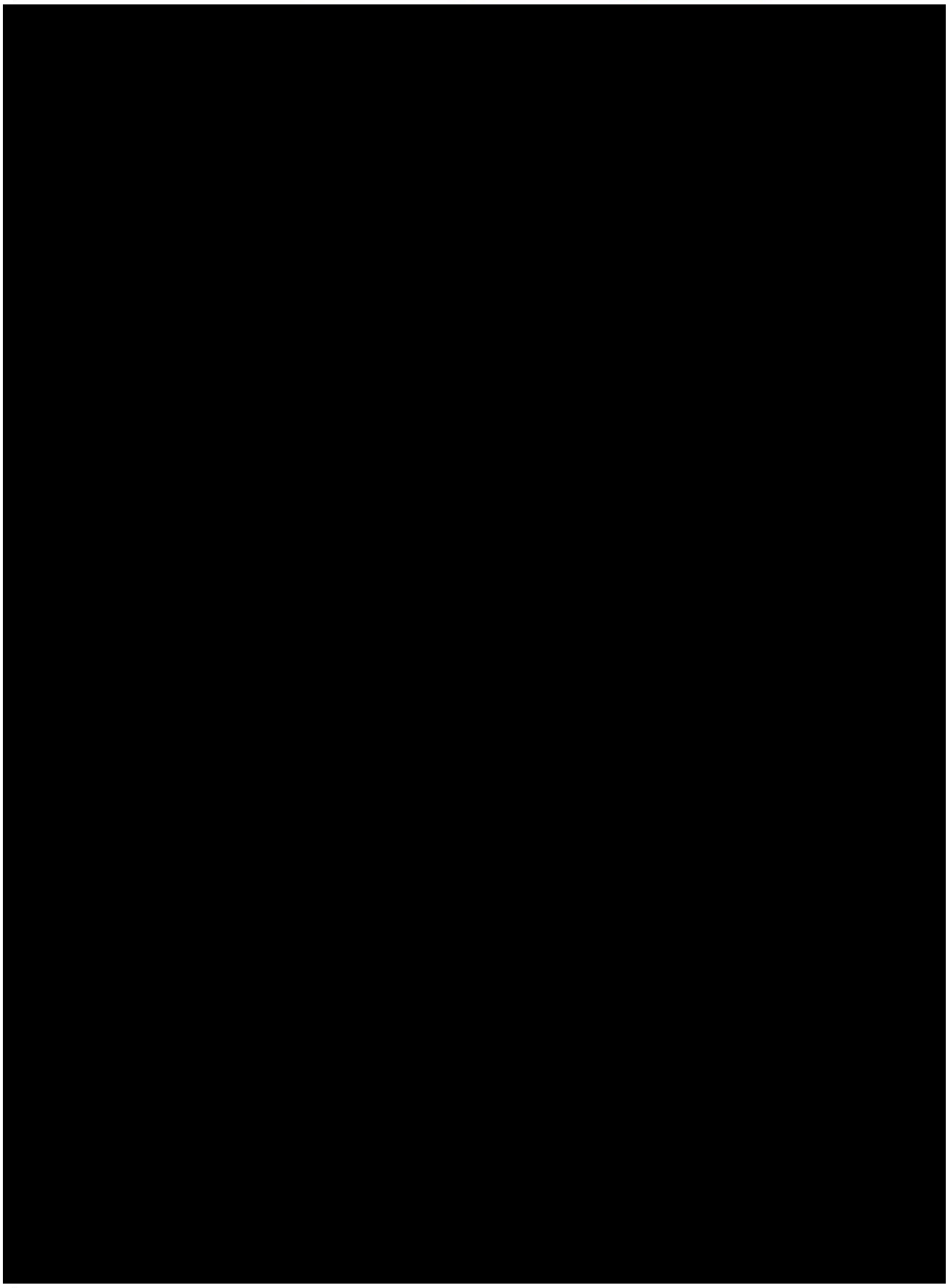


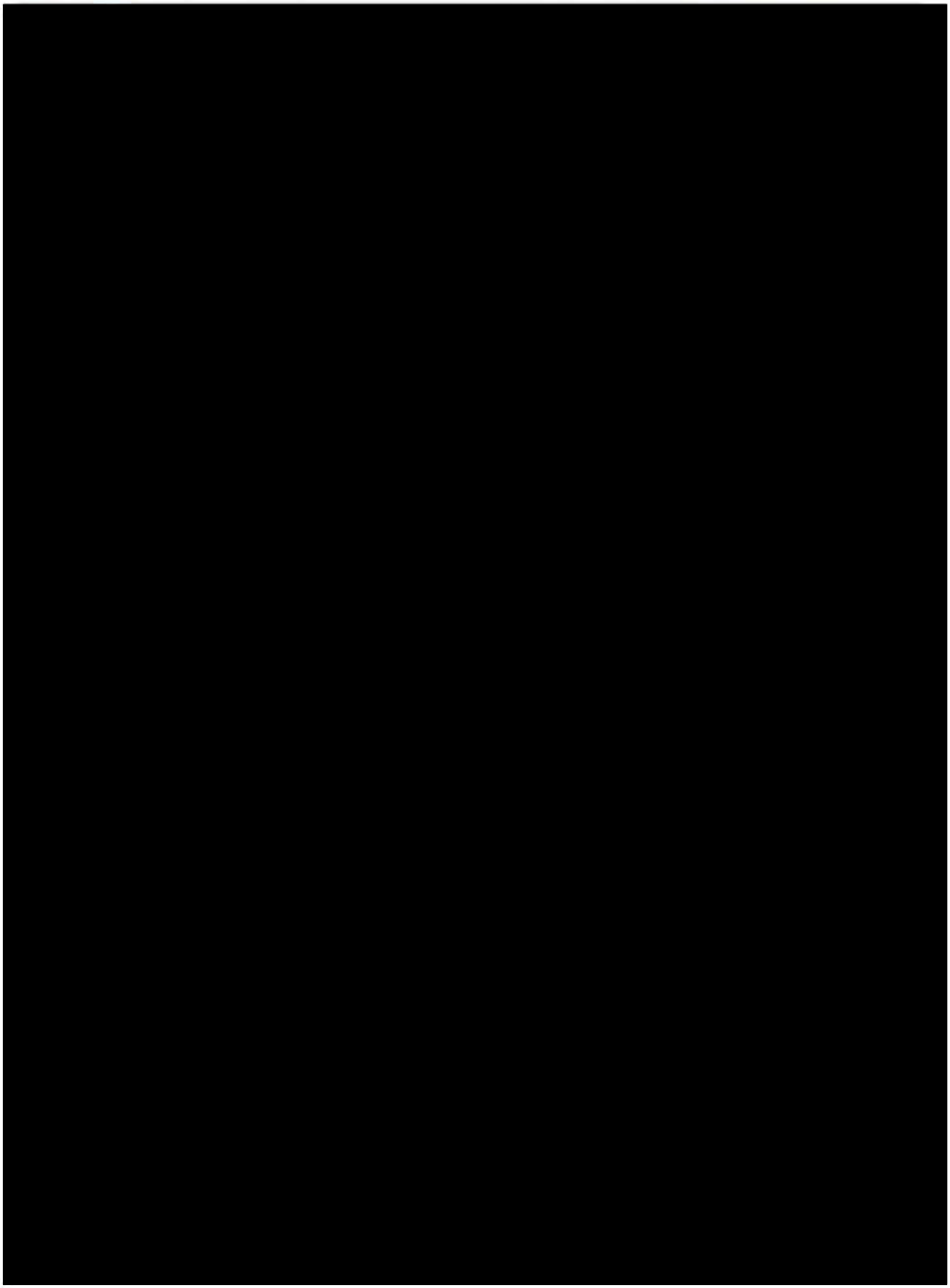


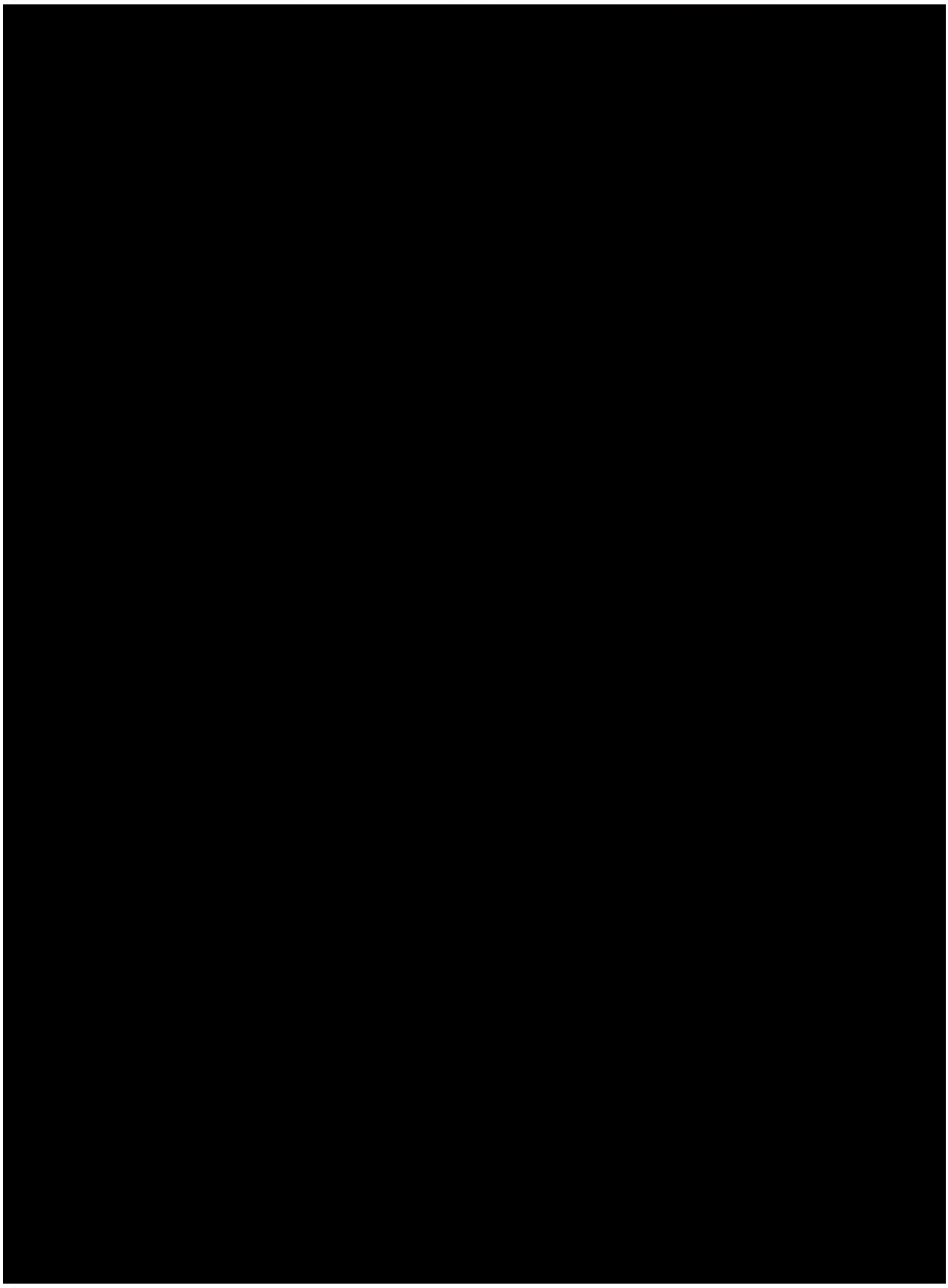


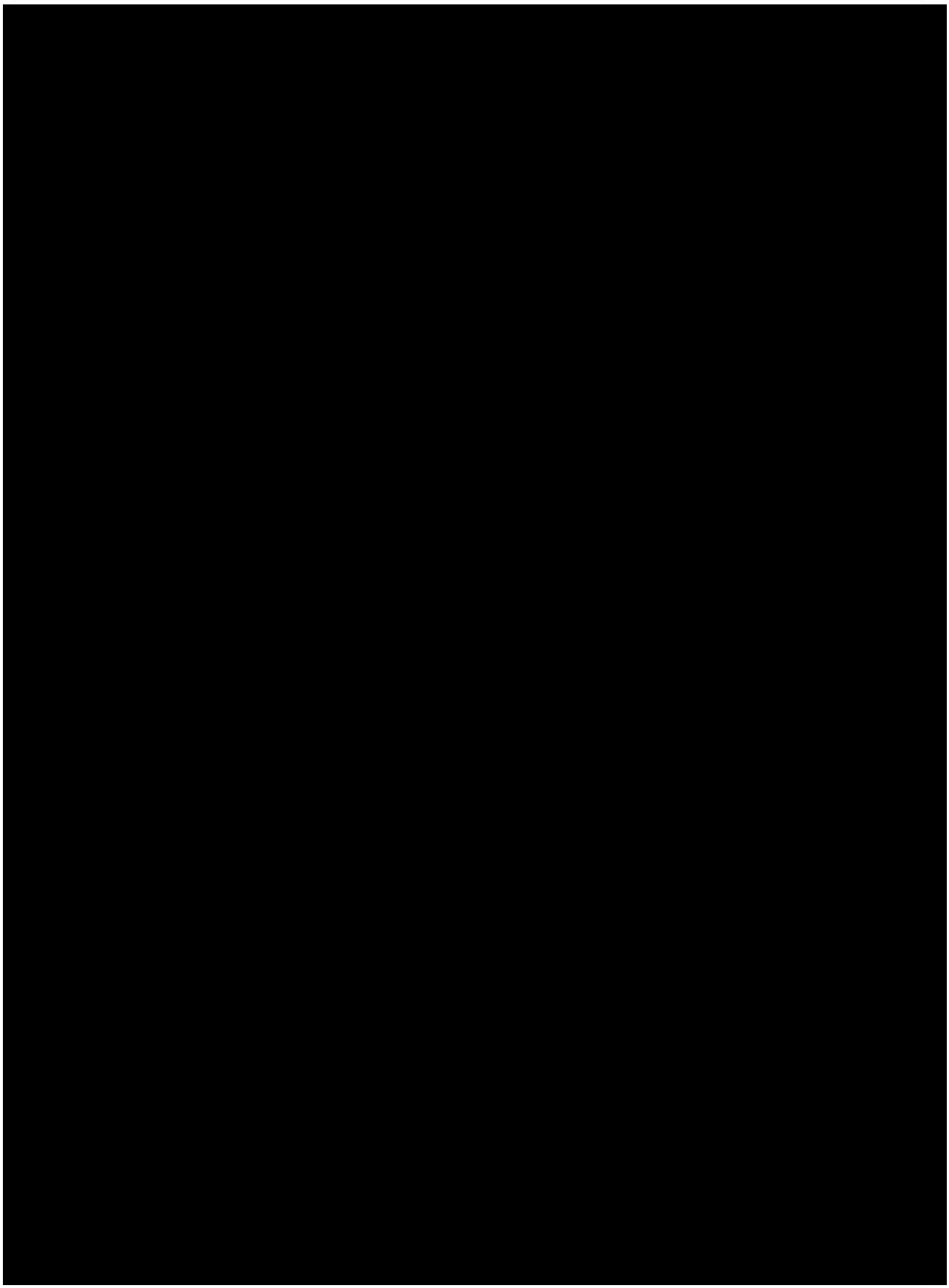


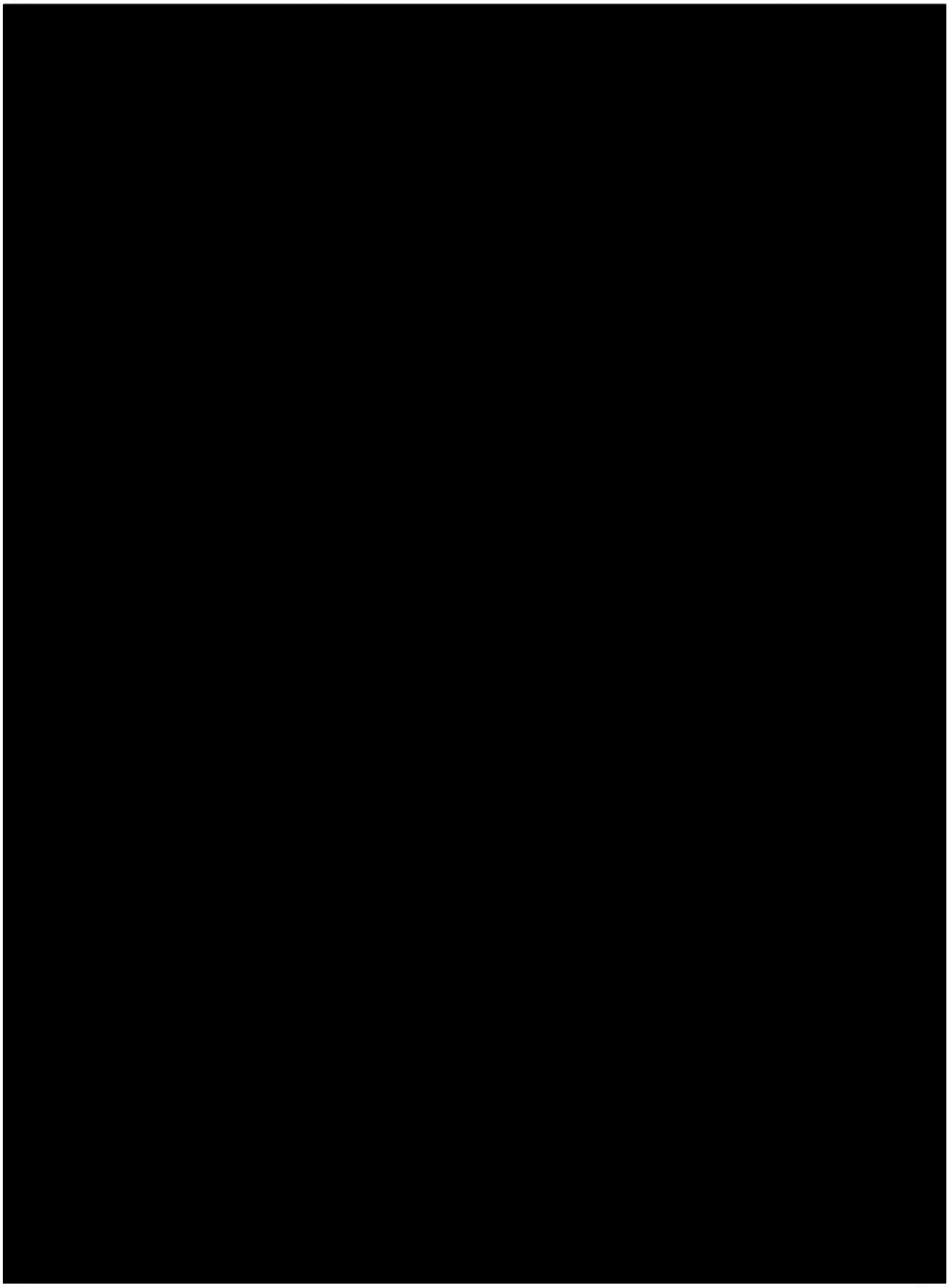


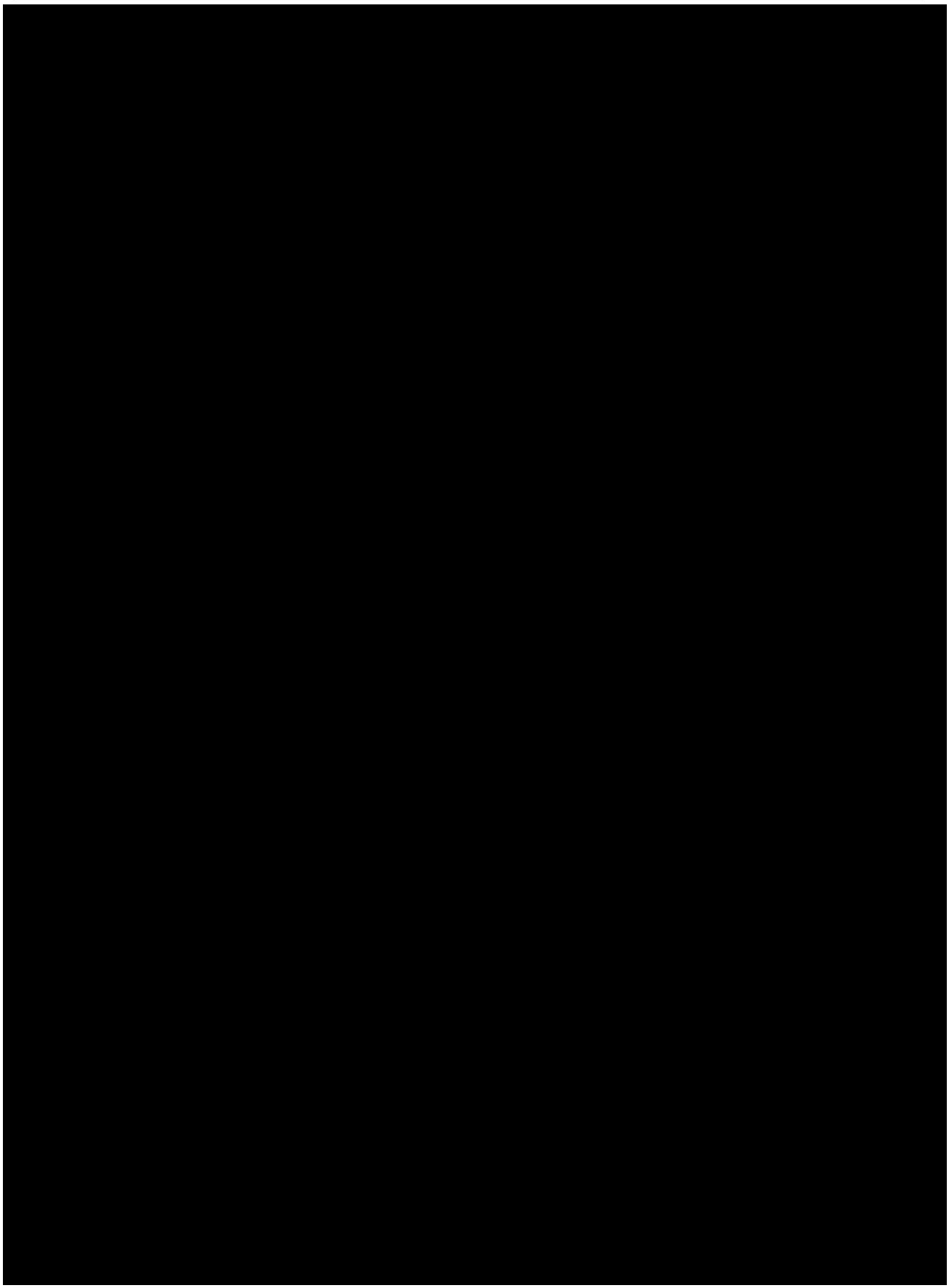


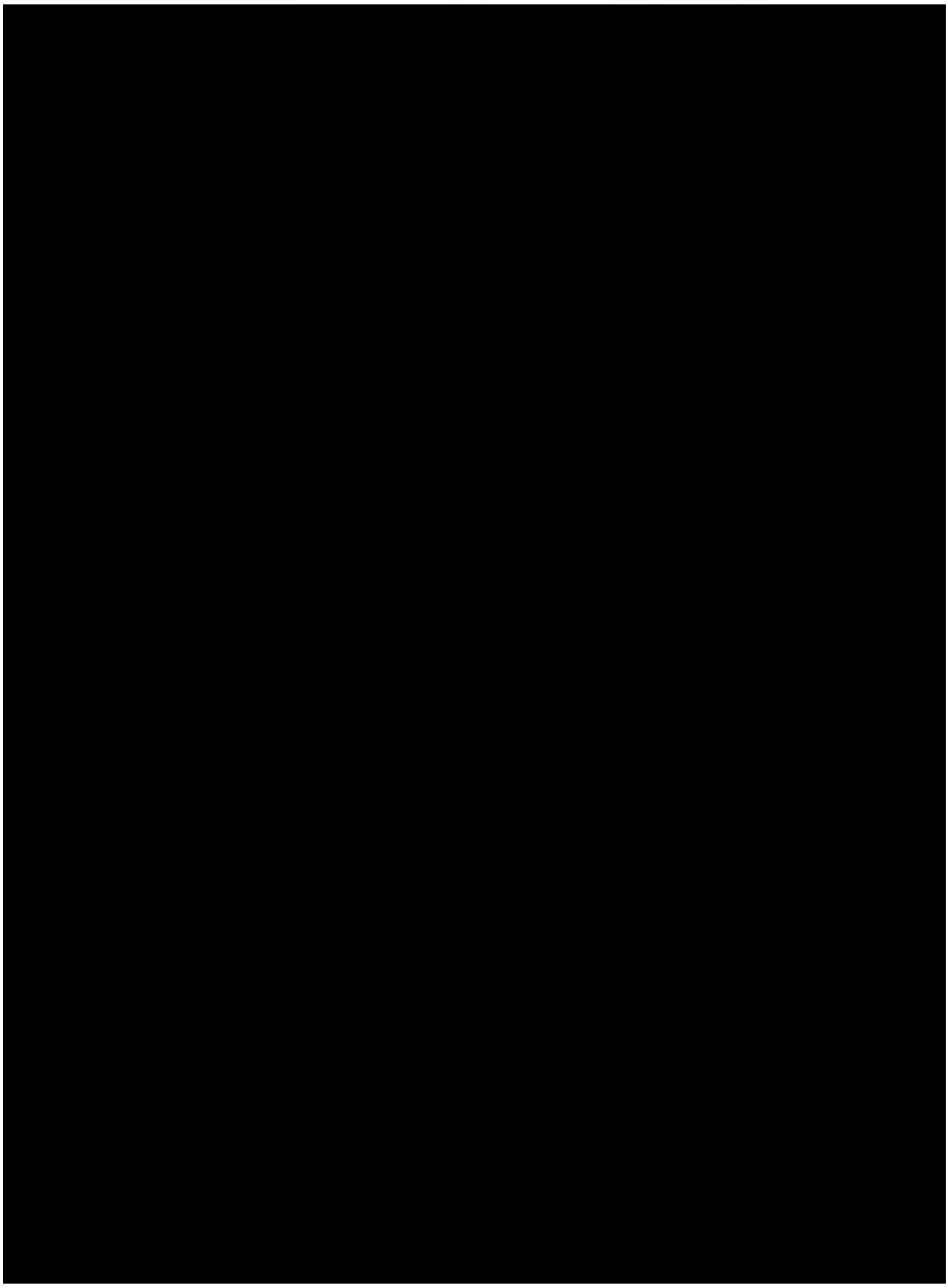


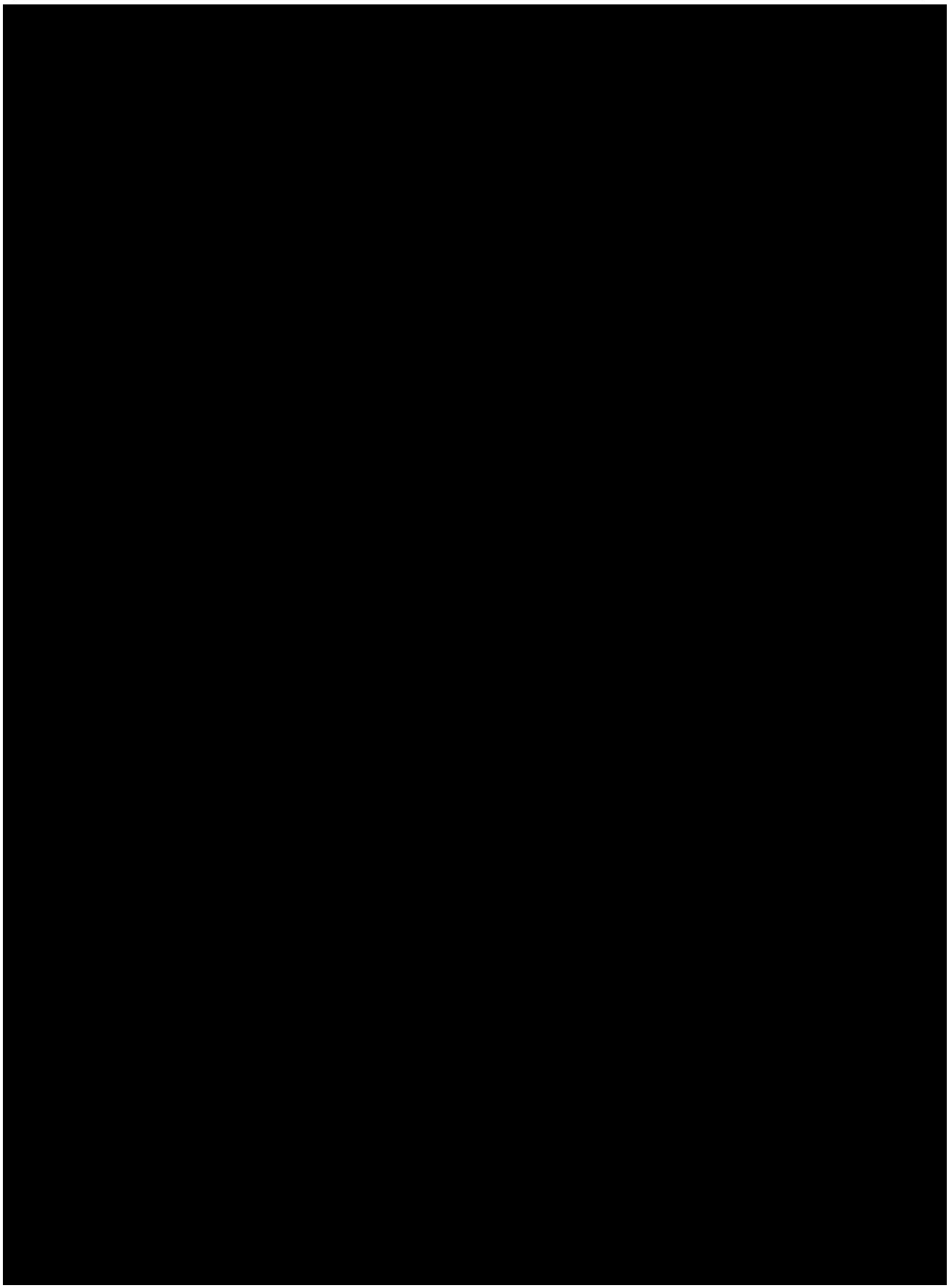


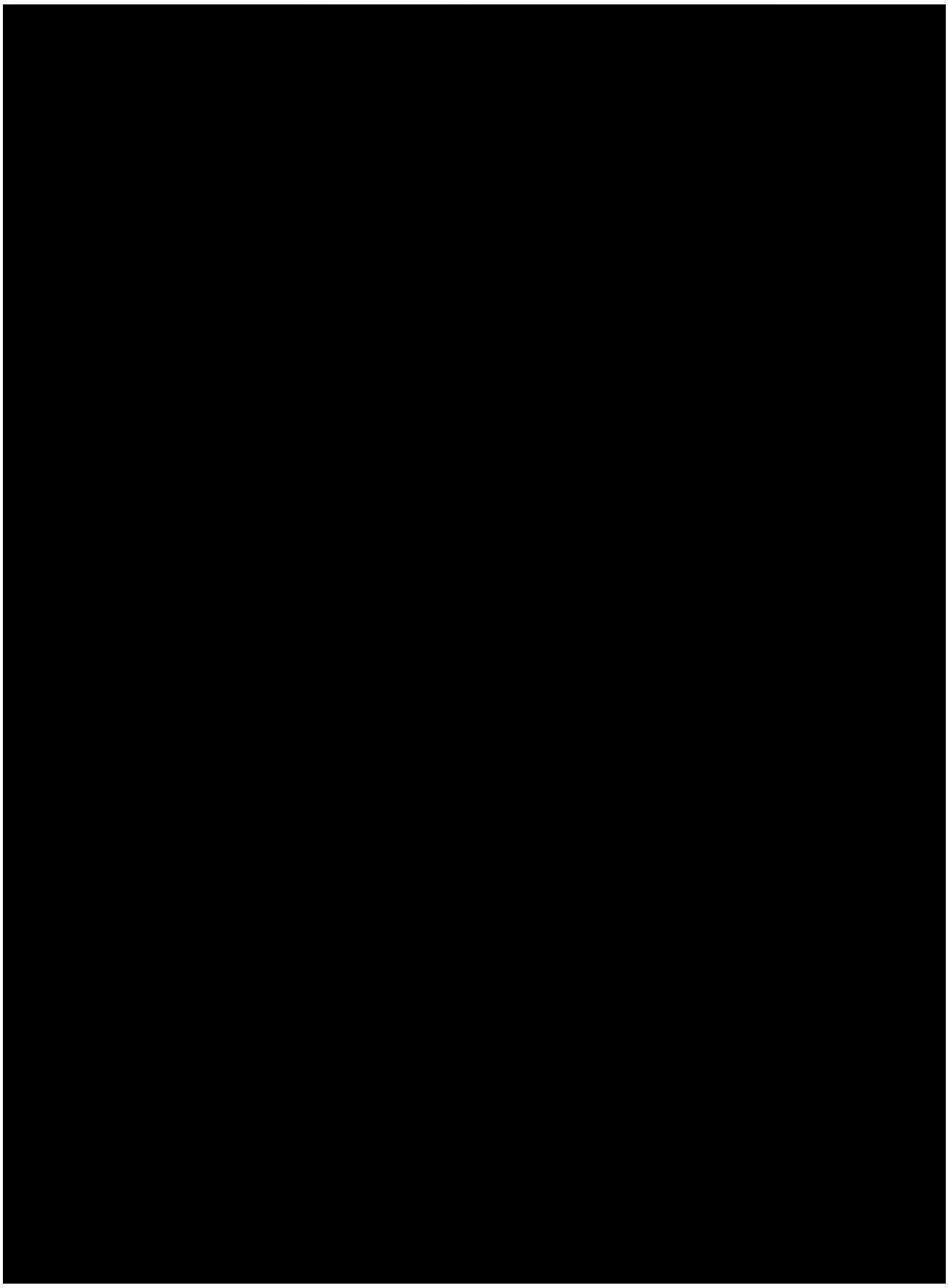


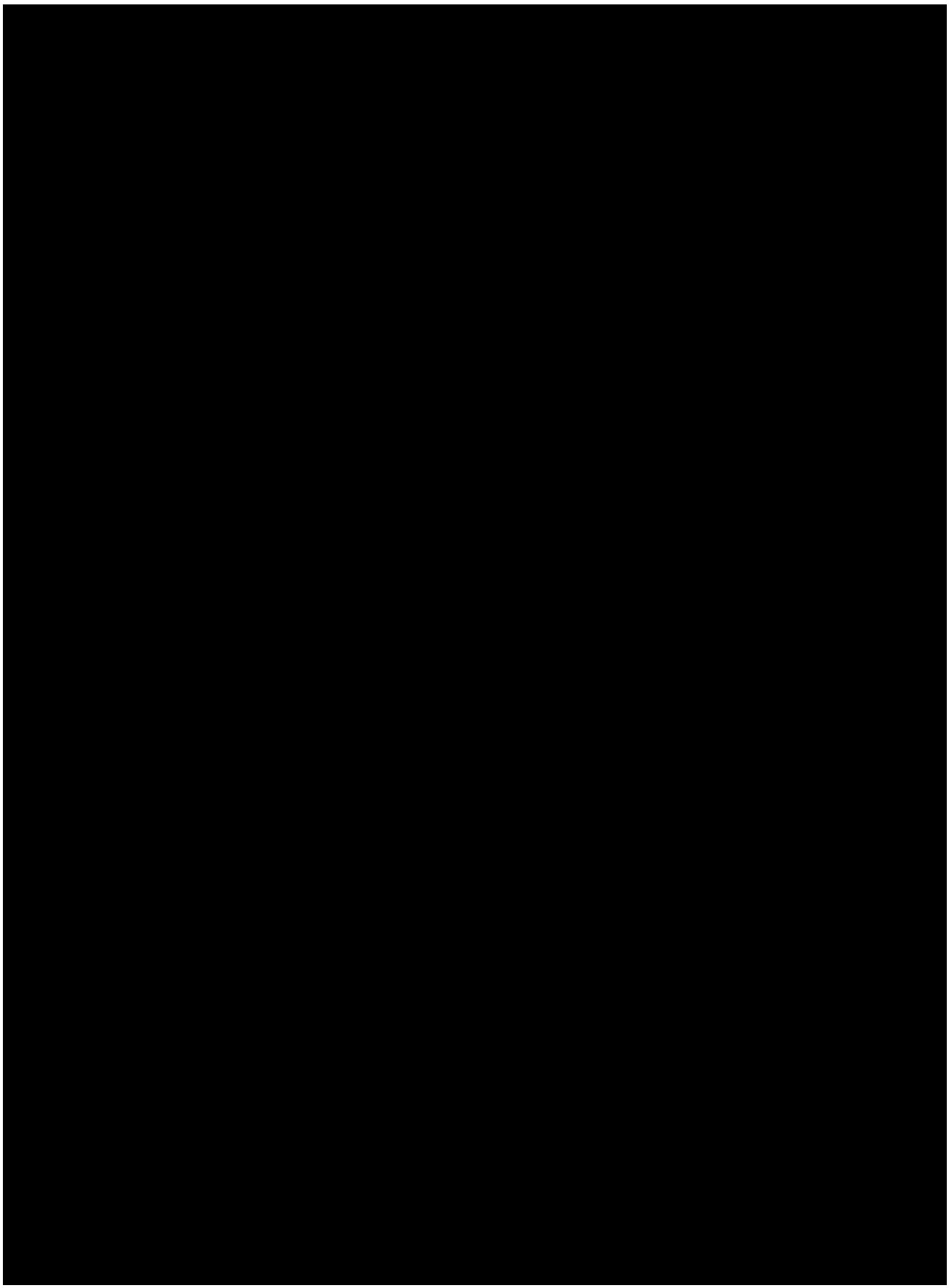


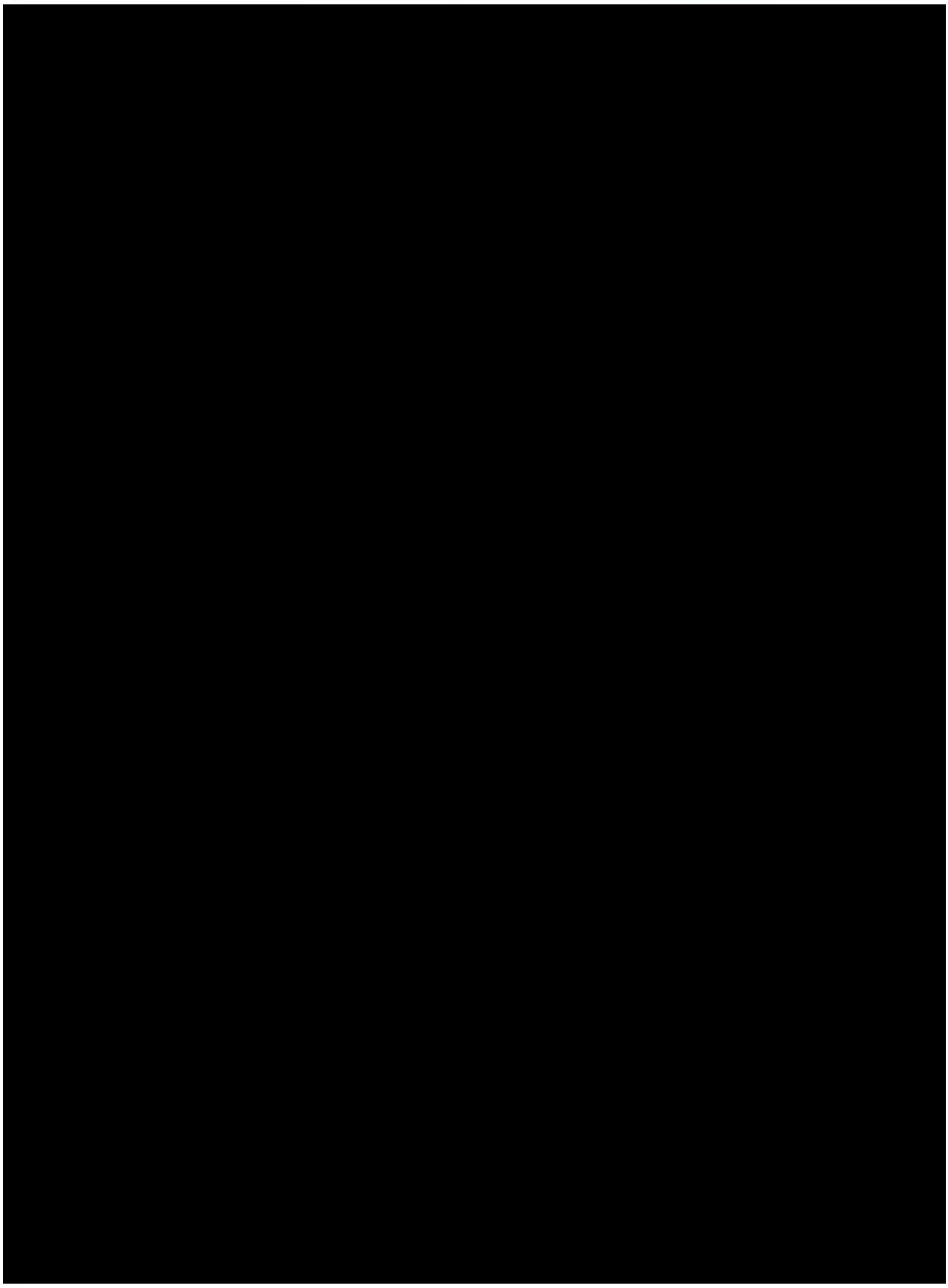


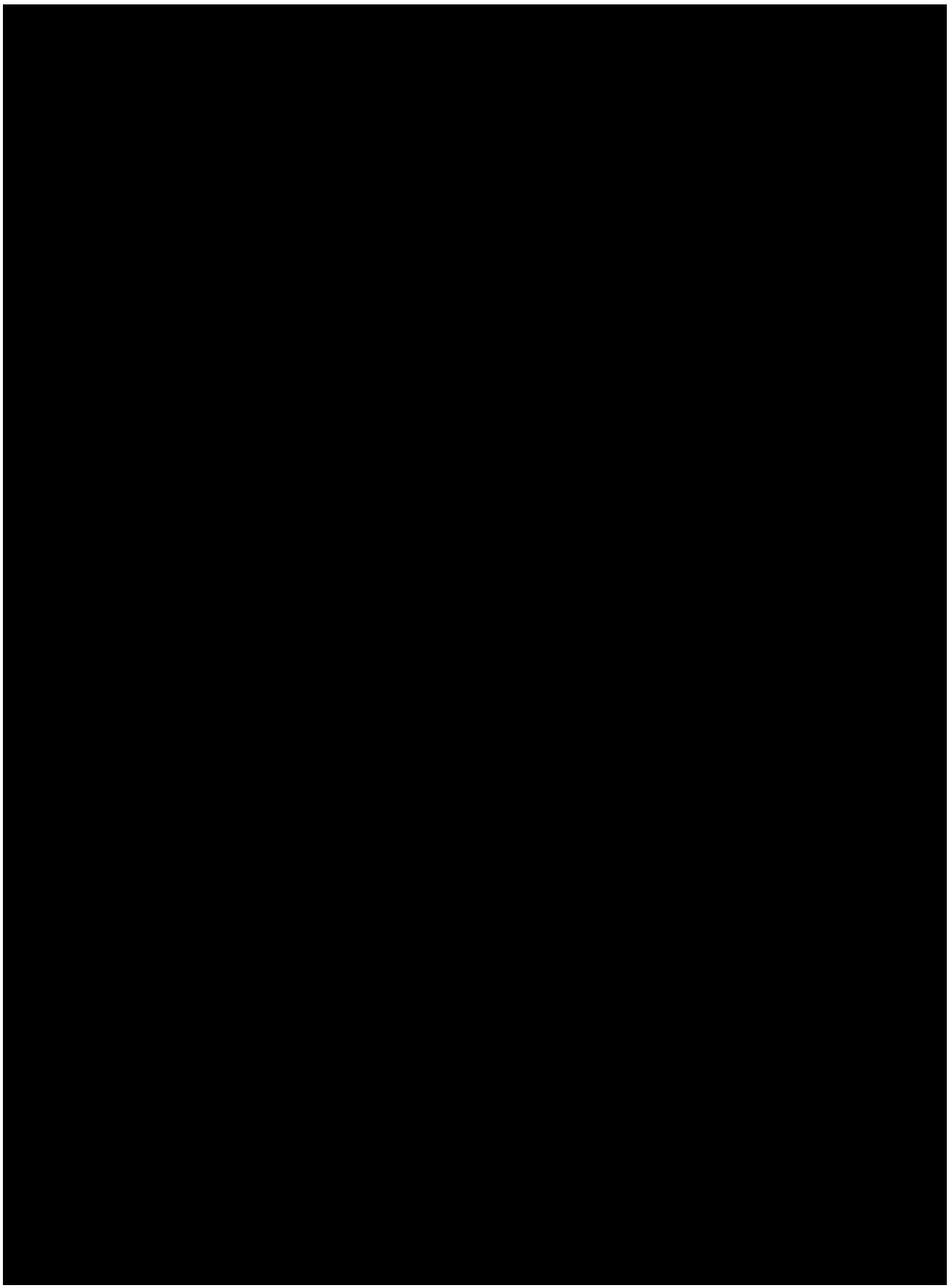


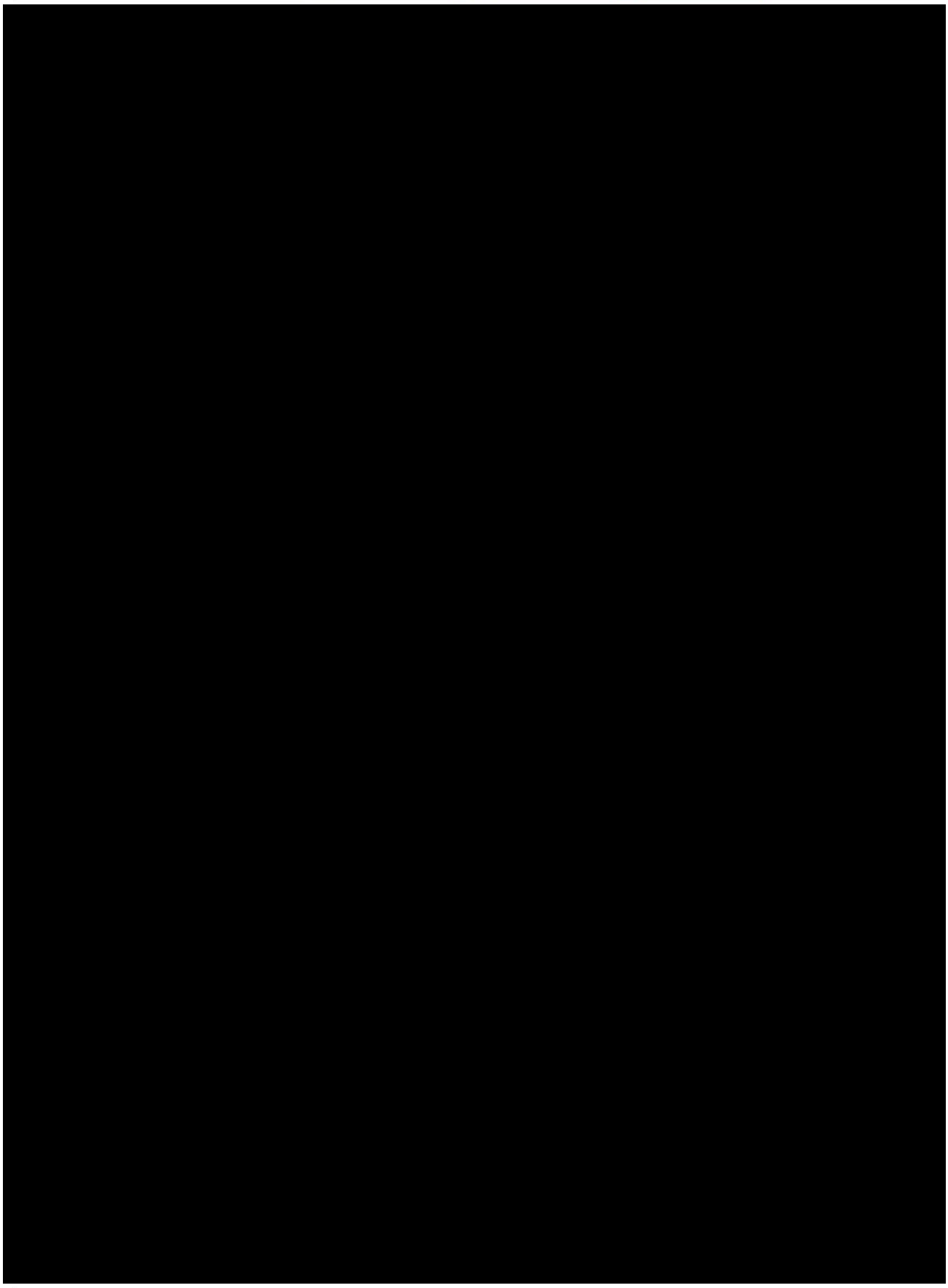


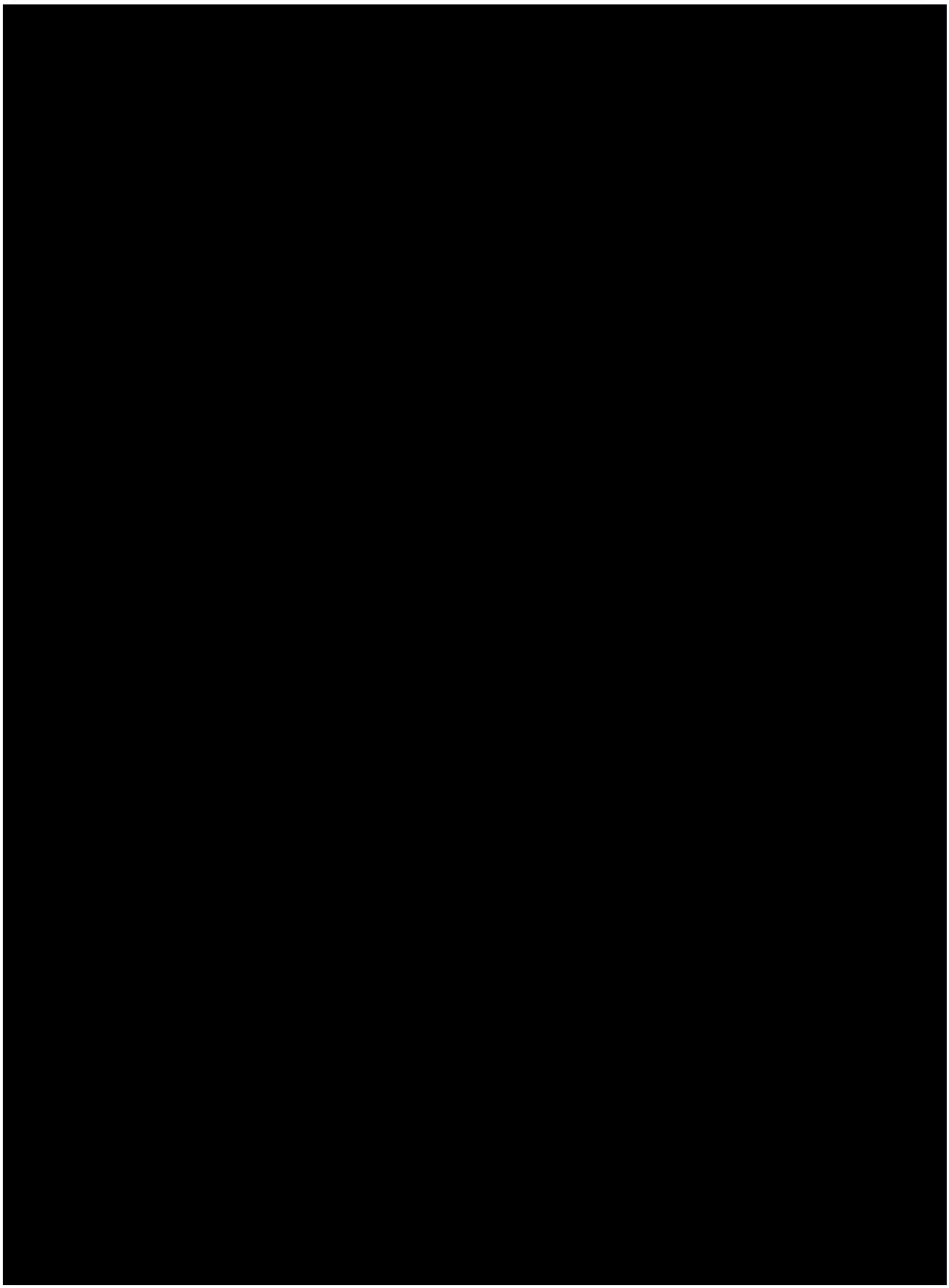


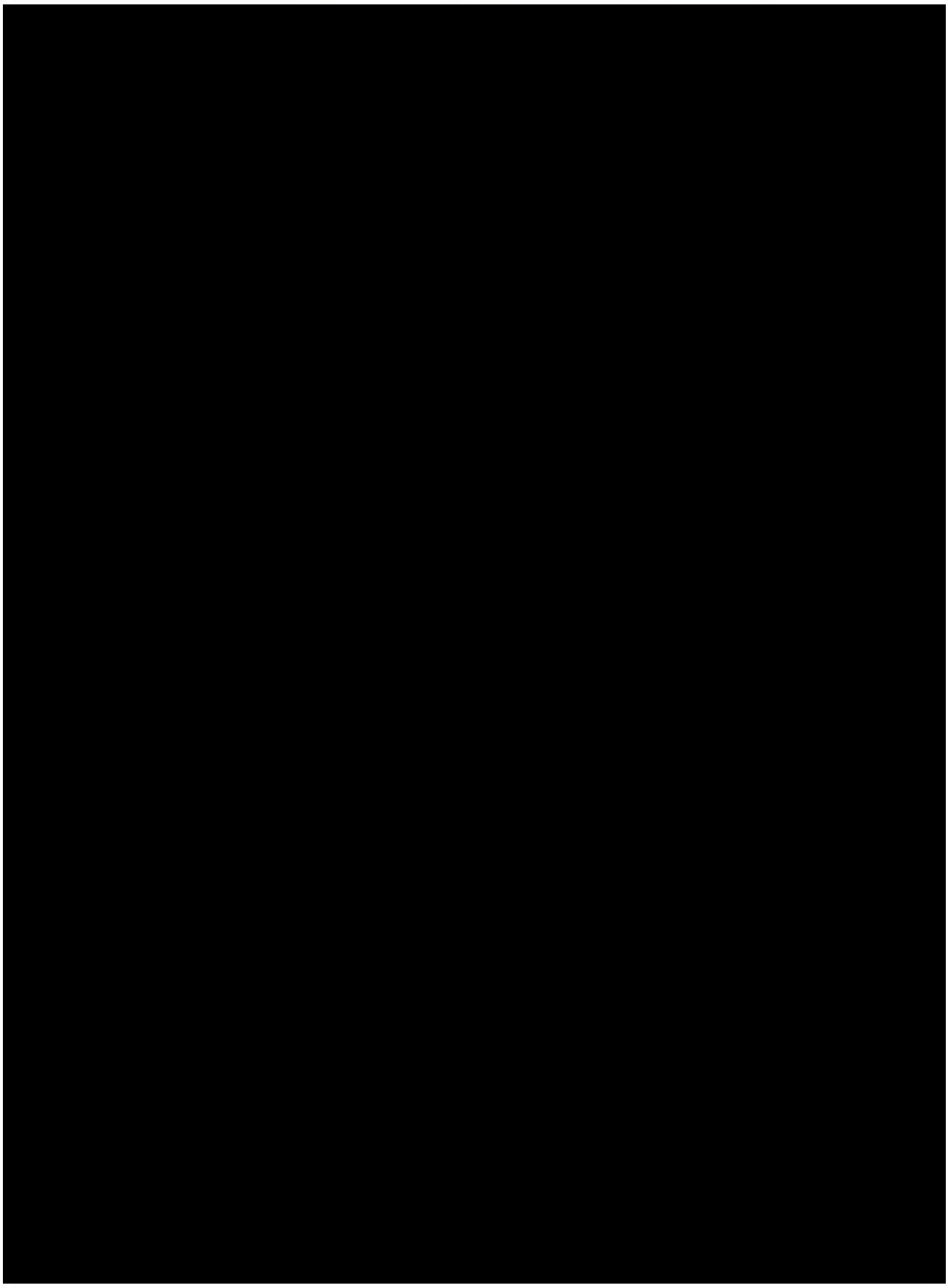


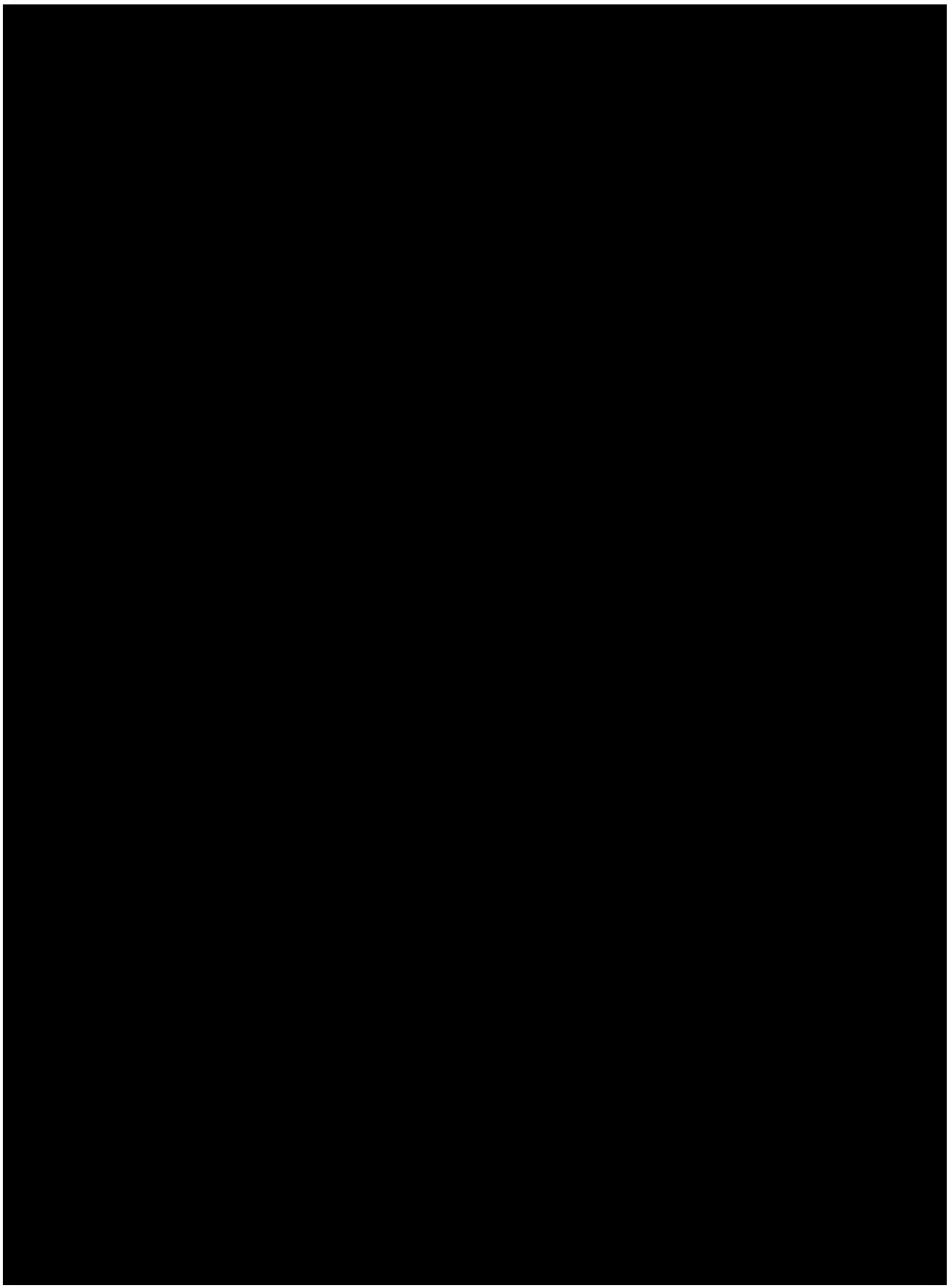












Legal Issues

3.3 Legal Issues

Kiewit-Meridiam Partners has not identified any anticipated legal issues relating to or affecting or anticipated to affect its and/or any Core Proposer Team Member that need to be resolved in order for:

i. Kiewit-Meridiam Partners, assuming it is selected as a Short-listed Proposer, to deliver a Proposal in response to the RFP; and/or;
ii. Kiewit-Meridiam Partners and all its Core Proposer Team Members, assuming Kiewit-Meridiam Partners is selected as Preferred Proposer, to perform its and their anticipated obligations under the Project Agreement or any related agreements, as applicable.

EAST
INTERSTATE
70
Central
Park
Blvd
NPT

TO
EAST
INTERSTATE
70
NPT

Project	Project Description can be found on page…	Construction Value (millions)	Annual O&M Value (millions)	Core Proposer Team Member: Meridiam & Affiliates	Core Proposer Team Member: Kiewit & Affiliates	Core Proposer Team Member: Parsons Brinckerhoff	Core Proposer Team Member: Jacobs	Core Proposer Team Member: Jorgensen	Key Personnel: Tom Howell Design-Build Manager	Key Personnel: Doug Andrew Design Manager	Key Personnel: Abraham Henningsgaard O&M Manager	Key Personnel: Gordon Peterson Quality Manager	Key Personnel: Jenn Bradtmueller Environmental Manager	Key Personnel: Kevin Custy Utilities Manager	Key Personnel: Hunter Sydnor Community/Public Relations Mgr	Extent and Relevance of Kiewit-Meridiam Partners' Demonstrated Experience: Project Financing: TIFIA loan closed by developer	Project Financing: Used PABs or similar	Project Financing: Highway or roadway project	Project Financing: Located in North America	Project Financing: Availability payment model	Design and Construction: Roadway expansion/reconstruction (inc. interchange reconstruction)	Design and Construction: Demolition of existing infrastructure in urban environments	Design and Construction: Major excavation (inc. groundwater/drainage requirements)	Design and Construction: Complex traffic management in urban areas	Design and Construction: Construction staging in confined spaces	Design and Construction: Structures w/ventilation/fire life safety considerations	Design and Construction: Coordination w/RR and/or utility companies	O&M: Infrastructure under similar env. conditions	O&M: Interfaces with adjacent road operators	Workforce Engagement: Workforce development programs (community partnerships, apprenticeships)	Workforce Engagement: Achieve/exceed D/SBE participation goals	Environmental: Air quality monitoring/mitigation in urban environments	Environmental: Noise monitoring/mitigation in urban environments	Meets CDOT Criteria
EQUITY MEMBER REFERENCE PROJECTS (Vol 1. Sec. 4.1.a)																																		
Port of Miami Tunnel and Access Improvements (POMT)	**113**	$607	$8.3	●		●	●									✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	16
North Tarrant Express (NTE)	**125**	$3,000	$30.0	●			●									✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	16
Goethals Bridge Replacement Project (Goethals Bridge)	**137**	$938	$6.0		●											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	18
Northeast Anthony Henday Drive (NEAH)	**149**	$1,080	$9.6	●													✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	17
Region of Waterloo Stage 1 Light Rail Transit (Waterloo LRT)	**159**	$397	$15.0	●	●	●											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	16
LEAD CONTRACTOR REFERENCE PROJECTS (Vol 1. Sec. 4.1.b)																																		
Dallas/Fort Worth (DFW) Connector	**173**	$916	$3.3		●	●	●		●			●	●		●						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	13
Southeast Corridor Multi-Modal (T-REX)	**187**	$1,180	N/A		●		●		●			●		●	●						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	13
Port Mann and Highway 1 Improvements (PMH1)	**199**	$1,960	N/A		●	●															✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	13
Denver Union Station (DUS) Transit Improvements	**211**	$336	N/A		●	●	●		●				●	●	●						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	13
Downtown Tunnel/Midtown Tunnel/Martin Luther King Extension (Midtown Tunnel)	**223**	$1,460	N/A		●	●				●						✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	17
I-225 Rail Line (LRT)	**235**	$410	N/A		●	●	●		●				●	●	●						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	13
LEAD ENGINEER REFERENCE PROJECTS (Vol 1. Sec. 4.1.c)																																		
Dallas/Fort Worth (DFW) Connector	**245**	$916	$3.3		●	●	●		●			●	●		●						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	13
Dallas Horseshoe (The Horseshoe) Design Build	**259**	$718	N/A			●															✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	13
I-4 Ultimate Project	**267**	$2,320	N/A				●									✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	16
I-275 Design Build (I-275)	**275**	$215	N/A			●															✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	12
Ohio River Bridges East End Crossing (P3)	**283**	$763	N/A			●	●										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	17
I-15 South Corridor Design Build (I-15 South)	**291**	$246	N/A				●			●											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	13
LEAD OPERATOR REFERENCE PROJECTS (Vol 1. Sec. 4.1.d)																																		
I-595 Corridor Roadway Improvements (I-595 Express)	**299**	N/A	$3.7					●			●					✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	17
I-495 Express Lanes with Dynamic Tolling (I-495 Express)	**311**	N/A	$3.5					●			●					✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	15
Roadway Maintenance Services for Harris County Toll Road Authority (HCTRA)	**321**	N/A	$12.2					●													✓		✓	✓	✓	✓	✓	✓	✓	✓				9
IH 635 Managed Lanes (LBJ Express)	**329**	$2,100	$22.0	●			●									✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	17

SAFEWAY
NPT

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

Submitted as Equity Member Project #1

- ☒ Equity Member: **Meridiam**
- ☐ Lead Contractor
- ☐ Lead Engineer
- ☐ Lead Operator
- ☒ Joint venturer in Lead Operator: **Meridiam;** Lead Engineer: **Jacobs; Parsons Brinckerhoff,** Owner's Rep
- ☒ Affiliate of Equity Member: **Meridiam**

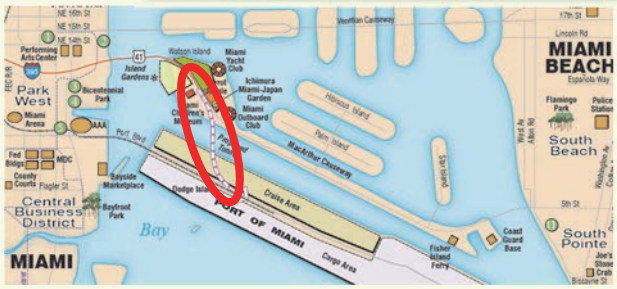
FORM F: PROJECT/TRANSACTION DESCRIPTION

No.	Required Information	Response
I. BACKGROUND INFORMATION		
(1)	**Project Name**	**Port of Miami Tunnel and Access Improvements (POMT)**
(2)	**Type of Facility**	Tunneling project with twin tunnels bored underwater, bridge widening, and roadway improvements at a port facility.
(3)	**Owner/ Procuring Authority**	Florida Department of Transportation (FDOT)
(4)	**Brief Description of Project**	

POMT is a $607 million DBFOM project for new 0.75 mile twin tunnels under Government Cut (a shipping channel for the Port of Miami). The scope included widening of the MacArthur Causeway Bridge from three to four lanes in each direction, access roadway renovation and expansion along with the operations and maintenance of the tunnel and associated facilities. The project is a 35-year concession with a construction period of 4.5 years and availability-based revenues. It links the seaport and highways I-395 and I-95 by connecting SR A1A/MacArthur Causeway to Dodge Island to alleviate a congested urban environment while facilitating development of the cruise liner and goods transportation markets.

Why we included POMT:

- Successful financial close during the financial crisis of 2008/9
- Twin tunnels with complex excavation, drainage and life/safety solutions
- Introduction of $341M in TIFIA financing by developer
- Multiple team members involved



POMT is located between Miami and Miami Beach

The project demonstrates Meridiam's commitment and capacity to reach financial close using TIFIA and private debt despite very difficult economic conditions. At the height of the financial crisis of 2008/9, Meridiam was able to utilize its global relationships with financial institutions to close a 10-bank club deal, concurrently encouraging TIFIA to lend to a new project. Project awards include Project Finance International's - Americas PPP Deal of the Year 2009 and Infrastructure Investor's – Global PPP Transaction of the Year 2009.

(5)	**Contract Term**	35-year concession agreement – 10/2009 – 10/2044
(6)	**Current Status**	Complete and in operation since 08/2014 (final acceptance 11/2014)

(7) **Key Dates and Milestones**

Contract Milestone	Contracted Dates	Actual
Contract execution	10/15/2009	10/15/2009
Financial Close	0 months 10/2009	0 months 10/2009
Commencement of design	0 months 10/2009	0 months 10/2009
Commencement of construction	12 months 10/2010	7 months 05/2010
Achievement of Substantial Completion	55 months 05/2014	58 months* 08/2014
Service/Operations Commencement	55 months 05/2014	58 months 08/2014
Achievement of Final Completion	58 months 08/2014	61 months 11/2014
End of Service/Operations	35 years 10/2044	35 years 10/2044

*Substantial Completion Delay:
While all significant construction work was completed by the contracted Substantial Completion Date, the commissioning process highlighted issues with the tunnel ventilation and drainage systems which prevented the opening to traffic. Once further testing, repairs, and safety checks were complete the tunnel opened to traffic, to achieve Substantial Completion a total of 76 days beyond the anticipated date. FDOT was not impacted by the delay.

(8) **Relevance to the Project**

Substantive Evaluation Criteria, Other Relevant Criteria

The project includes the following items of financial relevance to I-70 East:

- **Project financing with a TIFIA loan closed by a project developer |** Meridiam managed to secure a $341 million TIFIA loan as part of the financing of the project despite it not being initially identified as a financing source.
- **Financed project was a highway or road project |** The project tunnel is part of an urban highway system and is a critical piece of transportation infrastructure for the city, county, and state.
- **Financed project was located in North America |** POMT is in a highly confined urban area and connects downtown Miami, Florida, to the Port of Miami, one of the world's largest cruise terminals. The POMT project creates a direct point of entry to the Port of Miami from I-395, removing a decades-long bottleneck in the transportation network that also reduces truck traffic on the local streets and increased safety throughout the community.

  This project not only improved the existing operations of a port facility, but also allowed the facility to accept the larger ships coming from the expanded Panama Canal.

- **Participation as an equity member in projects using an availability payment model |** An Affiliate of Meridiam is the majority equity member in the developer and the project uses an availability payment model.

Technical elements of direct relevance to I-70 East include:

MAT's tunnel boring machine manufactured specifically for POMT

- **Roadway expansion (including interchanges) |** POMT involves not just boring twin tunnels, but also widening the MacArthur Causeway Bridge from three to four lanes in each direction including associated interchanges to connect into existing highways.
- **Demolition of existing infrastructure |** The project includes demolition of urban infrastructure due to the MacArthur Causeway relocation and ramp connections to the tunnel (on Watson Island).
- **Major excavation and drainage issues |** Associated with twin bored tunnels under the main channel and depressed U-wall sections and cut-and-cover tunnel sections used to form the transition to the tunnel portals on both Watson Island and the Port.
- **Complex traffic management in urban setting |** On ramp connections and roadway improvements/reconstruction on Dodge Island.
- **Construction staging in a confined space |** To accommodate modified roadway circulation plan with grade-separated roadways on Dodge Island, phasing was critical.
- **Structures including ventilation and fire life safety considerations |** ventilation systems are included for air quality maintenance through the tunnel. Eight air quality monitoring sensors drive the tunnels' 44 tunnel ventilation fans.

POMT emergency exits, one of many features to ensure safety within the tunnel

- **Extensive safety mechanisms |** A tunnel such as the POMT requires evacuation and fire plans. In addition, the structure has hurricane protection systems, namely flood gates at each end of the tunnels.
- **Road operator interfaces |** Interfaces are managed between the project company's operations of the tunnel and adjacent FDOT and Port Miami operators. Tunnel operations are redundant with capabilities for control from either Dodge Island or Watson Island Operations Buildings.

- **Workforce, subcontractor and stakeholder engagement |** The project company led its subcontractors to have the project contract with a total of 831 companies which translates to a total of $325 million in contracts awarded, with 465 being local Miami-Dade County businesses.
- **DBE goals for the project |** The goal of 8.1% DBE participation was exceeded.
- **Noise monitoring and mitigation |** The project identified acceptable noise level criteria and alleviated noise in the community in order to protect local residents and busy visitor attractions such as the Miami Children's Museum, Jungle Island, and the Miami World Trade Center.

President Obama speaking about the importance of investing in infrastructure at POMT

- **Air quality monitoring and mitigation |** The air monitoring system frequently checks carbon monoxide concentration levels in the tunnels to ensure that air quality is safe for motorists using the tunnel. Measures to prevent the emission of greenhouse gases have been implemented by selecting concrete mixes with high fly ash proportions. Fly ash partially displaces the production of other production intensive concrete ingredients, resulting in energy savings and reductions in greenhouse gas emissions.

Relevance to the I-70 East Project (as described in Sections 8, 22, and 27)					
☒	TIFIA closed by developer	☐	PABs	☒	Highway/road financing
☒	Financed/located in North America	☒	Availability Payment model	☒	Rdwy/IC exp/reconstruction
☒	Construction staging, confined space	☒	Road operator interfaces	☒	Urban infrastructure demo
☒	Ventilation/fire life safety	☒	Workforce development programs	☒	Major excavation work
☒	RR/utility coordination	☒	Meet/exceed DBE	☒	Complex urban traffic mgmt.
☐	Infra w/similar env conditions	☒	Air quality monitoring/mitigation	☒	Noise monitoring/mitigation

II. DESCRIPTION OF TEAM MEMBER INVOLVEMENT

(9) **Proposer Team Member(s) Involved**

Meridiam is involved in POMT through its Affiliate, MAT Concessionaire LLC, a 90% equity member of the project company at time of financial close.

MAT Concessionaire LLC is controlled by its fund manager, Meridiam SAS, who has full ownership of Meridiam Infrastructure North America Corp., the fund manager to MNII Fund (the Financially Responsible Party for Meridiam's Equity Member, Meridiam I-70 East CO, LLC). Meridiam SAS and MNII Fund's experience will be made available to and applied by Meridiam I-70 East CO, LLC in the context of the Project as both entities share the same senior management.

The period from issuance of the RFP to the short-listed proposers to

		financial close took nearly 36 months. 15 months into the process, in February 2008, the owner, FDOT, selected the MAT Consortium as preferred proposer. Shortly thereafter, in March 2008, Meridiam was contacted by the MAT consortium and asked to join this consortium as equity investor. Following such request, Meridiam started a detailed due diligence process, during which it collaborated closely with the members of the preferred proposer with regard to the further development of the project towards commercial close. In November 2008, in a time of global financial crisis, Meridiam's due diligence process culminated in investment approval and a commitment letter to both the MAT consortium and FDOT. Despite this sign of confidence from Meridiam, FDOT announced in December 2008 that it could not reach an agreement with the MAT consortium due to financial difficulties. Over the following months, Meridiam led further negotiations with FDOT and all stakeholders, reset a number of commercial terms, and brought TIFIA and a group of banks into the project, all to allow FDOT to officially continue the procurement process. The project finally reached financial close in October 2009 and Meridiam invested equity at the same time as the other original investor. Meridiam's involvement in the project development for more than half of the procurement process was crucial to the completion of the procurement and the achievement of financial close. Other Proposer Team Members Involved: Jacobs and Parsons Brinckerhoff
(10)	**Role of Proposer Team Member(s)**	Meridiam and Affiliates – **Equity Member** Jacobs – **Lead Engineer** Parsons Brinckerhoff served as Owner's Representative In addition, Barclays acted as financial advisor
(11)	**Key Personnel, Roles, and Responsibilities**	No Key Personnel were involved. **Value-Added Personnel |** From Section 2.1.3b also on the POMT project include Jane Garvey, John Dionisio, and Stephen Howard.
III. REFERENCE		
(12)	**Name**	[redacted]
(13)	**Title & Employer (current)**	[redacted]
(14)	**Title & Employer (at time of project/ transaction)**	[redacted]
(15)	**Phone & Email**	[redacted]

(16)	**Location & Time Zone**	[redacted]
(17)	**Other**	[redacted]
IV. TECHNICAL INFORMATION		
(18)	**Construction Value**	$607 million
(19)	**Completion within/above Budget**	Completed within budget under a fixed-price DB contract
(20)	**O&M Value**	Approximately $8.3 million annually
(21)	**Length of Road under Operation (centerline miles)**	Two centerline miles of roadway with 0.75 centerline miles of twin (2) bored 43 ft. diameter tunnels, 0.5 centerline miles in bridge widening and 0.75 centerline miles of roadway improvements
(22)	**Key Technical Challenges and Solutions Implemented**	

Similar to the Colorado I-70 East Project, POMT presents a range of relevant technical challenges. Meridiam has led the development of one of Miami's most critical flagship infrastructure projects. POMT is in the heart of Miami, and a crucial connection for its global cruise tourism and container cargo industries. Some highlights of the technical challenges are outlined below:

Miami's Flagship Project

POMT is in the heart of Miami, and a crucial connection for its global cruise tourism and container cargo industries. Meridiam and its team have delivered the POMT project and continue to help Miami grow.

Challenge: **Coordination with operator interfaces – cruise industry**

Solution: MAT Concessionaire LLC (MAT), a Meridiam Affiliate is the project company on the POMT project. MAT's work schedule was developed such that no work was performed along the cruise ship berths when cruise ships were in port. The project company did not block or prohibit access or passage along the cruise terminal waterfront throughout the construction phase while tunnel boring continued 24/7 below the bay bottom with the cruise ships moored at their piers.

Furthermore, once the project moved into the operating phase, strong working relationships built with the Port initiated the need for better signage for the port. In true partnership, the project company determined that this potential challenge could be addressed through additional signage to improve way finding. MAT coordinated with FDOT on this effort of installing these signs going above and beyond the DBFOM project agreement.

Challenge: **Operator interfaces – emergency services**

Solution: The tunnel is a key element of the local traffic infrastructure. MAT has a very good relationship with the Miami-Dade Police Department (MDPD) with clear communication lines established early in the process—even before the tunnel was opened. Early incidents were reported in record time allowing MDPD to act upon them very quickly. The project company has even been able to help notify the authorities of incidents in the surrounding area due to the cameras situated throughout the project footprint which are monitored on a 24/7 basis.

Challenge: **Confined work areas at the portals on both Dodge and Watson Islands**

Solution: The initial design was revised with separate portals for each tunnel combined into single common portal areas instead of split apart, which allowed for the best use of minimal space to enable a much faster and less complicated turntable approach for the Tunnel Boring Machine (TBM). The revised design also extended the length of the TBM-excavated tunnel, shortening the length of the cut and cover tunnel at the portals to reduce the volume of excavation.

Challenge: **Emergency planning in hurricane evacuation route**

Tunnel entrance with flood gates ensure emergency preparedness during hurricanes

Solution: The MacArthur Causeway Bridge is a hurricane evacuation route and it was imperative that MAT designed, scheduled, and constructed the works such that the bridge was fully operational throughout the construction period. An emergency response plan was prepared in close coordination with the Port, local emergency agencies, and authorities, such that all parties had a script to work from in the event of any emergencies throughout the construction operations. Furthermore, the tunnel has floodgates that can be quickly deployed if necessary during hurricane season. These are concealed above the tunnel entrances.

Challenge: **Fire and life safety in a confined tunnel**

Solution: Fire and life safety is a major concern in any tunnel design. For this project, there is a comprehensive emergency response system in place that includes fireproofing material to protect the segmental lining, a deluge fire suppression system, a ventilation system designed for emergency fire conditions with jet fans, and a camera detection system to immediately alert maintenance crews and authorities of any incident occurring inside the tunnel. Jacobs led extensive coordination with the city Fire Marshall at all stages of design which gave FDOT the confidence to accelerate design knowing that the city Fire Marshall had input on fire and life safety system designs and egress plans throughout its development.

Interior of tunnel with jet fans used maintain air quality & control airflow

The tunnel ventilation utilizes a ceiling-mounted longitudinal jet fan system with reversible flow capabilities to clear smoke and heat away from incident locations and away from the route of evacuation. Fireproofing material around the tunnel circumference provides physical protection of the tunnel liner segments. Tunnel fire suppression standby system and water deluge sprinkler suppression systems provide water to zones within the tunnel that are directly affected by a fire incident.

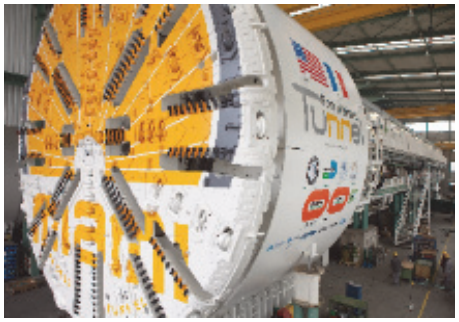
The tunnel control systems provide a responsive operating approach to reduce with the use of camera surveillance, motion detection, over-height detection, dynamic message signing, and SCADA monitoring of critical equipment and tunnel environment. The communication and surveillance network is manned on a 24-hour basis by the tunnel operator from the Operations Building on Dodge Island. It is fully compatible with a fully redundant operations room at FDOT's District 6 Traffic Management Center.

Evacuation Route Protected from Smoke and Heat

The tunnel ventilation uses a ceiling-mounted longitudinal jet fan system with reversible flow capabilities to clear smoke and heat away from incident locations.

Challenge: **Geotechnical uncertainty for tunnel boring and excavation**

Solution: Meridiam led productive negotiations with FDOT and its consortium partners regarding excavation risk which helped FDOT realize a $90 million saving compared to its pre-allotted contingency for excavation. Prior to bid, a preliminary geotechnical study identified a potential risk related to underground geological stability. To mitigate the risk at bid time, a base line was created by FDOT along with a geotechnical reserve of $150 million, accessible under specific contractual requirements. After extensive investigations during construction, MAT and Meridiam coordinated with FDOT and the construction contractor on all aspects of the resolution of the matter to minimize financial and schedule impacts. Negotiations led to a successful outcome, whereby $90 million in contingency was saved with only $60 million of the reserve accessed. The tunnel boring took place without significant delays in completion and without any significant technical incidents.



"Harriet" the tunnel boring machine, named by local Girl Scout troop as a nod to Harriet Tubman's Underground Railroad

Watson Island access works

Challenge: **Construction phasing for deep excavation at tunnel entrances**

Solution: The Watson Island ramps are open-cut U-wall sections approximately 100 ft. wide and 375 ft. long. The ramps connect to the bored tunnel through a 40 ft. cut-and-cover section that will also support the floodgates. A 1,000 cubic ft. sump enables stormwater to be collected before entry into the bored tunnel and pumped into the surface stormwater system. The U-wall ramps on Dodge Island direct traffic to the commercial port, cruise terminal, and maintenance areas.

To construct the cut-and-cover and U-wall sections at the tunnel entrance, a clear coordinated construction phasing plan was needed. Through collaborative working groups, MAT was able to address the challenge. Secant piles and sheet pile walls temporarily supported the excavation until the permanent concrete walls and box structures were placed. Once excavation

progressed sufficiently to allow for pouring the immersed bottom seal, permanent tension anchor piles were placed using drilling machines located on temporary bridge structures. The bottom seal was installed by tremie concrete methods then dewatered to provide a dry access for pouring structural concrete slabs and walls and to provide launching and receiving pits for the tunnel boring machine (TBM) on both Watson and Dodge Islands.

$90 Million Saved Through Productive Negotiations

Meridiam led negotiations regarding excavation to help FDOT realize a $90 million savings in its pre-allotted contingency for excavation.

Challenge: **Meeting DBE Goals**

Solution: Within 30 days of project commencement MAT developed and implemented an approved DBE Affirmative Action Program Plan which was filed with the Equal Opportunity Office. MAT ensured that all department-certified disadvantaged business enterprises had the opportunity to participate in, compete for, and perform subcontracts. The project's 8.1% goal was exceeded throughout construction operations.

Challenge: **Mitigating construction noise to comply with a strict noise penalty regime**

Solution: MAT was responsible for the abatement of operational and construction noise levels as measured at each portal, within the tunnel, along the approach, and at nearby residential and commercial noise-sensitive receptor locations. FDOT created a penalty regime that imposed a monetary penalty based on the number of noise violations. This was vigorously policed by MAT throughout construction operations as well as being incorporated into the design of all equipment that was procured for the project. To comply with the noise level criteria, the project company provided an acoustical engineering firm to prepare noise control plans, equipment noise certifications, and to monitor construction and complaint response noise monitoring.

V. FINANCIAL INFORMATION

(23) Payment Mechanism

The payment mechanism for the project is availability payments. Upon substantial completion, FDOT began making availability payments to the project company for having the project open and available for public travel. The payment mechanism includes the following components:

Payments during construction: FDOT provided a $100 million milestone payment during construction and a $350 million milestone payment at final acceptance. These payments accounted for 49.8% of the total project funding requirements (74.1% of the construction cost).

Payments post construction: Upon substantial completion, FDOT started paying the project company monthly availability payments. These payments are capped at the Maximum Availability Payment (MAP), which identifies the maximum payment FDOT will make if there are no performance deductions for a given period.

Indexation: The MAP is subject to two separate indexation factors:

- CPI: 33% of the availability payment is indexed to CPI to cover the concessionaire's costs which are also CPI-linked.
- Fixed rate: 67% are indexed to a 3% annual inflation rate.

Deductions: The MAP is subject to performance deductions from the roadway not being open and available for public travel. Payments are being made to the project company on a monthly basis and every quarter the amount is corrected to take into account any deductions.

(24)	**Source(s) of Revenues or Payments**	The project revenues are backed by FDOT funds, which are subject to appropriations.
(25)	**Proposer Team Member(s) Equity Investment**	The total equity investment in the project was $80 million. The method of investment is through direct equity into MAT, the project company. At the time of financial close, Meridiam was a 90% equity member of the project company with $72 million invested in MAT.
(26)	**Financing Method(s) and Value(s)**	

Financing methods for POMT	$ million	% of external financing
Long-term TIFIA	341	45%
Long-term bank commercial loans	341	45%
Long-term equity	80	10%
Total external financing	762	100%

(27) **Key Financial and Funding Challenges and Solutions Implemented**

***Challenge*: Achieving financial close in challenging economic environment**

Solution: The POMT project demonstrates Meridiam's commitment and capacity to successfully reach financial close even in a difficult economic environment. At the height of the financial crisis of 2008/2009 the owner (FDOT) stopped the whole procurement process. Meridiam was able to utilize its global relationships with banks to commit a 10-bank club to finance the deal on a project finance basis without any further recourse to the owner and thereby restarted the procurement and brought it successfully to close.

Challenge: **Incorporating TIFIA despite not being initially identified as a financing source**

Solution: To address changing market conditions and utilize the cost-efficient debt opportunity, Meridiam successfully sought out a TIFIA loan despite it not being initially identified as a financing source, thus delivering additional financial value to the project owner. This also allowed Meridiam to develop a relationship with USDOT at the infancy of TIFIA and pioneer the establishment of standard terms and conditions that would be used on future TIFIA projects.

Challenge: **Effective risk sharing between private and public sectors**

Solution: Meridiam led negotiations to arrive at a solution that benefitted both FDOT and MAT. As a complex transportation project involving two immersed tube tunnels in a geotechnically sensitive area, POMT

Effective Negotiations with Multiple Stakeholders

Meridiam led the negotiations with multiple parties to achieve a cost-sharing program to cover geotechnical risk that allowed the project to proceed.

employed P3 delivery to achieve an effective risk sharing structure between FDOT and MAT. Significant geotechnical risk was shared among the owner, developer and contractor. Meridiam led the negotiations amongst the multiple parties involved (including FDOT, the contractor, and financing sources) to achieve a cost-sharing program to cover geotechnical risk that allowed the project to proceed. Using this structure, Meridiam successfully raised the requisite debt from banks and TIFIA in a challenging economic climate. As a result, the project remained on budget and largely on schedule while managing the substantial geotechnical risk.

Challenge: **Avoiding refinancing risk**

Solution: To match the revenue structure, two commercial loans were negotiated including one five-year loan and one six-year loan to match the first year's availability payment. At the same time, despite not being initially identified as a financing source, Meridiam successfully sought a long-term TIFIA loan as the sole remaining long term debt through operations because the banks retreated from tenors greater than six years. The innovative financing solution allowed Meridiam and its team to avoid the refinancing risk inherent in mini-perm structures available in the banking market at the time. This solution helped FDOT and MAT avoid a capital cost associated with refinancing and the reduced risk premium typical for a mini-perm structure.

Novel Financing in a Difficult Market

Despite the difficult market conditions, Meridiam with Moody's were able to introduce TIFIA as a new funding source.

Challenge: **Securing credit ratings for a novel financing in the US market**

Solution: Meridiam worked closely with Moody's throughout the process leading up to financial close, and despite the difficult market conditions were able to introduce TIFIA as a new funding source and still secure an investment grade rating on the bank loans. Moody's rating committee assigned a rating of Baa3 to the $341.5 million senior bank facility.

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

meridiam

Submitted as Equity Member Project #2

- ☒ Equity Member: **Meridiam**
- ☐ Lead Contractor
- ☐ Lead Engineer
- ☐ Lead Operator
- ☒ Joint venturer in Lead Operator: **Meridiam**; Lead Engineer: **Jacobs**
- ☒ Affiliate of Equity Member: **Meridiam**

FORM F: PROJECT/TRANSACTION DESCRIPTION

No.	Required Information	Response
I. BACKGROUND INFORMATION		
(1)	**Project Name**	**North Tarrant Express (NTE)**
(2)	**Type of Facility**	Interstate toll road with managed lanes.
(3)	**Owner/ Procuring Authority**	Texas Department of Transportation (TxDOT)
(4)	**Brief Description of Project**	

NTE is a $3.0 billion, 23.7-mile managed lanes project in the Dallas-Fort Worth region that was procured under a DBFOM model in two phases under separate Comprehensive Development Agreements (CDA) with total terms of 52 and 48 years, respectively.

Why we included NTE:

- $1.28B in TIFIA loans
- Managed lanes constructed and operated in an existing corridor with 150,000+ ADT
- First unwrapped PABs issuance of $672M for a greenfield project
- Close reached just prior to the financial crisis of 2008/9

NTE Segments 1 & 2 (NTE 1-2) achieved financial close in 2009, and this was followed by NTE 3A3B which achieved financial close in 2013. Each of the phases were co-developed by Meridiam, who also self-performs the operations and maintenance activities. The respective project companies for each phase are responsible for operating the toll lanes, managing the traffic flow in the managed lanes through dynamic tolling systems and the use of fully open road tolling technology supplemented by video recognition systems to maintain a free-flow speed of 50 mph on the managed lanes.

NTE located in the Dallas-Fort Worth Metroplex

Toll collection is the responsibility of the North Texas Tollway Authority (NTTA), a public authority associated with TxDOT. The two project phases include:

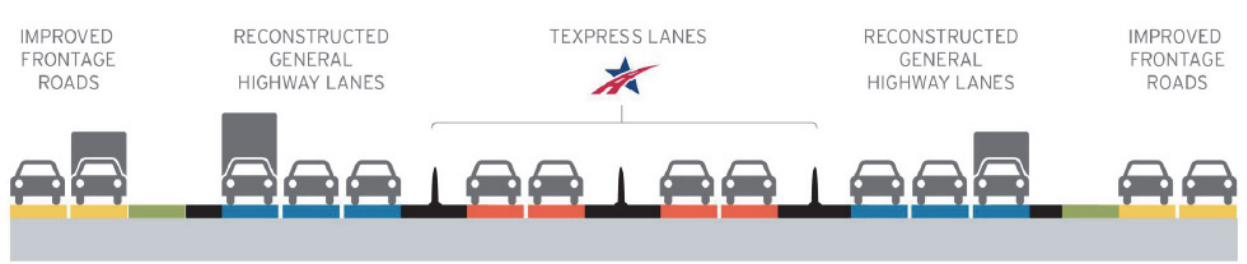
1) NTE 1-2: 13.5-miles of rebuild primarily along the congested section of IH 820 and SH 121/183) to the SH 121 split, currently used by over 170,000 vehicles daily. The scope

Kiewit meridiam PARTNERS

includes addition of up to three managed lanes in each direction, rehabilitation of existing lanes, new auxiliary lanes, and new frontage roads.

2) NTE 3A3B: 10.2-mile rebuild of existing freeway and addition of two managed toll lanes in each direction of IH 35W. The scope includes reconstruction of the IH 820/IH 35W interchange, and connection with NTE 1-2. The project company is responsible for designing and building 3A. While TxDOT is designing and constructing 3B under a traditional delivery contract, the concessionaire is responsible for the operations and maintenance of 3A and 3B.

The North Tarrant Express project received the Infrastructure Journal Awards 2009: Global Transport Deal of the Year



(5)	**Contract Term**	*NTE 1-2* DBFOM contract term – 06/2009 – 06/2061 (52 years) DB contract term – 06/2009 – 09/2015 (75 months) O&M contract term – 06/2009 – 06/2061 (52 years) *NTE 3A3B* DBFOM contract term – 03/2013 – 06/2061 (48 years) DB contract term – 03/2013 – 12/2018 (69 months) O&M contract term – 03/2013 – 06/2061 (48 years)
(6)	**Current Status**	*NTE* 1-2 In operation *NTE 3A3B* In construction (15% complete)

(7) **Key Dates and Milestone**

Contract Milestones	NTE 1-2		NTE 3A3B	
	Contracted Dates	Actual	Contracted Dates	Actual
Contract Execution	06/2009	06/2009	03/2013	03/2013
Financial Close	06/2009	06/2009	03/2013	03/2013
Commencement of Construction	16 months 10/2010	16 months 10/2010	5 months 09/2013	5 months 09/2013
Achievement of Substantial Completion	72 months 06/2015	64 months 10/2014	60 months 09/2018	60 months 09/2018 (anticipated)
Service/Operations Commencement	6 months 10/2010	6 months 10/2010	5 months 09/2013	5 months 09/2013

Achievement of Final Completion	75 months 09/2015	67 months 01/2015	66 months 12/2018	66 months 12/2018 (anticipated)
End of Service/Operations	52 years 2061	52 years 2061 (anticipated)	48 years 2061	48 years 2061 (anticipated)

(8) Relevance to the Project

Substantive Evaluation Criteria, Other Relevant Criteria

NTE is one of the largest project-financed managed lanes projects in the US that holds a heavy resemblance to I-70 East. In particular, NTE has the following relevant financial features:

TIFIA financing | TIFIA was a key component for the financing of both phases with over $700 million invested in the project. Meridiam was instrumental in the raising of this financing by engaging the TIFIA office and relevant stakeholders at the federal level. This is of particular relevance to the I-70 East Project since TIFIA has been identified as a likely source of financing.

PABs financing | The NTE project was the first use of unwrapped Private Activity Bonds (PABs) on a greenfield DBFOM project. Before this project all PABs issuances had been wrapped with mono-line insurance coverage. Meridiam with its partners demonstrated that this new structure could achieve an investment grade rating from Moody's, Fitch, and S&P through a thorough due diligence process with the rating agencies. This is relevant to the I-70 East Project since PABs have been identified as a source of financing and our team was involved with the first PABs financing of its time.

NTE under construction

Managed lanes toll road in an urban landscape | Meridiam was integral in structuring the transaction in a way that would be attractive to the debt markets and eventually lead to a debt offering that was 2.4 times oversubscribed. This will be of great value to CDOT, knowing that our team has proven experience in structuring projects that are able to attract financing so that we can achieve a timely and efficient financial close.

Financed in North America | The project financed in Texas, used financing products similar to those available in Colorado. The Texas municipal bonds market is particularly liquid and it should be possible to enhance the liquidity of Colorado paper via the issuance of the I-70 PABs (if this financing source were to be used).

Project-specific financing approach | Meridiam and its partners were able to use a project-specific financing approach to build local partnerships by attracting a strong local investment partner, the Dallas Police and Fire Pension System (DPFPS), to co-invest in the project. In particular, the presence of Meridiam, an independent equity developer not affiliated with an industrial construction firm, provided additional comfort to DPFPS that the project structure was well-balanced for all investors for the long term. This project-specific financing approach is relevant to the I-70 East Project because it shows our team's ability to build a financing package around the project. We would apply a similar project-specific approach to

financing I-70 East that would consider unique aspects such as the constraints of Colorado Taxpayer's Bill of Rights (TABOR) and the Colorado Bridge Enterprise's (CBE's) need to balance the improvements with the remaining Funding Advancement for Surface Transportation and Economic Recovery (FASTER) eligible bridges.

Project-Specific Financing Approach

It is critical to consider the unique aspects of TABOR and understand CBE's need to optimize value over I-70 East and FASTER-eligible bridges.

As co-lead of the consortium, Meridiam was involved with guiding the project team to find the optimal technical solution to properly mitigate risks through the lens of the entire project life cycle. The technical scope of this project that is relevant to the I-70 East Project includes:

- **Expansion of the existing roadway |** Improvements to the existing general purpose lanes and building of new managed lanes, along with rebuilding the associated interchanges and upgrading the ITS systems to accommodate the expanded roadway.
- **Demolition of existing roadways |** Demolition of existing roads and bridges was required to allow for the widened and increased density of the roadway within the footprint of the new project and while maintaining traffic operations on the facility.
- **Major excavation |** To accommodate the newer vertical levels of the interchanges and increased entry and exit points of multiple lanes within the highway corridor, major excavation was required.
- **Extensive complex traffic management |** The 150,000+ vehicles per day travelling through the project corridor stresses the importance of the ongoing operation of the existing highways, while the major construction is being progressed to minimize impacts on the community.
- **Construction within an existing corridor |** The project company was required to stay within the timeframe imposed by the ROW acquisition processes.
- **Utilities and railroad interaction |** were required due to the need for widening of bridges and replacement of existing infrastructure.
- **Outreach program and communication |** to involve members of the community at all levels through the Advanced Placement (AP) Training and Incentive Program that involved three local high schools in the project along with involvement of the local organization 6 Stones, which works to revitalize neighborhoods.
- **Community Involvement |** the project company sponsored the AP math and science program at a local high school, including organizing direct project staff discussions with students. With the Swansea Elementary School adjacent to I-70, our involvement with local schools is of particular relevance to CDOT.
- **Similar Environments |** Relevant to the Denver region, there are high-degree summers followed by snow and ice in winter. The project corridor has experienced significant snow and ice events over the 2014/2015 winter and was responsible for clearing frozen connectors and fly-overs of ice and snow.

Project Interfaces | are being managed by the project company between the NTTA with their existing toll roads, as well as TxDOT who are maintaining the surrounding highways. NTTA is also providing toll collection services to the project.

DBE participation targets have been exceeded | on the NTE 1-2; a goal of $128 million was established and the project exceeded that goal by more than 40%. NTE 3A3B, still under construction and approximately 15% complete, is 59% complete in fulfilling the DBE goal of $53 million.

Snow removal equipment used in the winter of 2014/2015

Noise monitoring | noise walls have been installed throughout the project to reduce the impacts of noise during and post construction. This is relevant to the I-70 East Project as noise mitigation will be important to maintain the quality of life for the local community.

Relevance to the I-70 East Project (as described in Sections 8, 22, and 27)					
☒	TIFIA closed by developer	☒	PABs	☒	Highway/road financing
☒	Financed/located in North America	☒	Availability Payment model	☒	Rdwy/IC exp/reconstruction
☒	Construction staging, confined space	☒	Road operator interfaces	☒	Urban infrastructure demo
☒	Ventilation/fire life safety	☒	Workforce development programs	☒	Major excavation work
☒	RR/utility coordination	☒	Meet/exceed DBE	☒	Complex urban traffic mgmt.
☒	Infra. w/similar env conditions	☐	Air quality monitoring/mitigation	☒	Noise monitoring/mitigation

II. DESCRIPTION OF TEAM MEMBER INVOLVEMENT

(9) **Proposer Team Member(s) Involved**

Meridiam was involved on NTE through its Affiliates, NTE Mobility Partners LLC, NTE Mobility Partners 2-4, LLC and NTE Mobility Partners Segments 3, LLC, all combined a 36% equity member of the project company at time of financial close.

NTE Mobility Partners LLC is controlled by its fund manager, Meridiam SAS, who has full ownership of Meridiam Infrastructure North America Corp., the fund manager to MNII Fund, the Financially Responsible Party for Meridiam's Equity Member, Meridiam I-70 East CO, LLC.

NTE Mobility Partners 2-4, LLC and NTE Mobility Partners Segments 3, LLC is controlled by its fund manager, Meridiam Infrastructure North America Corp., the fund manager to MNII Fund, the Financially Responsible Party for Meridiam's Equity Member, Meridiam I-70 East CO, LLC.

Meridiam SAS and MNII Fund's experience will be made available to and applied by Meridiam I-70 East CO, LLC in the context of the

		Project as both entities share the same senior management. Other team members include: Jacobs
(10)	**Role of Proposer Team Member(s)**	Meridiam and Affiliate– **Equity Member** and **Lead Operator (Co-Lead)** Jacobs – Owner's Representative Other: Barclays – Underwriter
(11)	**Key Personnel Involved, Roles, Responsibilities**	No Key Personnel are involved. **Value-Added Personnel** | From 2.1.3b also on NTE include Jean-Michel Martinez, Life Cycle & Asset Management Director; Sven Kottwitz, Finance & Commercial Lead.
III. REFERENCE		
(12)	**Name**	[redacted]
(13)	**Title & Employer (current)**	[redacted]
(14)	**Title & Employer (at time of project/ transaction)**	[redacted]
(15)	**Phone & Email**	[redacted]
(16)	**Location & Time Zone**	[redacted]
(17)	**Other**	[redacted]
IV. TECHNICAL INFORMATION		
(18)	**Construction Value**	Total of $3.0 billion Consisting of: • Phase NTE 1-2: $1.8 billion • Phase NTE 3A3B: $1.2 billion total ($990 million by private sector, and $240 million by TxDOT for Segment 3B)
(19)	**Completion within/above Budget**	All of NTE construction has been subcontracted on the basis of a fixed-price contract meaning that TxDOT does not carry the risk of construction cost over runs. NTE 1-2 has been completed within budget and NTE 3A3B is within budget expectations.

(20)	**O&M Value**	NTE total: $30 million per year NTE 1-2: $20 million annually NTE 3A3B: $10 million annually
(21)	**Length of Road under Operation (centerline miles)**	NTE total: 23.7 miles NTE 1-2: 13.5 miles NTE 3A3B: 10.2 miles

(22) **Key Technical Challenges and Solutions Implemented**

Meridiam and its partners are self-performing the maintenance activities on all sections of the NTE project. This includes maintenance of the existing highway during the construction period and after service commencement. The scope of work also includes the maintenance of all bridges, street overpasses, street underpasses, railroad overpasses and pedestrian overpasses.

The project company has developed a maintenance organization staffed with 25 experienced professionals and supported by Meridiam's asset management team.

IH 35W/IH 820 Interchange

Challenge: **O&M Service during and post construction**

Solution: The project company performed a thorough asset condition survey of existing assets to remain in place shortly after receiving NTP and agreed to a defect repair plan with TxDOT within the first months of operations. This allowed the project company to perform the O&M services in a cost-effective manner through risk sharing of existing asset repairs with TxDOT. The project company was then able to build an O&M program to effectively address routine and preventative maintenance including pavement, structural, deck and joints, guardrail repair, scour controls, lighting, and other standard highway and bridges maintenance activities.

Challenge: **The life cycle program for O&M responsibilities from day 1**

Solution: A comprehensive asset management plan was developed based on the design that had been used during the development stages so that it was in place at the start of construction. As design and construction progressed an assumption used in the asset management plan evolved, further adjustments and improvements were made to optimize the program. To accomplish this, there was a full integration with the DB and O&M teams through a task force with a development interface.

Challenge: **Managing safety given the sheer size and length of the project, combined with the live traffic in the corridor**

Solution: Safety has always been a major priority for our team. To mitigate safety concerns, a Comprehensive Safety Program with a Zero Tolerance

Comprehensive Safety Program Used

To mitigate safety concerns, a Comprehensive Safety Program with a Zero Tolerance Policy has been implemented on NTE.

Policy has been implemented on NTE. This has been enforced through a work plan safety analysis, weekly safety meetings, inspections, and safety training. We will place a heavy emphasis on safety for I-70 East and will use a similar safety management strategy to that implemented on NTE.

Challenge: **Providing effective response time to incidents as they occur**

Solution: The project company uses traffic incident management programs and manages the Traffic Management Center to provide effective communication with the Stakeholders (fire department police, TxDOT, Cities). Our team uses the ITS devices and Traffic Management Center combined with incident management program to provide effective response time to incidents as they occur.

Challenge: **Community involvement at all levels**

Solution: NTE together with the LBJ Express project (another Meridiam project), have a shared budget that has been set aside over five years to help students from three nearby high schools: Haltom High, R.L. Turner, and Lockhart. The money is used to finance an AP Training and Incentive Program locally, a federal initiative designed to improve the education and employment prospects of high school students applying for university courses in science and mathematics.

The fourth report from the NMSI project showed that the achievement level of the students to the AP math, science and English AP qualifying exams went up almost 25% each year since the program started. For example, AP Calculus increased by 113% between 2011 and 2012, AP Physics by 167% and AP Biology by 400% over the same period. For the school year 2013-2014, NTE has approached their engineers to determine interest in working with Haltom students either as a mentor or as a presenter in the classroom, receiving the proper training beforehand. New topics have been discussed in the classroom, such as the human impact on the ecosystem through this construction project, as well as the new self-healing concrete technology.

Among other initiatives, NTE teams have given students and future engineers tours of the site. They also provide support to the local organization 6 Stones, which works to revitalize certain neighborhoods and is engaged particularly in supporting the elderly and people with disabilities.

As a long-term partner, we view community involvement through a long-term lens. We see Swansea Elementary's presence adjacent to the I-70 East Project site as a great opportunity to involve young developing students in the project, similar to NTE. Our team believes long-term partnerships require community involvement on all levels and would intend to use this approach on the I-70 East Project.

Challenge: **Management of two major interfaces, including:**

1) NTTA interface: NTTA is responsible for collecting tolls based on data collected by the project company and toll pricing set by the project company
2) TxDOT interface: TxDOT is responsible for building Segment 3B with the project company taking over responsibility for tolling, operations, and maintenance upon completion.

The all-electronic open road tolling system

Solution: The management of interfaces on NTE is a major challenge that our team was able to address through the following:

1) NTTA Tolling arrangements: The project company has put in place protocols with NTTA who is responsible for collecting the tolls. The project company is responsible for all of the operations of the project outside of toll collection. This includes setting toll rates and ensuring that transaction data is correctly collected, the system is compatible with TEXpress. This provides for all-electronic free-flow tolling with additional video tolling for those users that do not have electronic tags in their vehicles. While the contractual arrangement is strong, the project will only work if the parties on the ground are able to work cohesively and partner effectively. It is mutually beneficial for our team and the NTTA to interface properly and we have developed a strong working relationship through partnering sessions with NTTA over time to assure that the tolling arrangements are implemented as laid out in the contractual agreement.
2) TxDOT interface: During the development phase of NTE 3A3B, TxDOT determined that it would prefer to design and build Segment 3B. This meant that it was not possible to use the existing contractual structure without extensive additional negotiations amongst the parties. To accommodate this challenge, the Meridiam team negotiated the terms of the interface with TxDOT to build a fair structure that included:
    - Sufficient liquidity available as a security package-equivalent had to be negotiated with TxDOT to ensure the project would receive adequate payments for any delay by TxDOT on its Segment 3B.
    - Specifications of Segment B as stringent as those of the remaining project (which in some instances are more stringent than the minimum requirements requested by TxDOT) so that the life cycle and maintenance plans would be adequate.
    - ITS equipment installation incorporated in TxDOT's scope.
    - Seamless take-over of Segment 3B by the project company for managing of the whole road.

Managing the interfaces on NTE sets clear communication of responsibilities and expectations. By establishing tolling arrangements with NTTA and structuring a fair solution for the 3B TxDOT work, our team was able to build and operate a roadway with multiple interfaces that performs seamlessly for the traveling public.

V. FINANCIAL INFORMATION

(23) Payment Mechanism

Payments during construction: TxDOT made capital payments during construction for the two phases of $600 million, representing 20% of the funding requirement (23% of construction value).

Payments post construction: TxDOT procured a DBFOM contract which relied on revenue realized via tolled managed lanes where the private sector takes full control over toll-setting and takes full revenue risk. The managed lanes are tolled while the general purpose lanes require no fee to use. The toll fee is set higher as the congestion levels increase in the corridor to maintain free flow speeds on the managed lanes.

The tolls are set on a dynamic basis within 5-minute timeframes, with collection data being passed to NTTA to collect.The technology includes both fully electronic free flow tolling and video tolling, allowing for a smooth ridership experience.

(24)	**Source(s) of Revenues or Payments**	The project's sources of ongoing revenues are toll revenues from the managed lanes. These are dynamic toll rates where the concessionaire is required to maintain a minimum speed level in the managed lanes. The lanes compete directly with the adjacent non-tolled general purpose lanes. Tolling is fully automatic free flow with the use of electronic toll tags as well as video tolling. Tolls are set dynamically to achieve the appropriate congestion levels.
(25)	**Proposer Team Member(s) Equity Investment**	At financial close of the two phases of the project, Meridiam committed a total of $310 million representing an ownership of 36%. Meridiam was instrumental in attracting the Dallas Police and Fire Pension System (DPFPS) as an additional and important equity co-investor. DPFPS provides an important link to the community and serves on the Board of Directors along with Meridiam.
(26)	**Financing Method(s) and Value(s)**	

Financing methods for all NTE Phases	$ million	% of external financing
Long-term TIFIA	1,281	46%
Long-term PABs	672	24%
Long-term Equity	860	31%
Total external financing	2,813	100%

All sources of finance are invested for the long term in the project, with no individual type of financing being structured for automatic early repayment.

Challenge: **First unwrapped PABs**

One of the main challenges faced was the uniqueness of a financial structure for a traffic risk concession combining private equity with unwrapped PABs. Prior to NTE, PABs were "wrapped" through monoline insurance coverage that insured the project company's ability to repay their debt service. By removing the "wrapped" coverage, the first phase of the project (NTE 1-2) was the first unwrapped PABs structure ever for a P3 project.

Solution: The starting point for advancing this new PABs approach was the analysis of similar municipal projects for the sake of understanding the dynamics of PABs coupled with demand risk. This approach also required an understanding of bondholders' risk tolerance for a capital structure that included private equity such as the NTE project.

Challenge: **Closing in a volatile market in 2009**

The attempt to implement the structure during the global financial crisis presented a major challenge.

Oversubscribed in a Volatile Market

The PABs issue was well received by the market and was 2.4 times oversubscribed.

Solution: In the run-up to financial close, the team ran a bank and a bond solution concurrently to determine which structure was both more efficient and most deliverable. This was key to ensuring that the financing could be delivered since 2009 was a time when many banks retreated from long-term financing and monoline providers collapsed, thereby closing down these forms of debt financing. Once the consortium settled on this proposed financial structure which replaced senior bank debt exclusively with PABs, the team undertook a Road Show process to attract bond investors. The first issue was well received by the market, and was 2.4 times oversubscribed.

Challenge: **Two project phases with differing TIFIA requirements**

Solution: The second phase of the project (NTE 3A3B) was not an exact copy of the first nancing structure. It required renewed discussions with TIFIA due to the developments in TIFIA's portfolio as there were changes in their standard loan terms. TIFIA tightened certain terms which had to be incorporated and mitigated in the structure to minimize their detrimental effect on the cost of the project.

In addition, it was necessary to carefully structure and explain to rating agencies, TIFIA, and PABs investors how the integration of the works on Segment B that TxDOT had decided to take in-house would be achieved. Meridiam was able to lead the discussions with TIFIA and the rating agencies to ensure there was a clear understanding of the differences between NTE 1-2 and NTE 3A3B so that all lenders to the project were able to develop a level of comfort with the two separate project phases.

Challenge: **Reaching closing with a new rating agency approach to traffic risk**

Solution: The rating agencies have been adapting their understanding and analysis of traffic risk and financial structures over time. For NTE, it was necessary to present, review and explain all aspects of the traffic and financing to the rating agencies again, despite the success of not only

the first phase (NTE 1-2) but also Meridiam's other Texas project, LBJ Express. Meridiam was able to navigate the changing perspectives of the rating agencies by not only relying on past success but also present a clear case for the NTE project moving forward.

Meridiam was able to meet all of the financial challenges on NTE and ultimately reach financial close. From structuring the first unwrapped PABs closing in the challenging market of 2009, to a multi-phased project, NTE demonstrates our team's ability to find solutions for unique challenges. We do not shy away from blazing new trails in transport project finance and are eager to find the optimal solutions for the challenges that lie ahead for the I-70 East Project.

Completed section on NTE 1-2 with managed lanes in operation

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

Kiewit

Submitted as Equity Member Project #3

- ☒ Equity Member: **Kiewit**
- ☒ Lead Contractor
- ☐ Lead Engineer
- ☐ Lead Operator
- ☒ Joint venturer in Lead Operator: **Kiewit**
- ☐ Affiliate(s):

FORM F: PROJECT/TRANSACTION DESCRIPTION

No.	Required Information	Response
I. BACKGROUND INFORMATION		
(1)	**Project Name**	**Goethals Bridge Replacement Project (Goethals Bridge)**
(2)	**Type of Facility**	Interstate toll bridge replacement and associated connector roadways.
(3)	**Owner/ Procuring Authority**	Port Authority of New York & New Jersey (PANYNJ)
(4)	**Brief Description of Project**	

The project is a $1.2 billion new toll bridge connecting Staten Island to New Jersey, located directly south of the existing bridge procured under an availability payment DBFOM model.

The 13.5 lane-mile project will improve safety, alleviate congestion from the 80,000 ADT, and better accommodate future traffic growth. The project involves construction over 4.3 years of a new six-lane cable-stayed main span bridge, new approach structures and realignments to link to the existing road network, demolition and removal of the existing bridge, and a 35-year operating period.

Goethals Bridge demonstrates Kiewit's commitment and capacity to work together with an equity member to successfully reach close using PABs and TIFIA and, as a member of the developer, to self-perform all O&M responsibilities.

Many of Goethals Bridge's goals are similar to the I-70 East Project, including:

- Improving regional mobility and addressing needs
- Safer operating conditions that will decrease congestion
- Enhancement of aging structure to reduce life cycle costs

Why we included Goethals:

- $935 million of combined TIFIA (closed by developer) and PABs, partly monoline insured
- Constructed and operated in a urban environment under live traffic
- Availability payment mechanism for an asset tolled by the owner
- Self-performing of O&M and life cycle

Goethals Bridge serves as one of the main routes for traffic between New Jersey and Brooklyn via the Staten Island Expressway.

(5)	**Contract Term**	DBFOM contract term 08/2013 – 12/2052 (39 years)
(6)	**Current Status**	Under construction, 25% complete

(7) **Key Dates and Milestones**

Contract Milestone	Contracted Dates	Actual
Contract execution	8/30/2013	8/30/2013
Financial Close	11/8/2013	11/8/2013
Commencement of design	2 months 11/2013	2 months 11/2013
Commencement of construction	2 months 11/2013	2 months 11/2013
Achievement of Substantial Completion	52 months 12/2017	52 months 12/2017 (anticipated)
Service/Operations Commencement	52 months 12/2017	52 months 12/2017 (anticipated)
Achievement of Final Completion	55 months 3/2018	55 months 3/2018 (anticipated)
End of Service/Operations	39 years 12/2052	39 years 12/2052 (anticipated)

(8) **Relevance to the Project**

Substantive Evaluation Criteria, Other Relevant Criteria

Goethals Bridge includes the following items of financial relevance to I-70 East:

Project financing with a TIFIA loan | Project includes a $474 million TIFIA loan that was closed by the developer and not the owner. Fitch rated the TIFIA loan BBB.

Project financing with PABs | Project includes $461 million in PABs. Fitch rated the bonds BBB.

New six-lane cable stayed bridge rendering.

Financed project was a highway or road project | The project is part of an urban highway system and is a critical piece of transportation infrastructure for the cities, counties and states in the area.

Financed project was located in North America | Goethals Bridge is located south of Newark Liberty International Airport, two exits from the New Jersey Turnpike-Newark Bay Extension in a highly confined urban area and serves as one of the main routes for traffic between New Jersey and Brooklyn, NY.

Participation as an equity member in projects using an availability payment model | Kiewit Development Co. is an equity member in the developer and the project uses an availability payment model.

As a member of the lead contractor joint venture and an equity member of the developer, Kiewit was involved in every aspect of the project leading to a holistic technical solution that considered all of the interactions between designing, building, financing, operating, and maintaining the project. The technical scope that is relevant to I-70 East includes:

Roadway expansion (including interchanges) | The new bridge will expand the existing four lane structure with no shoulders, to carry six 12 ft. traffic lanes with 12 ft. outer shoulders and five ft. inner shoulders in each direction. The new bridge has been designed to allow for a future two-lane transit corridor that will be 27 ft. wide and have a 20 ft. vertical clearance. The new bridge will also include a bike/pedestrian facility that is ten ft. wide.

New Jersey approach work

Reconstruction of the roadway connectors to the existing road network (I-287, NJ Turnpike and US Route 1-9) is also an important component of the project. To link to the existing road network, construction of the new approach structures and realignment of the existing structures includes:

- Replacement of the Travis Spur Rail Bridge over I-278
- Replacement of approach structures in New Jersey and New York
- Re-alignment and construction of Gulf Avenue in New York
- Construction of a permanent access road on the east side including a trestle bridge over Old Place Creek

Demolition of existing infrastructure | The project includes demolition of the existing steel truss bridge and foundations, the removal of the approach bridges, including demolition of several spans over both the NJ Turnpike and Conrail mainline track, and all associated infrastructure. Site clearing included the demolition of several residences and businesses in both Elizabeth, New Jersey and Staten Island, New York to permit construction of the Replacement Bridge.

Major excavation and drainage issues | The new bridge's main span towers are each founded on six nine-ft. diameter drilled shafts into bedrock with pile caps extending below the mud line of the channel. Construction of these foundations included the use of deep-water cofferdams, placement of concrete seals, and dewatering. The approach span piers are all founded directly on drilled shafts constructed in the wet. All water removed from these deep excavations was treated by custom on-site water treatment plants prior to discharge.

- **Complex traffic management in urban setting |** The bridge and associated ramps and roadways cross over or under state highways, railways, commercially active waterways, NYCDOT roadways as well as the NJ Turnpike which requires complex urban traffic management.

- **Construction staging in a confined space |** The bridge's New York approach is being constructed from a half-mile long partially pile founded temporary access road/trestle that is approximately 40 ft. wide. Staging is required to reconstruct the roadway approaches while maintaining access to heavily traveled existing roadway networks.

- **Structures including ventilation and fire/life/safety considerations |** The project includes two utility structures and generator enclosure buildings which house the pumps for the fire standpipe system, the SCADA/ITS rooms, and the electrical rooms to supply power from the emergency generators. These buildings are designed with full temperature control and ventilation systems as well as fire walls and full Fire Life Safety systems. In addition, all temporary office and maintenance structures have been designed and constructed with fire life safety systems in accordance with Port Authority requirements.

Safety at the Forefront

All temporary office and maintenance structures have been designed and constructed with fire life safety systems in accordance with PANYNJ requirements.

- **Coordination with railroad and/or utility |** Significant coordination is required with utility companies including development of Utility Adjustment Agreements with each of them. Work includes replacement of existing utilities, relocation of existing utilities, and/or protection of existing utilities.

  In order to incorporate the new highway alignment, two of the existing railway bridge spans of the existing bridge on the Travis Spur will be replaced with new rail bridge structures. The design and construction of these bridge structures require close coordination between the lead contractor joint venture and Consolidated Rail Corporation.

- **Infrastructure under similar conditions |** The New York/New Jersey area experience conditions similar to the Denver region with varying temperatures—high degree summers followed by snow and ice in winter.

- **Road operator interfaces |** The project requires extensive coordination with adjacent jurisdictions and roadway operators including NYCDOT, NJDOT, NJ Turnpike, and the City of Elizabeth, New Jersey. Existing tolling occurs in Staten Island for eastbound traffic with paving limits extending through the area. The project requires that the developer operate and maintain all aspects of the new bridge with

Preparing to drive pile/casing

the exclusion of the toll systems and collections, security and bridge access control. As these operational duties will be the responsibility of the owner, close coordination will be required between the owner and developer.

Workforce Development Programs | The Kiewit-led lead contractor joint venture has an extensive subcontracting program in place which is on track to create more than 2,250 direct construction jobs and $224 million in wages which will result in over $872 million in economic activity for the region.

DBE Goals for the project | The project team is committed to providing meaningful employment opportunities for hundreds of construction individuals in the region, with particular outreach to the DBE community, and desires to meet or exceed federal requirements for diversity. The project is on track to meet the overall DBE participation goal of 10%.

Driving 10' diameter casing for new eastbound structure

Air quality monitoring and mitigation in urban environment | The project has developed a construction Air Quality Plan that provides details on the means and methods for minimizing fugitive dust and tracks Nitrogen Oxides (NOx) emissions generated by construction equipment. Fugitive dust mitigation methods are monitored on a daily basis. Emissions generated by diesel-powered land-based and barge mounted equipment and vehicles are evaluated monthly in a NOx calculator spreadsheet using actual and estimated hours of construction equipment to ensure that allowable limits are not exceeded. Equipment is required to be Tier 2 and an anti-idling policy is in place.

Noise monitoring and mitigation | Before construction began, the project team monitored background noise levels near sensitive receptors including residential areas. The selection of the drilled shaft foundations instead of impact driven pile has mitigated/eliminated the majority of concerns related to noise. Therefore, the only monitoring completed is minor compliance monitoring when operations are very near sensitive receptors. The project team has developed a Vibration Monitoring Plan and monitors vibration levels against threshold values at all sensitive receptors, which are primarily the existing bridge, existing and new utilities, and the railroad facilities.

Relevance to the I-70 East Project (as described in Sections 8, 22, and 27)		
☒ TIFIA closed by developer	☒ PABs	☒ Highway/road financing
☒ Financed/located in North America	☒ Availability Payment model	☒ Rdwy/IC expan/reconst
☒ Construction staging, confined space	☒ Road operator interfaces	☒ Urban infrastructure demo
☒ Ventilation/fire life safety	☒ Workforce development programs	☒ Major excavation work
☒ RR/utility coordination	☒ Meet/exceed DBE	☒ Complex urban traffic mgmt
☒ Infra w/similar env conditions	☒ Air quality monitoring/mitigation	☒ Noise monitoring/mitigation

II. DESCRIPTION OF TEAM MEMBER INVOLVEMENT		
(9)	**Proposer Team Member(s) (or Affiliates) Involved**	Kiewit Development Company (KDC) is a 10% equity member of the developer and Kiewit Infrastructure Co. (KIC) is a 70% member of the project's lead contractor joint venture. KDC committed to invest equity at the same time as the other equity member and participated in the project development and procurement process for the entirety of the period from the issuance of the request for qualifications to financial close, and for the entirety of the period following shortlisting.
(10)	**Role of Proposer Team Member(s) (or Affiliates)**	KDC is a 10% equity member of the **Developer**. As the developer is self-performing all O&M responsibilities, KDC is a 10% member of the project's **Lead Operator** joint venture. Kiewit Infrastructure Co. (KIC) is a 70% member of the project's **Lead Contractor** joint venture. Nixon Peabody served as the lenders' legal advisor Barclays acted as an underwriter on the PABs issuance
(11)	**Key Personnel Involved, Roles, and Responsibilities**	No Key Personnel were involved. **Value-Added Personnel** | From 2.1.3b also on Goethals Bridge include David Miles, John McArthur, Sam Chai, Sam Gilmore, and Stephen Howard.
III. REFERENCE		
(12)	**Name**	[redacted]
(13)	**Title & Employer (current)**	[redacted]
(14)	**Title & Employer (at time of project/ transaction)**	[redacted]
(15)	**Phone & Email**	[redacted]
(16)	**Location & Time Zone**	[redacted]
(17)	**Other**	[redacted]
IV. TECHNICAL INFORMATION		
(18)	**Construction Value**	$937.9 million
(19)	**Completion within/above Budget**	The Goethals Bridge project benefits from a fixed-price date-certain contract for the delivery of the construction related scope of work from the lead contractor joint venture.

(20)	**O&M Value**	$6.0 million annually
(21)	**Length of Road under Operation (centerline miles)**	Approximately two centerline miles excluding ramps. Taking into account ramps and access roads, there are approximately 12 lane miles during construction. Post substantial completion, the O&M limits are approximately 11 lane miles.
(22)	**Key Technical Challenges and Solutions Implemented**	

Challenge: **Minimizing impacts on the quality of the surrounding environment**

Solution: The Port Authority and US Coast guard required that the design and construction of the bridge have no adverse impact on the quality of the environment surrounding the project. Both the New York and New Jersey sides of the Goethals Bridge present unique land, air, and water considerations that have required close planning and coordination with a wide range of environmental experts and state and federal agencies.

The first step of environmental protection prior to monitoring and mitigation is to minimize the overall project impacts during design. During pre-bid design workshops multiple bridge foundation and types were considered to minimize impacts to the environment and drive project value. Large diameter drilled shafts directly supporting the approach piers without pile caps were selected to minimize excavation (including potentially contaminated soils), minimize dewatering, and reduce temporary and permanent impacts to the areas.

Further, the project team is committed to minimizing any potential disturbance to wildlife in the area. Access roads and security fences have been designed to minimize obstructions to animals moving through the wetland area. In addition, a unique exclusion wall concept was utilized at the NJ inter-pier basin to temporarily exclude fish from the basin and accommodate fish moratorium restrictions.

Temporary steel access trestle

Measures being taken to help control emissions include:

- Retrofitting equipment with the best available emissions control technology, as verified by the US Environmental Protection Agency
- Limiting idling time for diesel-fueled vehicles
- Locating diesel exhausts away from sensitive areas

Challenge: **Improve long term life cycle of the bridge deck and roadway surface**

Solution: Project specifications called for a traffic detection system using sensors embedded in the bridge deck and roadway surfacing to monitor the speed, volume and lane occupancy of the facility. These sensors were required to be placed in pairs, in each lane, every 500 feet throughout the project limits and have an average expected replacement frequency of 10 years or less based on their battery life. The lead contractor joint venture proposed an alternate

system using pole mounted side fire radar to collect the required traffic data. Because this non-invasive system does not require coring into the bridge deck at each sensor location for replacement, long term deck performance is improved significantly. The developer and lead contractor joint venture evaluated the total life cycle cost including both construction and long term maintenance of the traffic detection system and determined the costs would be equal to or slightly less than the original system. This solution was provided to the owner and will significantly improve the long term deck performance reducing the challenge of meeting or exceeding the 100 year deck service life requirement.

Challenge: **Ability to adapt design given geometric constraints and design speeds**

Solution: The Goethals Bridge Project developer and lead contractor joint venture have shown flexibility to respond rapidly to technical challenges. As an example, advancing highway geometric design indicated that the specified emergency vehicle turnaround bridge, between the eastbound and westbound approach retaining walls in NJ, would not be AASHTO compliant due to project geometric constraints and design speeds. The requirements and provisions for work and the indicative plan set identified the location for this feature with associated geometric requirements. The project team worked with the owner and the NJ Turnpike Authority to relocate the turnaround to an acceptable location. The final design includes appropriate acceleration and deceleration lanes, satisfies all design, project and third party requirements and was completed without impacting the project schedule.

Temporary U-turn connecting westbound to eastbound approach

Challenge: **Incorporating impacts resulting from adjacent facilities**

Solution: The project team has also shown great flexibility and response agility resulting from proposed third party modifications to the existing 12-lane NJ Turnpike that the project crosses over. The potential future modifications to the NJ Turnpike included the reconstruction of an off-ramp and associated alignment shifts on the supporting roadway network. These potential future modifications required that the new bridge pier locations be modified from the layouts specified in the constraint drawings of the Goethals Bridge contract. With the potential new ramp design, associated geometric requirements and security clear zone requirements, the

New York access road and approach foundations

pier locations specified would not allow the future modifications to the NJ Turnpike to be implemented. The project team modified the pier locations during final design, increasing the critical span length of the structure, while maintaining the required vertical clearances and considering all current and future geometric constraints. Long-term accessibility for utility providers, inspection crews, and project stakeholders was also considered critical in developing the solution. The team rapidly responded to this challenge and provided an alternate layout to meet the needs of all stakeholders.

Challenge: **Improve long term life cycle of the new facilities versus initial construction cost**

Solution: The project's requirements and provisions for work allowed the use of either concrete girders or steel plate girders for the approach span bridges. During the project procurement phase, the project team performed preliminary design of both bridge types and developed a preliminary corrosion protection plan for the project. The developer and lead contract joint venture performed a total life cycle cost analysis considering both construction and long term maintenance costs. Due to high local labor costs, while the steel girder solution was more attractive from a construction cost perspective, the use of long span pre-cast pre-stressed concrete girders was the best overall solution due to reduced life cycle costs. The team evaluated multiple concrete girder lengths and ultimately selected 95 in. deep girders with a maximum span length of 177 ft. which reduced foundation costs and allowed flexibility to span site constraints including existing utilities.

V. FINANCIAL INFORMATION

(23) Payment Mechanism

Although there are tolls on the bridge, the project has an availability payment-based payment mechanism. Toll revenue risk remains with the owner. The payment mechanism includes the following components:

Payments during construction: During the construction period, the owner provides five milestone payments in an aggregate amount of $150 million, approximately 16.0% of the Construction Value. The fifth milestone payment, in the amount of $25 million is paid within 30 days of completion of construction. Milestone payments commence once cumulative construction costs surpass 70% of Construction Value.

Payments post construction: upon Substantial Completion, PANYNJ will begin making availability payments to the project company for having the project open and available for public travel.

Indexation: Availability payments are partially adjusted for annual changes in the Consumer Price Index.

Deductions: Availability payments are subject to the following deductions:

- Noncompliance deductions due to breaches or failures in the developer's performance or obligations and
- Unavailability deductions due to traffic lane closures that exceed the contractual allowances for repair and maintenance, after service commencement.

(24)	**Source(s) of Revenues or Payments**	The milestone payments and availability payments will be paid from the PANYNJ's revenues.
(25)	**Proposer Team Member(s) Equity Investment**	The total equity investment in the project was $106.8 million. At the time of financial close, KDC was a 10% equity member of the project company with $10.7 million invested. The method of investment is in the form of equity in the developer.
(26)	**Financing Method(s) and Value(s)**	All sources of finance are invested for the long term in the project, with no individual type of financing being structured for automatic early repayment. The $461 million PABs issuance has a range in maturities from 17 to 38 years with a final maturity of 2051 and has an all-in coupon of 5.375%. At financial close the bonds had a yield of 5.58%. Three tranches are insured by Assured Guaranty, which marks the return of a monoline insurer to P3 project financings since the global financial crisis. Barclays acted as an underwriter. The TIFIA loan was closed by the developer and has a final maturity of 2050 and has an all-in interest rate of 3.71%.

Financing methods used for Goethals Bridge	$ million	% of external financing
Long term TIFIA	474	46%
Long term PABs	461	44%
Long term equity	107	10%
Total external financing	1,042	100%

(27)	**Key Financial and Funding Challenges and Solutions Implemented**

Challenge: **Sourcing competitive long term DBFOM financing**

Solution: As part of the financing process for Goethals Bridge, a detailed due diligence process was undertaken with rating agencies, TIFIA, Assured Guaranty (insured some of the PABs maturities), and the underwriters in order to achieve the right balance between risk mitigation, debt repayment profile, efficiency, and cost effectiveness. During the process, there was a specific focus on security levels and stress testing with corresponding discussions involving the lenders to obtain competitive financing while satisfying their requirements.

Challenge: **Eliminating the need for short term construction period financing**

Solution: The project team sought to eliminate short term financing needs due to the timing of milestone payments by optimizing the construction schedule and the lead contractor joint venture payment curve. The project team's efforts resulted in a financing solution with only long-term financing elements, thereby reducing the project's overall cost of capital. This reduction resulted in lower performance payments.

Challenge: **Lack of detailed TIFIA loan terms during RFP phase**

Solution: TIFIA is a cost-effective long-term financing tool in the US. Even though TIFIA loan terms were not fully documented at the time of bid, the project team was able to conduct extensive negotiations post bid with TIFIA during a time of changing federal requirements.

The close relationship with TIFIA and the flexibility and resiliency of the project team's financing solution led to a successful financial close utilizing TIFIA to maximize value for money to the owner.

Maximizing Value for Money for PANYNJ

The close relationship with TIFIA and the flexibility and resiliency of the project team's financing solution led to a successful financial close utilizing TIFIA.

Challenge: **Payment mechanism structure resulted in significant taxable interest income**

Solution: The owner structured part of the payments during operations as repayments of a loan, which would result in significant interest income having to be recognized generating tax liabilities. The equity members worked with their legal, tax, and accounting advisors to structure the developer as a flow through partnership resulting in lower availability payments.

Challenge: **Payments under the PANYNJ Project Agreement**

Solution: One of the main challenges of the Project Agreement with the PANYNJ was the appropriate prioritization of payments, a crucial aspect of the financing structure. The equity members carried out a thorough due diligence of the flow of funds the lenders would focus on, including payment obligations of existing (and future) contractual and debt obligations. The understanding of the payment "waterfall" provisions, coupled with the team's understanding of the appropriations based structure, attracted significant bond investors and a highly successful PABs issuance.

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

meridiam

Submitted as Equity Member Project #4

- ☒ Equity Member: **Meridiam**
- ☐ Lead Contractor
- ☐ Lead Engineer
- ☐ Lead Operator
- ☐ Joint venturer in Lead
- ☒ Affiliate of Equity Member: **Meridiam**

FORM F: PROJECT/TRANSACTION DESCRIPTION

No.	Required Information	Response
I. BACKGROUND INFORMATION		
(1)	**Project Name**	**Northeast Anthony Henday Drive (NEAH)**
(2)	**Type of Facility**	Reconstruction of major highway facility with new construction and improvements to existing roadways.
(3)	**Owner/ Procuring Authority**	Alberta Transportation Ministry
(4)	**Brief Description of Project**	

The Northeast Anthony Henday project (NEAH) is a DBFOM to complete the northeast and final leg of the ring road around Edmonton, the Province of Alberta's capital city. The $1.08 billion (C$1.35 billion) project comprises 16 miles of new six- and eight-lane divided freeway, encompassing five miles of new construction and 11 miles of existing roadway reconstruction.

The concessionaire is responsible for the operation and maintenance of the existing infrastructure during both the construction and operating periods for a total of 34.5 years. More than 65,000 Albertans use NEAH each day. Similar to I-70, NEAH's goal is to reduce traffic congestion and decrease the commute time along the project corridor.

The project was the recipient of the Silver Award for Innovation and Excellence in Public-Private Partnerships by the Canadian Council for Public-Private Partnerships (CCPPP).

Why we included NEAH:

- 56 days from submission to close—demonstrates ability to swiftly deliver project financing
- Investment rating achieved despite new rating methodology shows our strong relationships with rating agencies
- 500+ utilities in project corridor – comfort with interface risk
- Severe winter weather

Ring road around Edmonton – NEAH in bold

(5)	**Contract Term**	34.5 years – 11/2012 – 10/2046
(6)	**Current Status**	Under construction (73% complete)

(7) **Key Dates and Milestones**

Contract Milestone	Contracted Dates	Actual
Contract Execution	05/11/2012	05/11/2012
Financial Close	0 months 05/2012	0 months 05/2012
Commencement of Design	0 months 05/2012	0 months 05/2012
Commencement of Construction	1 month 06/2012	1 month 06/2012
Achievement of Substantial Completion	53 months 10/2016	53 months 10/2016 (anticipated)
Service/Operations Commencement	53 months 10/2016	53 months 10/2016 (anticipated)
End of Service/Operations	34.5 years 10/2046	34.5 years 10/2046 (anticipated)

(8) **Relevance to the Project**

Substantive Evaluation Criteria, Other Relevant Criteria

The NEAH project includes the following **financial** relevance to the I-70 East Project:

Financed within North America | NEAH is the single largest highway project undertaken by Alberta Transportation to date.

Quickly Achieved Financial Close | NEAH achieved financial close only 48 days after selection as preferred proponent, and 56 days after submission of a binding bid with fully committed financing.

NEAH achieved financial close only 48 days after selection

PABs-like financing | NEAH's financial structure includes **long term bonds** with an investment grade rating of A- from S&P and A(low) from DBRS. These bonds are widely distributed with a long tenor much like PABs. The bonds were determined to be the most efficient financing structure after the Meridiam-led finance team completed a process of competing funding sources and underwriters, while working through a new rating agency methodology.

Availability payment model | The payment mechanism used for the project is an availability payment model with performance based payments similar to the I-70 East Project.

NEAH includes the following **design and construction** items of relevance to the I-70 East Project. Meridiam, as the largest equity member, was involved in the overall shaping of the bid, ensuring that the technical issues were addressed, and the project company continues to actively manage the construction subcontract.

- **Roadway expansion |** NEAH involves widening the existing highway from four lanes to eight lanes over approximately five miles of new roadway.
- **Interchange reconstruction |** Nine interchanges, 10 flyovers and 48 bridges (including twin major bridge structures across the North Saskatchewan River) were constructed as part of the project providing a substantial structural scope much like I-70 East.
- **Demolition of urban infrastructure |** involves demolishing 13 bridges and collector roads, as well as rebuilding service streets in an industrial section of the city.
- **Major excavation and drainage issues |** NEAH requires 5.5 miles of major excavation work in a greenfield area including the installation of the twin-river-bridge over the North Saskatchewan River with the installations of supports within the river, cofferdams, dewatering systems, and deep pipe piles driven into bedrock
- **Complex traffic management in an urban area |** involves traffic accommodation strategies to address the daily traffic of over 65,000 vehicles per day.
- **Construction staging in a confined space |** is a key part of the project with many of the new bridges being constructed directly adjacent to the existing bridges being demolished.
- **Coordination with railways and utilities |** NEAH involves eight railway overpasses and 526 known utilities within the project corridor which requires constant coordination with the railway and utility companies on a daily basis.

Railroad and Utility Coordination on NEAH Involves:

- 8 railway overpasses
- 526 known utilities within the project corridor

The project has further relevance to operations and maintenance where Meridiam is a core member of the project company and is taking the life cycle risk while managing the operating subcontractor.

- **Pavement under environmental conditions similar to Colorado |** with cold weather protection required around the structural elements during the winter months.
- **Interfaces with utility companies and rail companies |** the Transportation Utility Corridor within the project corridor has numerous interfaces associated with the utility owners and railways requiring daily coordination.
- **Snow removal operations |** on existing roadways are part of the scope during construction and new and existing roadways post-construction.

Relevance to the I-70 East Project (as described in Sections 8, 22, and 27)		
☐ TIFIA closed by developer	☒ PABs or similar	☒ Highway/road financing
☒ Financed/located in North America	☒ Availability Payment model	☒ Rdwy/IC exp/reconstruction
☒ Construction staging, confined space	☒ Road operator interfaces	☒ Urban infrastructure demo
☒ Ventilation/fire life safety	☒ Workforce development programs	☒ Major excavation work
☒ RR/utility coordination	☒ Meet/exceed DBE	☒ Complex urban traffic mgmt.
☒ Infra w/similar env conditions	☒ Air quality monitoring/mitigation	☒ Noise monitoring/mitigation

II. DESCRIPTION OF TEAM MEMBER INVOLVEMENT

(9)	**Proposer Team Member(s) Involved**	Meridiam was involved on NEAH through its Affiliate, Meridiam Infrastructure NEAH ULC, a 50% equity member of the project company at time of financial close. Meridiam Infrastructure NEAH ULC is controlled by its fund manager, Meridiam Infrastructure North America Corp., the fund manager to MNII Fund, the Financially Responsible Party for Meridiam's Equity Member, Meridiam I-70 East CO, LLC. MNII Fund's experience will be made available to and applied by Meridiam I-70 East CO, LLC in the context of the Project as the entities share the same senior management. Meridiam invested equity at the same time as the other original equity investors and participated in the project development and procurement process for the entirety of the period from the issuance of the request for qualifications to financial close and in particular for the entirety of the period following shortlisting.
(10)	**Role of Proposer Team Member(s)**	Meridiam – largest **Equity Member** with 50% of the equity In Tech was involved as Lender Insurance Advisor RBC served as selling agent of the bonds
(11)	**Key Personnel Involved, Roles, Responsibilities**	No Key Personnel were involved. **Value-Added Personnel** | From Section 2.1.3b also on the NEAH project include Jean-Michel Martinez.

III. REFERENCE

(12)	**Name**	[redacted]
(13)	**Title & Employer (current)**	[redacted]
(14)	**Title & Employer (at time of project/ transaction)**	[redacted]

(15)	**Phone & Email**	[redacted]
(16)	**Location & Time Zone**	[redacted]
(17)	**Other**	[redacted]
IV. TECHNICAL INFORMATION		
(18)	**Construction Value**	$1.08 billion (C$1.35 billion)
(19)	**Completion within/above Budget**	73% complete and on schedule The project benefits from a fixed-price date-certain design build (DB) contract for the delivery of the construction-related scope of work from the DB contractor.
(20)	**O&M Value**	Approximately $9.6 million (C$12 million) annually
(21)	**Length of Road under Operation (centerline miles)**	16 miles of new six- and eight-lane divided freeway (5 miles of new construction and 11 miles of existing roadway reconstruction)
(22)	**Key Technical Challenges and Solutions Implemented**	

Similar to the Colorado I-70 East Project, NEAH presents a range of relevant technical challenges. Meridiam as the largest shareholder of the concessionaire has subcontracted for the execution of the design and build of the construction elements, and subcontracted for the operations and routine maintenance. The concessionaire retains overall responsibility for the execution of the works, and takes residual performance risk on its subcontractors while retaining responsibilities for life cycle management in-house. Therefore it has been necessary to work closely with all subcontractors throughout the bidding and execution phases to ensure all works are completed with quality so that there are no latent risks or defects and that there is an integrated project solution over the term of the contract. Some highlights of the technical challenges are outlined below:

Substantial Technical Risks

Meridiam as majority equity owner is taking risk on the performance of its contracting partners through construction in an environment with heavy winters.

Challenge: **Building an efficient life cycle program**

Solution: On NEAH, the project company retained life cycle responsibility to ensure the best value for money to the Province. The scope of work includes 48 bridge structures including a major twin bridge across the North Saskatchewan River and 10 flyovers. The development team worked closely with the design, construction, and maintenance teams through working groups to ensure the design and construction solution matched the priorities of the life cycle work—a robust life cycle plan and a competitive submission. Meridiam's asset management team developed a robust life cycle plan to ensure the project requirements are met in the most economically effective way while planning for a clean handback process.

North Saskatchewan River crossing with cofferdam in place for bridge construction

Challenge: **Major excavation and drainage issues at North Saskatchewan River**

Solution: The North Saskatchewan River required the installation of twin-river-bridge structures with supports constructed within the river. To accommodate this, cofferdams with dewatering systems were established to allow for construction within the waterway. The foundations for the bridge supports incorporated deep pipe piles driven into bedrock, and a riprap bank with heavy armor stone to protect the structures. Fish and other wildlife in the river were closely monitored by a specialist environmental firm during construction to ensure impacts from bridge construction were minimized.

Challenge**: Interface with the Transportation Utility Corridor along the route**

Solution**:** The project is being constructed within the Transportation Utility Corridor, a 2,500-foot-wide corridor designated for roads, utilities, and pipelines by the Province of Alberta and the City of Edmonton. Not part of this project, 526 known utilities, were located within the corridor prior to commencement of construction. This created a complex interface with the project that has required coordination across numerous utility owners. To minimize the impact of these utilities, daily coordination with utility owners has been required for relocations and conflicts.

One of 58 structures under construction with a 100 year-design life required a proven quality program

Challenge**: Managing life cycle of 100-year design life structures**

Solution**:** The long-term DBFOM contract requires the project company to accept performance risk of the project for over 30 years. However, being in a region with extreme temperatures in the winter, the damage from excessive snow and ice presented a noteworthy challenge to the asset management plan. To address this, the Province required a 100-year design life for the bridge structures, well beyond the contract term. This essentially split life cycle risk with the project company responsible for the first 30 years and Province responsible for the remaining 70 years. The project team worked closely with the Province to develop a design and quality program for the structures that would mitigate the life cycle risk held by both the project company and the Province. The design included high performance concrete and the use of stainless steel reinforcing bars (instead of black steel) that would ensure the structures would endure well beyond project handback.

Challenge**: Demolition adjacent to new structures in a confined space**

Solution**:** Many of the new bridges are built next to existing bridges that were subsequently demolished which presented a quality challenge. Since the Province established a 100-year

design life for the bridge, constant monitoring was required to ensure the quality of the brand new structures would not be compromised by the demolition operation. The project company worked with the Province to establish a thorough design and quality program to retain structure integrity that would ensure the bridges would endure decades beyond project handback.

***Challenge*: Impacts of severe winter environmental conditions**

Baseline Road interchange following a snow event demonstrates working through winter months and managing snow and ice removal

***Solution*:** Similar to Colorado, the winter weather in Edmonton has low temperatures matched with significant amounts of snowfall. The potential damage from extreme cold mixed with snow and ice removal initiated further design considerations (see "Managing life cycle of 100-year design life structures" above) which were aimed at significantly increasing the life of the project. During construction, cold weather placement protection has been required around the structural elements to allow for concrete placement to continue in the winter months. Snow and ice removal has been the responsibility of the project company both during and post construction.

***Challenge*: Coordination of railroad operations and safety across multiple rail companies**

National rail crossing, one of eight railroad crossings, required major coordination with rail companies

***Solution*:** The NEAH project includes eight railroad overpasses used by two railroad companies. The consortium developed a plan to conform to both railroads' operations and safety requirements. The consortium developed separate schedules for each rail site, set up a Rail Project Communication Team and holds regular meetings with each railroad to ensure all aspects of the railroads' and consortium's needs are incorporated into the design and construction process and to ensure timely delivery of the rail crossings.

***Challenge*: Environmental mitigation through the greenfield portion of the project**

***Solution*:** Mitigation of air pollutants along with waste management and stormwater runoff were of particular concern for the greenfield portion of the project. Local communities and environmental bodies have been closely involved in the establishment of environmental mitigation measures relating to wetlands flora and fauna including the selection of an alignment that minimizes impacts sensitive environmental areas. To ensure reliable reporting on environmental mitigation measures and compliance, Meridiam through its leading role in the project company has implemented an ISO 14001-compliant environmental management system.

V. FINANCIAL INFORMATION

(23) **Payment Mechanism**

The payment mechanism for the NEAH project is availability payments. Upon substantial completion, the client is due to begin making availability payments to the project company for having the project open and available for public travel. The payment mechanism includes the following components:

Payments during construction: Progress payments are paid on a quarterly basis totaling $739 million (CA$925 million) which was 60% of total funding requirement (approximately 69% of the construction cost). The amount is based on the percent completion of construction work and was paid once construction reached 30% completion.

Payments post construction: Upon traffic availability (i.e., substantial completion), the project company is paid monthly availability payments comprising capital payment to service the debt and equity over the term of the agreement and an O&M payment for the costs associated with new infrastructure O&M, existing infrastructure O&M, and new infrastructure major rehab.

Indexation: The availability payments are subject to the following indexation factors:

- O&M payment – monthly payment indexed and sculpted to match the costs associated with new infrastructure O&M, existing infrastructure O&M, and new infrastructure major rehab. Alberta Transportation established a combined index including CPI and seven separately published indices.
- Capital payment – the portion of the availability payment dedicated to debt service is un-indexed. This has been sized to service the financing over the term of the agreement.

Deductions: The monthly availability-based payments are subject to the following deductions:

- Performance-based adjustments – lowers the payments if the roadway is not open and available for public travel.
- Holdbacks – a deduction regime commencing towards the end of the project life, which will withhold payments if the project company does not satisfy the Handback Requirements

Special adjustment: A one-time traffic volume adjustment if traffic exceeds projections of 125,000 vehicles per day to pay the project company for the increased O&M costs associated with the increased traffic.

(24)	**Source(s) of Revenues or Payments**	All payments are guaranteed by the Province of Alberta.
(25)	**Proposer Team Member(s) Equity Investment**	The total equity investment in the project is $58 million (C$72 million). At the time of financial close, Meridiam was the largest shareholder in the company with a 50% share of the project company due to an equity investment of $29 million (C$36 million). The equity investment is in the form of equity.

(26) Financing Method(s) and Value(s)

Financing methods used for NEAH	$ million	C$ million	% of external financing
Taxable Bonds	427	535	88%
Long term equity	58	72	12%
Total external financing	485	607	100%

(27) Key Financial and Funding Challenges and Solutions Implemented

***Challenge*: Short time frame to achieve financial close to meet the project delivery schedule**

***Solution*:** NEAH demonstrates Meridiam's ability to achieve financial close quickly—close was achieved only 48 days after selection as preferred proponent, and 56 days after submission of a binding bid with fully committed financing. CDOT will benefit from Meridiam's experience in being able to execute financing in a very short time frame.

Project Delivery Begins with Financial Close

NEAH shows Meridiam's ability to achieve financial close quickly—with close achieved only 48 days after selection as preferred proponent

***Challenge*: Cost-effective financing through competitive process**

***Solution*:** Meridiam was the consortium lead in evaluating financing solutions, which included bank debt, private placement bond, and widely distributed bond. We also undertook a competition of underwriters' terms to ensure an optimal financing. This process was put in place to compete multiple alternatives to find the optimal solution.

***Challenge*: Achieving A- rating to reduce cost of capital**

***Solution*:** Meridiam also worked intensively with the rating agencies to address multiple rounds of technical and commercial due diligence. Much like PABs, the widely distributed Taxable Bonds used require a public rating. The project achieved an A-level rating (from S&P and DBRS) which enhanced delivery of cost-effective senior funding. This commitment to competitive and robust financing process:

(i) Ensured the most cost-effective private financing package with the issuance of NEAH bonds marking the first time the spread on a Canadian P3 amortizing bond broke the 200 basis point floor since the 2008 financial crisis.

(ii) Contributed to the consortium's bid providing an overall $296 million (C$370 million) savings on a net present value basis, compared to Alberta Transportation's estimated cost of using traditional design-bid-build delivery.

Met Schedule Even With New Rating Agency Methodology

Meridiam went through multiple rounds of technical and commercial due diligence within an unchanged timetable driven by the client.

***Challenge*: New project finance rating methodology**

***Solution*:** The issuance of the NEAH long-dated bonds represented the first financial close achieved by a Canadian P3 project rated in accordance with S&P's new "Project Finance Construction and Operations Counterparty Methodology" (published on Dec. 20, 2011), which superseded previously applicable criteria, "Updated

Project Finance Summary Debt Rating Criteria" (published on Sept. 18, 2007). As some criteria had changed, and the rating agency's analyst team was using a new methodology, it was necessary to go through multiple rounds of technical and commercial due diligence within an unchanged timetable driven by the client. The project still achieved an A-level rating and cost-efficient senior funding. The updated "Project Finance Construction and Operations Counterparty Methodology" has been used on projects in the US as well and will likely be used to rate debt or bond issuances on I-70 East.

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

Submitted as Equity Member Project #5

FORM F: PROJECT/TRANSACTION DESCRIPTION

- ☒ Equity Member: **Meridiam**
- ☒ Equity Member: **Kiewit**
- ☒ Lead Contractor
- ☐ Lead Engineer
- ☐ Lead Operator
- ☒ Joint venturer in Lead Engineer: **Parsons Brinkerhoff**
- ☒ Affiliates of Equity Members: **Meridiam, Kiewit;** Lead Contractor: **Kiewit**

No.	Required Information	Response
I. BACKGROUND INFORMATION		
(1)	**Project Name**	**Region of Waterloo Stage 1 Light Rail Transit (Waterloo LRT)**
(2)	**Type of Facility**	Light rail transit over existing roads.
(3)	**Owner/ Procuring Authority**	The Regional Municipality of Waterloo (the Region) The Region retained Infrastructure Ontario (IO) as the procurement lead, providing advice and assistance throughout the procurement.
(4)	**Brief Description of Project**	

This $496 million (C$621 million) 11.8 mile LRT line between Conestoga Mall in the City of Waterloo and Fairview Park Mall in the City of Kitchener, in Ontario, Canada, was procured under an availability payment DBFOM model.

The Waterloo LRT uses a mixture of on-road running and existing railway corridors and is designed to fit within the existing urban constraints with a goal to minimize impacts to the communities. The project has a construction period of 3.2 years and a 30-year operating period.

The project demonstrates Meridiam's and Kiewit's commitment and capacity to successfully work together and reach financial close using a hybrid structure of short- and long-term financing.

Why we included Waterloo LRT:

- Kiewit and Meridiam partnership: equity and construction
- Closed $496 million project in an urban environment with complex interfaces
- Availability payment mechanism with long-term bond similar to PABs

Waterloo LRT rendering

Many of Waterloo LRT's goals are similar to I-70 East, including:

- Moving people efficiently, comfortably, and conveniently
- Work with the community to minimize impacts during construction and operations
- Transforming communities and neighborhoods, while protecting the stability of others and recognizing the need to enhance connectivity.

(5)	**Contract Term**	DBFOM contract term 05/2014 – 07/2047 (33 years)
(6)	**Current Status**	Under construction (28% complete)

(7) **Key Dates and Milestones**

Contract Milestone	Contracted Dates	Actual
Contract Execution	5/6/2014	5/6/2014
Financial Close	5/9/2014	5/9/2014
Commencement of Design	0 months 5/2014	0 months 5/2014
Commencement of Construction	4 months 8/2014	4 months 8/2014
Achievement of Substantial Completion	39 months 7/2017	39 months 7/2017 (anticipated)
Service/Operations Commencement	39 months 7/2017	39 months 7/2017 (anticipated)
Achievement of Final Completion	44 months 12/2017	44 months 12/2017 (anticipated)
End of Service/Operations	33 years 7/2047	33 years 7/2047 (anticipated)

(8) **Relevance to the Project**

Substantive Evaluation Criteria, Other Relevant Criteria

Waterloo LRT includes the following items of financial relevance to I-70 East:

Financed project was located in North America | Waterloo LRT is located in the Region of Waterloo in Ontario, Canada within a highly confined urban area. The team was able to reach financial close within 37 business days of being selected as preferred proponent.

Project financing with bonds | Project includes long-term fixed-rate publicly traded bonds, which are very similar in nature to PABs. The long-term bonds have yields equivalent to recently issued privately placed P3 transportation PABs and are a highly rated investment.

Financed project includes road work | The project route includes two significant on-road segments, requires maintenance of vehicular traffic during construction, and integration of maintenance activities with other entities performing roadway maintenance.

Participation as an equity member in projects using an availability payment model | Affiliates of Kiewit Development Co. and Meridiam I-70E CO are equity members in the developer and the project uses an availability payment model.

As a member of the lead contractor joint venture and an equity member of the developer, Kiewit was involved in the key aspects of the project leading to a holistic technical solution that considered all of the interactions between designing, building, financing, operating, and maintaining the project. The technical scope that is relevant to I-70 East includes:

Roadway expansion (including interchanges) | The project includes the design and construction of approximately 12 miles of light rail trackways through the two neighboring cities of Waterloo and Kitchener. Large portions of the trackways are routed through major urban streets and high traffic corridors. Due to the addition of the trackway, many of the existing roadways require significant expansion and reconstruction. Sections of the proposed LRT route involve the expansion of four-lane, two-way arterial roads to accommodate the proposed trackways. Almost all of the existing roads and sidewalks through which the LRT travels are reconstructed as part of the project, replacing many aging roadways during the course of the construction.

Demolition of existing infrastructure | To facilitate the maintenance of public infrastructure and utilities after the LRT begins operation, a large number of infrastructure elements are relocated outside of the LRT's proposed travel routes. This leads to the demolition and removal of many pieces of existing urban infrastructure, both simple and complex. This includes the removal of over 100,000 feet of existing water mains, storm sewers, and sanitary pipes up to five feet in diameter; utility structures such as reinforced concrete manholes up to 10 feet in diameter; active power, telecommunications, and traffic signal poles; and over 300,000 square yards of current pavements.

O&M storage facility

A number of existing public structures are removed for the construction of their replacements including a public pedestrian bridge and a number of active railway crossings and railway structures. Existing roadway bridges and structures were rehabilitated and reinforced for light rail usage, including a four-lane, two-way arterial overpass over an existing freeway.

Uptown King Street rendering

Major excavation | A major area of excavation is the operations, maintenance, and storage facilities (OMSF) for the light rail vehicles. For the site preparation and construction of the three main buildings in the OMSF, over 540,000 cubic yards of earthworks removal was necessary to complete the structural foundations, the underground infrastructure, and the final finished grade of the OMSF yard.

Complex traffic management in urban setting | With construction work along many of the Region's major arterial streets, detailed traffic planning and management is implemented on the project. A project-wide traffic management plan outlines the measures and requirements for managing public traffic. Specific requirements in the plan include maintaining local access to all properties and businesses, plus emergency responder access

at all times. A traffic quality management plan governs the implementation and conditions of traffic management and outlines the daily monitoring of traffic quality, the inspection of traffic control measures, and the corrective action process to improve deficiencies in traffic management. Specific traffic control plans are submitted to the client and affected stakeholders for review prior to being deployed. These plans contain details regarding the traffic staging, lane closures, and traffic control phasing, all with conformance to the applicable standards, such as the Ontario Traffic Manuals.

Construction staging in a confined space | Construction is constrained by the lack of large, open staging spaces due to the urban nature of the project; the route travels through both city centers. Construction staging is carefully managed via detailed laydown and storage planning, procurement and delivery scheduling, and traffic staging. By conducting negotiations with private owners and property coordination, the project also acquires additional areas at various locations along the alignment for fulfilling material and equipment staging needs.

Wet utility work

Structures including ventilation and fire life safety considerations | The project team has engaged with local agencies in the design process to ensure all improvements fully comply with fire life safety systems. This is done by a local committee with representatives from the fire and police departments and ambulance services. The committee works with the design team in real-time fashion so that compliance can be met early on. Their focus includes everything from clear access/egress along the light rail system to ensuring code has been met during construction. The committees continue to monitor construction and commissioning activities to ensure that what was designed is reflected in the final product.


New Canadian National Railway bridge

Coordination with rail road and/or utility | To facilitate the construction of the LRT trackway, a significant number of third party utility structures had to be relocated outside of the trackway exclusion zone section where no utilities are permitted to run parallel to track. Further complication is added with the need to install new storm, water, and sanitary services within the same road section, but outside of the exclusion zone. This leaves minimal space for all new wet and dry utilities to be installed.


Railroad track shift

The majority of the relocations needed to occur prior to construction starting, which required the project to coordinate and communicate the new design with all third party utility companies. The project spent significant effort coordinating with up to 12 different companies within the water, gas, and telecommunication industries to identify all conflicts and resolve them ahead of time. Beyond the relocation of third party utilities, the project involves designing and installing prospect sleeves under the track to accommodate future utilities.

As the Waterloo LRT's alignment will also use existing railway corridors, a significant amount of coordination is needed with Canada National Railway tracks.

Pavement under similar conditions | Approximately 7.5 miles of the 12 miles of LRT trackway run through the existing road network. The large amount of sewer and water services being built, combined with the need to widen the existing road, results in the majority of the 7.5 miles requiring a new pavement structure. With the project being in Ontario and having a condensed construction schedule, construction needs to continue during the cold winter months where the low-temperature average can reach 13°F. The project requires paving up to 235,000 square yards of roads and parking lot areas. Through detailed planning, the project team has minimized the amount of paving that occurs during winter months.

Road Operator Interfaces | Approximately 7.5 miles of the 12 miles of LRT trackway run through the existing road network. Post substantial completion, the developer is responsible for the maintenance and repair of the roads, streets, and pathways including lanes and shoulders, sidewalks, medians, and any appurtenances necessary for lighting and drainage and conveyance and safety of the transit riders, motorists, and pedestrians. In some cases, these activities will require disruptions. For planned maintenance where there is a longer lead time, procedures specific to the work include actions which will be taken to minimize the disruptions to LRT operations, vehicular traffic, pedestrians, businesses, and other stakeholders. The developer will enact effective and informative communications protocols, working with the owner to advise the public. The planning process will first identify what the maintenance activity is, when the scheduled maintenance will be conducted, and the location. Minor disruption to local traffic flow will be coordinated by the O&M staff, while major disruptions requiring signaling outage will utilize local Police resources.

Construction of adapted bus rapid transit between Cambridge and Kitchener is underway (under a separate contract). The second stage of the program (which will be procured separately), will convert the adapted bus rapid transit alignment to LRT. The developer will coordinate the operations of the Waterloo LRT Project with the adapted bus rapid transit operations as well as the construction of Stage 2 LRT.

Workforce Development Programs | The project is expected to generate $42 million (C$52 million) in wages for the local workforce and add up to 433 man-years of construction employment in Ontario. The project has signed up with local construction

Workforce Development Builds Resources

The project is expected to generate $42 million (C$52 million) in wages for the local workforce and add up to 433 man-years of construction employment.

unions to fill its demands for the labor force. Through established union relationships, the project team will develop and implement an Apprenticeship Program with the goal of maximizing apprenticeship opportunities during construction.

The project has put together a 12-month Track School Program with the goal of educating, developing, and training local craftsmen within Ontario on railroad construction methods and equipment. To facilitate the training, the project brought expert trainers from Kiewit.

Air quality monitoring and mitigation in urban environment | the project team developed a set of processes which were outlined in the construction air and dust monitoring control plan. The plan established a framework for controlling and documenting, to the extent practicable, fugitive or airborne dust emissions at the project sites. Sources of dust include emission from site operation, equipment, existing soil conditions, and material handling. The project established multiple procedures to control sources, which are enforced by the project's health and safety advisors. Air quality is monitored by field staff site-wide. Air quality monitoring occurs on a daily basis in areas with sensitive receptors or contaminated sites.

Bridge work over an existing creek

Noise monitoring and mitigation | the first line of defense against noise is coming up with design alternatives that minimize the impacts on the environment. The project, through its design team, was able to eliminate the need to use driven piles for any of its structures that are adjacent to urban areas where residents could be impacted by the noise and vibration that is caused by the pile driving operation.

Relevance to the I-70 East Project (as described in Sections 8, 22, and 27)		
☐ TIFIA closed by developer	☒ PABs	☒ Highway/road financing
☒ Financed/located in North America	☒ Availability Payment model	☒ Rdwy/IC expan/reconst
☒ Construction staging, confined space	☒ Road operator interfaces	☒ Urban infrastructure demo
☒ Ventilation/fire life safety	☒ Workforce development programs	☒ Major excavation work
☒ RR/utility coordination	☐ Meet/exceed DBE	☒ Complex urban traffic mgmt
☒ Infra w/similar env conditions	☒ Air quality monitoring/mitigation	☒ Noise monitoring/mitigation

II. DESCRIPTION OF TEAM MEMBER INVOLVEMENT

(9) **Proposer Team Member(s) (or Affiliate(s)) Involved**

Meridiam I-70E CO, LLC's Affiliate, Meridiam Infrastructure Waterloo LRT ULC (MIWL), is a 35% equity member of the developer. MIWL is a wholly owned subsidiary of MNII, Meridiam I-70E CO, LLC's Financially Responsible Party.

MIWL is controlled by its fund manager, Meridiam Infrastructure North America Corp., the fund manager to MNII. MIWL's experience will be made available to and applied by Meridiam I-70

		East CO, LLC in the context of the Project as both entities share the same senior management. KDC's Affiliate, Kiewit Waterloo Investors Corp. (KWIC), is a 10% equity member of the developer, and KIC's Affiliate, Peter Kiewit Infrastructure Co. (PKIC), is a 49% member of the project's lead contractor joint venture. KWIC and PKIC are wholly owned subsidiaries of KIG, KDC's and KIC's Financially Responsible Party. KWIC's experience will be made available to and applied by KDC in the context of the Project, as both entities share the same senior management. KWIC and MIWL committed to invest equity at the same time as the other three original equity investors and participated in the project development and procurement process for the entirety of the period from the issuance of the request for qualifications to financial close and in particular for the entirety of the period following shortlisting.
(10)	**Role of Proposer Team Member(s) (or Affiliate(s))**	MNII's Affiliate is a 35% **Equity Member** of the developer. KDC's Affiliate is a 10% **Equity Member** of the developer. KIC's Affiliate is a 49% member in the **Lead Contractor** joint venture. Parsons Brinckerhoff was the owner's general engineering consultant who assisted in preparing design criteria and performance requirements. Norton Rose Fulbright served as the owner's legal advisor. In Tech served as insurance advisor to the equity members. RBC served as selling agent of the bonds.
(11)	**Key Personnel Involved, Roles and Responsibilities**	No Key Personnel were involved. **Value-Added Personnel** | From Section 2.1.3b also on the Waterloo project include David Miles, John McArthur, Sam Chai, and Sam Gilmore.
III. REFERENCE		
(12)	**Name**	[redacted]
(13)	**Title & Employer (current)**	[redacted]
(14)	**Title & Employer (at time of project/ transaction)**	[redacted]
(15)	**Phone & Email**	[redacted]

(16)	**Location & Time Zone**	[redacted]
(17)	**Other**	[redacted]
IV. TECHNICAL INFORMATION		
(18)	**Construction Value**	$397.4 million (C$ 497.6 million)
(19)	**Completion within/above Budget**	The Waterloo LRT project benefits from a fixed-price date-certain contract for the delivery of the construction-related scope of work from the lead contractor joint venture.
(20)	**O&M Value**	$15 million (C$ 18.8 million) annually
(21)	**Length of Road under Operation (centerline miles)**	The LRT route is approximately 12 miles, which includes on-road segments along existing streets and roads. Approximately 7.5 miles of the LRT trackway run through the existing road network.
(22)	**Key Technical Challenges and Solutions Implemented**	

Challenge: **Incorporating constructability and long-term life cycle into the design of the King Street Grade Separation (single largest structure on the project)**

Solution: The initial design required 6,600 ft. of piles to be driven resulting in a noisy operation within a very congested urban area. The design team, in coordination with the construction, O&M, and life cycle teams, developed an alternative solution that was more cost effective to build and maintain over the long-term. The alternative solution incorporated many benefits to the schedule and surrounding environment and included a secant wall by installing caissons to act as the substructure for the bridge, pouring the bridge deck and then excavating underneath to the new grade. This achieved two main goals: 1) there was no longer a need to excavate first and then drive the piles thus minimizing noise and vibration impacts to a sensitive area. 2) Using a secant wall eliminated the need to install temporary shoring which reduced the duration for the entire operation.

King Street rendering

Switching the design was not an easy undertaking. The lead contractor joint venture performed the required testing and analysis to prove the alternative was capable of satisfying the structural and geotechnical design requirements of the owner, while ensuring impacts to the long-term life cycle of the structure are minimized.

Challenge: **Hazardous Material Investigation, Quantification, and Execution of efficient disposal plan**

Solution: The owner provided information on the hazardous materials along the project corridor at bid time. As the project is being built in a region with a historical industrial base, the Ministry of Environment and other approving agencies are also aware of the challenge.

Post bid time the design coordination team has engaged the Engineer of Records to prepare "Modified Screening Level Risk Assessment" by geographical sections of the project. This

document provides a guideline for the locations of the contamination, contaminants of concern, volume of contaminated soil, and volume of contaminated soil that can be re-used within the project alignment to decrease the cost and environmental impact of hauling contaminated soil off-site for landfill disposal. This document along with borehole investigation done by the project team allows the construction team to prepare a better plan ahead of construction, communicate better information with the owner, other stakeholders and approving agencies, and execute construction efficiently through the contaminated locations.

King Street grade separation rendering

Challenge: **Construction Phasing and Maintenance of Traffic through the main artery of two cities**

Solution: The project alignment includes a major university, a hospital, corporate head offices of a major financial institution and a number of business and residential properties. The tight corridor and the existing property tie-in conditions to access each property do not allow for much flexibility to the detour plans.

The lead contractor joint venture adopted an active communication strategy with the stakeholders and the community. Sixty-day, 14-day and seven-day notices are provided to the public and businesses to communicate construction activities and duration in specific sections. Long standing detours have been setup to allow vehicular traffic to get used to moving around the construction sites.

Challenge: **Locate existing utilities, coordinate with the utility companies to design proposed relocations while progressing LRT design, and execute utility relocations**

Solution: The design team is mapping out the existing utilities through the use of extensive day lighting programs and 3D modeling. The design team allocated exclusive resources to coordinate with the utility companies to efficiently progress the utility relocations design in parallel with the LRT design. The design team has established processes and received buy-in from the owner and key stakeholders.

The construction team follows the processes established during design and maintains close coordination with the utility companies during the utility relocations.

Wet utility work

Challenge: **Managing contaminated groundwater**

Solution: The project team has proactively communicated with the Ministry of Environment and other approving agencies and prepared an extensive dewatering plan which includes the use of mobile treatment units on-site to process contaminated groundwater before discharging to storm sewers. The project team received buy-in from the stakeholders for the execution and monitoring plans for the groundwater management.

V. FINANCIAL INFORMATION

(23) **Payment Mechanism**

The Waterloo LRT is an availability payment based DBFOM project with revenue risk retained by the owner. The payment mechanism includes the following components:

Payments during construction: During the construction period, there are two forms of payments received from the owner, a series of milestone payments and a substantial completion payment. Totaling $359.4 million (C$450 million), these payments represent 90.4% of the construction value and 77.5% of total project costs during construction. Milestone payments begin once cumulative project costs surpass $104.4 million (C$130.7 million). Milestone payments are sized to reflect 85% of the cumulative costs incurred during such periods. There is also a substantial completion payment.

Payments post construction: upon substantial completion, the owner will begin making availability payments to the project company for having the project open and available for public travel.

Indexation: As part of the bidding process, the developer utilized three escalation factors based on CPI and five separately published indices: a) life cycle escalation factor; b) operations escalation factor; and c) maintenance escalation factor to be applied to the relevant components of the availability payment. Indexation does not apply to the capital portion of the availability payment.

Deductions: Availability payments are subject to:

- Service failure deductions due to breaches or failures in the developer's performance or obligations and
- Unavailability deductions based on arrival and departure times and/or completed trips.

During a six-month bedding-in period, unavailability and services failure deductions will be at a reduced rate.

Insurance adjustment: The owner is assuming a majority of the risk for changes in insurance costs for the entirety of the operating period for costs above a predetermined base annual insurance cost.

Volume adjustment: The availability payment is adjusted if operations result in a change in either operating hours or train miles. This would apply to either a reduction (from 96.5% to 99%) or an increase (101% to 103.5%) to base costs. Reductions or increases outside of these predetermined ranges will trigger a variation procedure.

(24)	**Source(s) of Revenues or Payments**	The milestone, substantial completion, and availability payments are backed by government appropriations. The availability payments will be paid from the Region's revenues.
(25)	**Proposer Team Member(s) Equity Investment**	The total equity investment in the project was $22.0 million (C$27.6 million). At the time of financial close: • Meridiam Affiliate was a 35% equity member of the project company with $7.7 million (C$9.7 million) invested.

- Kiewit Affiliate was a 10% equity member of the project company with $2.2 million (C$2.8 million) invested.

The method of investment is in the form of equity in the project company.

(26) **Financing Method(s) and Value(s)**

Private debt financing for the project consists of a combination of long-term senior bonds and short-term bank debt. The long-term senior bonds and the short-term senior bank facility have been rated BBB+ by S&P.

The $82.3 million (C$103 million) long-term bonds have a maturity date of March 2047, and have an all-in coupon of 4.77%, a spread of 195 basis points over the government of Canada curve. The long-term bonds are a private placement with a fixed rate. The long-term bonds have yields equivalent to recently issued privately placed P3 transportation PABs and are similarly rated.

RBC Capital Markets had a role of selling agent for the long-term senior bonds.

Alberta Treasury Branches was the sole provider of the $32.4 million (C$40.6 million) short-term senior bank facility with a term of approximately three years. This short-term bank facility was used to finance a portion of the substantial completion payment.

Financing methods used for Waterloo	$ million	C$ million	% of external financing
Short term bank	32	41	24%
Long term bonds	82	103	60%
Long term Equity	22	28	16%
Total external financing	136	172	100%

(27) **Key Financial and Funding Challenges and Solutions Implemented**

Challenge: **Structuring efficient long-term DBFOM financing**

Solution: Similar to the I-70 East Project, the Waterloo LRT project is a long-term DBFOM concession based on an availability payment mechanism in North America. Meridiam and Kiewit co-led the evaluation of financing solutions to obtain competitive financing in an amount of approximately $111.8 million (C$140 million) with only 50 days between project award and Financial Close. During this evaluation process, the financing group evaluated both short-term financing and long-term private placements, to ultimately create a hybrid solution. The short-term credit facility along with a long-term widely distributed bond was selected to optimize the capital structure while meeting the funding requirements of the Waterloo LRT project.

A similar analysis will be performed for the I-70 East Project to determine the best financing solution based on the project requirements and providing the best value for money. As part of

the financing process, the financing group went through a detailed due diligence process with the lenders to achieve the right balance between risk mitigation and debt repayment profile, efficiency, and cost effectiveness. During the process, there was a specific focus on security levels and stress testing to the financial model, with corresponding discussions involving the lenders, to obtain competitive financing while satisfying their requirements. This due diligence process will be valuable during the financing of I-70 East, as we will use the experience gained on the Waterloo LRT to obtain the most competitive financial solution.

The financing group spent significant time developing a solution that could be rated investment grade because of the unique nature of the structure. The short-term credit facility will be used to finance some construction costs until the substantial completion payment is received from the Region of Waterloo.

Challenge: **Balancing liquidity with value for money**

Solution: The project team selected a combination of a short-term credit facility and long term widely distributed PABs-like bonds, as the most competitive solution that satisfied the liquidity requirements of the project.

Alignment of Interests

By participating as both an equity member and lead contractor, Kiewit was able to generate value for money by driving transparently between all team members, , optimizing risk and scope allocation, and developing a holistic approach to life cycle solutions..

The short-term financing used to fund a percentage of the construction costs has been provided by a $32.4 million (C$40.6 million) short-term credit facility provided by Alberta Treasury Branches. The short-term facility is maturating approximately three years following financial close and will be fully repaid following the receipt of the substantial completion payment.

The long-term financing, similar to PABs, is provided by $82.3 million (C$103 million) long-term, widely distributed senior secured amortizing bonds—rated BBB+ by S&P. The final bond credit spread was 195 bps over the interpolated rate of two GOC bonds having maturity dates similar to the average life of the issued bonds, with a coupon of 4.77%.

Challenge: **Alignment of interest between equity members and the lead contractor**

Solution: By participating as equity members and with respect to Kiewit as a member of the lead contractor joint venture, Meridiam and Kiewit were able to take a fully integrated approach to the project during the bid process to show the robustness of the team supporting this complex transit project. This integrated approach ensured that all disciplines (from DB to O&M and life cycle) were involved in the development of each aspect of the project – ensuring the best value for money for the owner and most efficient life cycle plan.

Meridiam and Kiewit will apply this same integrated approach to its pursuit of I-70 East. Kiewit and Meridiam will be further aligned for the I-70 East given both are also participating as members of the Lead Operator joint venture.

Challenge: **Optimizing security package and acquiring an investment grade rating**

Solution: One of the challenges with LRT projects is the ability to scale up or down the level of service during the project term. Structuring a financing solution that is not only competitive, but flexible, requires a great deal of analysis and negotiation with lenders, underwriters, and rating agencies.

By engaging early with key financiers and rating agencies, Meridiam, Kiewit, and the remainder of the project team were able to secure a highly rated, competitively priced financing solution for Waterloo LRT, recognizing the unique complexity of rail projects relating to variable service levels.

The finance team spent a significant amount of time with the rating agency (S&P) early in the procurement process to structure a robust financial structure that was cognizant of the need to increase (or decrease) service levels throughout the project term.

By working closely with the rating agency, the team was able to structure a highly rated (BBB+) financial solution, which in turn attracted a large amount of investor interest. This investor interest, coupled with the broadly marketed approach, led to heightened competitive tension between investors and resulted in a very competitive market interest rate.

This approach will be applied to I-70 East Project to make sure an optimal and competitive financial solution is developed.

Lead
Contractor

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

Kiewit

Submitted as Lead Contractor Project #1

- ☐ Equity Member
- ☒ Lead Contractor: **Kiewit**
- ☐ Lead Engineer:
- ☐ Lead Operator
- ☒ Joint venturer in Lead Engineer: **Parsons Brinckerhoff, Jacobs** (GEC)
- ☒ Affiliate(s) of Lead Contractor: **Kiewit**

FORM F: PROJECT/TRANSACTION DESCRIPTION

No.	Required Information	Response
I. BACKGROUND INFORMATION		
(1)	**Project Name**	**Dallas/Fort Worth (DFW) Connector**
(2)	**Type of Facility**	The convergence and capacity improvement of State Highways (SH) 114 and 121 designed and constructed to interstate standards, and included connectivity and expansion of the local managed lanes network.
(3)	**Owner/ Procuring Authority**	Texas Department of Transportation (TxDOT)
(4)	**Brief Description of Project**	

The $991 million DFW Connector project consisted of the development, design, construction, and maintenance improvements along SH 114 and SH 121 including managed lanes along SH 114. Procured using a lump sum fixed price, best value format and executed using design-build-maintain (DBM) delivery, the 8.4-mile long corridor is located near the intersection of DFW's four most populous counties and is a vital connection for the economic viability of North Texas' business, commercial, and recreational interests.

The project was substantially completed in November 2013, nearly a full year ahead of the contracted final completion date. The first of the three 5-year capital maintenance terms began in November 2013.

Why we included DFW Connector:

- Major highway reconstruction with managed lanes in an urban area
- Significant engagement with stakeholders contributing to the success of the project
- Innovation and partnering commitment to support early completion

Proximity to DFW Airport and existing heavy traffic conditions required a detailed MOT plan and continual communication with the public and stakeholders.

The scope of work also included innovative maintenance of traffic (MOT) design to minimize disruption to 200,000 vehicles per day near the north entry/egress of DFW International Airport (DFWIA). At completion, 43 new bridge structures (including two interchanges and five overpasses) with 2,000 girders and several with post-tensioned straddle bents were constructed by this Kiewit-led joint venture. The team installed six large bridge class culverts and 150,000 ft. of drainage line. There are 68 retaining walls of over 800,000 sq. ft. and the project included 3.9 million cu. yds. of earthwork and 1.6 million sq. yds. of concrete paving for frontage roads, ramps, mainline and managed lanes.

(5)	**Contract Term**	DB contract term – 10/2009 – 04/2014 O&M contract term – 11/2013 – 11/2018
(6)	**Current Status**	Complete – 11/2013 O&M contract term – 11/2013 – 11/2018; the contract includes provisions for two additional 5-year maintenance terms at the discretion of TxDOT.

(7) **Key Dates and Milestones**

Contract Milestone	Contracted Dates	Actual
Contract Execution	10/06/2009	10/06/2009
Commencement of Design	0 months 10/2009	6 months early 04/2009
Commencement of Construction	10/2009	10/2009
Achievement of Substantial Completion	60 months 10/2014	49months 11/2013
Service/Operations Commencement	60 months 06/2014	49 months 11/2013
Achievement of Final Completion	60 months 10/2014	54 months 04/2014
End of Service/Operations	120 months 06/2019	114 months 11/2018

(8) **Relevance to the Project**

Substantive Evaluation Criteria, Other Relevant Criteria

Major excavation work | DFW Connector required approximately 3.9 million cu. yds. of earthwork activity that was ultimately balanced through a re-distribution of earthwork across the project footprint. During the initial MOT stage, Kiewit coordinated with adjacent projects to acquire fill material and further enhance the project's commitment to sustainable construction practices. This opened other areas for major excavation within the SH-114 interchange to allow for a new interchange configuration. Located adjacent to the DFWIA International Parkway toll road just south of the SH-114 interchange, this area featured one of the largest cut operations on the project. Excavated material was transported using legal haul trucks outfitted with FiveCubits systems. This system established an "invisible barrier" around the project footprint to track haul routes, haul speeds, fuel consumption and air quality, and served as part of a continued method analysis for operational efficiency. An additional measure Kiewit used to enhance operational effectiveness was to schedule long-hauls over public highways outside of the peak travel periods.

Roadway expansion, reconstruction or interchange | DFW Connector bears a tremendous similarity to the Colorado I-70 East Project due to a 8.4-mile corridor which included reconstruction and widening of four highways, two major interchanges, five overpasses, 37 bridges, new direct connect ramps, and continuous frontage roads. There are 24 general-purpose (GP) lanes at the widest point along the corridor, and two electronic managed lanes in each direction.

Concrete bridges provided the most economical solution to provide durable, low maintenance structures

Demolition of urban infrastructure | This project brings relevance based on the degree of demolition work that was required before this new facility could take shape. Kiewit demolished 35 bridges and more than 500,000 sq. yds. of pavement. Demolition activities were performed at night and during permitted weekend closures to reduce the impacts to weekday morning and evening peak travel periods for the traveling public, prevent impacts to motorists traveling to and from DFWIA during peak operational periods, and protect these motorists from potentially hazardous demolition operations.

Demolition activities were kept isolated from mainline traffic and predominately performed at night

Complex urban traffic management | The existing roadway was over 30 years old and carried over 200,000 vehicles per day though the DFW Connector corridor. Similarities to the I-70 East Project include a comprehensive MOT plan that was intuitive for drivers and focused on mobility. During the course of construction, more than 340 traffic switches were implemented, with an average of 160-280 man-hours per night shift and 100 man-hours per day shift spent setting up/taking down closures and sign maintenance. Kiewit paired this with a comprehensive and award-winning public outreach campaign so motorists and project stakeholders had a realistic expectation when traveling the corridor. Communication tools included daily and weekly e-mail alerts and TxDOT's first project mobile application, which provided real-time traffic map and closure information.

Airport access was maintained at all times to accommodate the peak operational air travel periods

Coordination with DFW | As one of the key elements of the MOT, design packages and construction was phased to keep access open to the airport while continuing to provide safe travel for heavy traffic throughout the construction period. Kiewit will use this outreach campaign as a base for developing the project specific outreach program on I-70 East.

Construction staging in confined space | Where SH-114 rests adjacent to the City of Grapevine, the corridor becomes significantly confined. In fact, this stretch of the corridor still features 24 GP lanes and two electronic managed lanes in each direction to fit into a constrained ROW. Added to that complexity is the delivery itself. Demolition, concrete recycling (crushing), earthwork, drainage, structures, and paving operations had to be carefully staged without safety risk to workers or the traveling public, while avoiding traffic volume impacts.

Coordination with railroad and/or utility | Coordination with the Fort Worth and Western Railroad (FWWR), Dallas Area Rapid Transit (DART), and the Fort Worth Transportation Authority (FWTA) began following contract execution. Led by a Kiewit railroad coordinator, a Railroad Task Force was established to maintain continuous interface with the railroad. Together, railroad crossing areas and ROW boundaries with multiple facility crossing were identified while construction procedures around railroad lines were co-developed. One crossing area is located in a highly confined space of SH-114 through the City of Grapevine, while the second crossing area is located in "bridge city" just north of the SH-121/SH-114 interchange. Railroad crossing work plans were a direct result of these meetings, which were then submitted to FWWR, DART, and FWTA for approval. This collaboration provided solutions to potential conflicts in the field and vetted out procedures for working around railroad to protect workers and maintain the integrity of railroad assets that intersect new roadway elements.

City streets, GP lanes, railroad ROW and a congested utility footprint required detailed planning and effective communication to mitigate challenges within this confined work area

DFW Connector received the 2014 FHWA Excellence in Utility Award in the Project Development category.

The project required 13 master utility adjustment agreements (MUAAs) and 58 supplemental agreements. To avoid utility impacts, the team re-phased certain portions of the work and coordinated with utility owners and agencies to fast-track many of the supplemental agreements. Utility types included telecommunications, electric transmission and distribution lines (overhead and underground), natural gas, and water/wastewater. Kiewit-Meridian Partners will utilize a similar railroad/utility task force on I-70 East.

Similar environmental conditions | The project rests in a corridor that offers a variety of surrounding features similar to I-70 East. For instance, the alignment from end-to-end sits adjacent to several mixed-use shopping centers, residential developments, business parks,

and medical centers. In addition, on the east end of the project rests DFW International Airport. This feature is very much similar to the I-70 East alignment with Denver International Airport positioned northeast of the project footprint. Moreover, the DFW Connector included the presence of a riparian habitat much like the water features crossing the I-70 East alignment. From the standpoint of year-around weather conditions, the DFW area endures a spectrum of weather behavior. With its proximity to the Gulf, DFW experiences high humidity factors year around and during the winter and spring seasons, endures sometimes violent weather patterns due to the clash of cold dry air from Canada and warm humid air from the Gulf. This fluctuation in temperature and precipitation during these seasons is very similar to those found in the Denver area.

Roadway operator interfaces | During the construction period of the corridor, Kiewit was also responsible for maintenance of the corridor. One year prior to substantial completion, the Kiewit team began meeting with the North Texas Tolling Authority (NTTA) during monthly tolling task force meetings. Upon achieving substantial completion, operational responsibility of the managed lanes portion of the corridor was placed into the jurisdiction of the NTTA. As the current maintenance service provider with TxDOT, this Kiewit team relied on scheduled monthly interface with the NTTA and the ETCS contractor for these managed lanes and uses co-developed protocols for maintenance incidents requiring interface with the NTTA.

The Kiewit-led project team worked 855 straight days without an accident.

Workforce development programs | In 2011, the Texas Workforce Commission (TWC) named this Kiewit-led joint venture the Employer of the Year. The project team worked with the Texas Workforce Commission and Workforce Solutions Greater Dallas to hire underserved and targeted populations to build long-term careers. The team provided training opportunities for entry-level employees to improve skills and increase their on-the-job responsibilities. Tools used for this effective program, including bi-lingual hiring managers, training, and outreach are planned for the I-70 East Project.

Meet or exceed DBE participation goals | This Kiewit team exceeded the contract goal with 12.69% DBE participation, equating to more than $125.6 million paid to certified DBE firms. The team worked diligently on outreach and giving DBE firms an opportunity in every scope of work. A strong team and focus on subcontractor and supplier management allowed for successful relationships with DBE subcontractors for the duration of the project.

FiveCubits asset management systems | FiveCubits provided real-time visibility of both team-owned and rental haul trucking and equipment assets. This system allowed our team to analyze cycle times and load counts to get the most out of our project fleet and reduce or eliminate idle times. At any time during shift, a haul truck's location was displayed on an aerial map of the site at the team's HUB office. This snapshot of the entire site would refresh every 45 seconds to provide supervisors a nearly continuous observation of trucking assets. The system showed the current status of each vehicle, such as loaded, unloaded, loading, or unloading material. Geo-fences were also established to delineate areas where status updates are being tracked vs. when haul trucks leave the site and are no longer in service.

Quality inspector development program | To mitigate the lack of experienced quality acceptance inspectors initially assigned to the project, the team's Quality Manager co-chaired an Inspector Development Program alongside TxDOT for 18 months. This program was offered to all QA inspectors on the project. The curriculum focused on coaching inspectors to understand their roles as auditors of construction performance at the appropriate hold points and to gain their buy-in as part of the larger Quality program. This groundwork effort led to collaborative solutions and program transparency once the program gained traction. Following substantial completion of the original contract, the project received a National Recognition Award at ACEC's 2013 Engineering Excellence Awards.

Acceleration of design and mobilization activates ahead of contract execution | To optimize the project schedule, the team chose to proceed at risk and mobilize into project offices, develop preliminary designs and begin field work to support design activities. During this advanced start, TxDOT participated in reviews and task forces and kept the team objectively informed. This advanced start allowed the project to proceed and accelerate the schedule. The preliminary design and the soils boring program were selected as early action items for advancement.

Fire life safety considerations | The project team held regular coordination meetings the with the Fire Departments and first responders for the City of Grapevine and South Lake to review Fire and Life Safety Access points both during construction (as part of the weekly MOT meetings) and for final design. As an example, this input from the local Fire and Life Safety representatives led to design modifications adding additional access points to the barrier-separated managed lanes.

Minimizing noise impacts to the communities | Most DFW Connector construction activity was performed during daytime shifts to coincide with daily stakeholder activity. In cases where nighttime work was necessary, crews implemented best management practices and remained highly cognizant of keeping construction "noise" to an acceptable level.

Maintaining air quality throughout the project | The team reduced fugitive dust by using water trucks and other continuous processing and stockpile spraying methods. Kiewit added water spray bars on the jaw crusher to suppress dust generation. To measure its effectiveness, Kiewit hired a specialist to test the plant and the readings were consistently near "zero" opacity readings.

Relevance to the I-70 East Project (as described in Sections 8 and 22)					
☐	TIFIA closed by developer	☐	PABs	☐	Highway/road financing
☐	Financed/located in North America	☐	Availability payment model	☒	Rdwy/IC exp/reconstruction
☒	Construction staging, confined space	☒	Road operator interfaces	☒	Urban infrastructure demo
☒	Ventilation/fire life safety	☒	Workforce development programs	☒	Major excavation work
☒	RR/utility coordination	☒	Meet/exceed DBE	☒	Complex urban traffic mgmt.
☒	Infra w/similar env conditions	☒	Air quality monitoring/mitigation	☒	Noise monitoring/mitigation

II. DESCRIPTION OF TEAM MEMBER INVOLVEMENT

(9)	**Proposer Team Member(s) Involved**	KIC's Affiliate, Kiewit Infrastructure South Co. (KISC), is a 65% member of the project's lead contractor. KISC is a wholly owned subsidiary of KIG, KIC's Financially Responsible Party. KISC's experience will be made available to and applied by KIC in the context of the Project as both entities share the same senior management.
(10)	**Role of Proposer Team Member(s)**	The Kiewit Affiliate is involved as a joint venture member of the project's **Lead Contractor** (Managing Partner), Developer and Capital Maintenance provider. Parsons Brinckerhoff – **Lead Engineer** Jacobs Engineering, Inc. – Owner's engineer
(11)	**Key Personnel Involved, Roles, Responsibilities**	**Tom Howell, DB/Maintenance Estimate Lead |** Played an instrumental role leading the design build and capital maintenance estimates. He was also a lead of the innovation task force, along with Parsons Brinckerhoff, for developing the team's Alternative Technical Concepts (ATCs). Following project award, Tom worked alongside the project's project director and TxDOT to leverage best practices from T-REX and plant the seeds of partnership and transparency. Further, Tom played an active role with the team's leadership during early MOT scheming and sequencing of work around the DFWIA. **Jenn Bradtmueller, Environmental Compliance Manager |** Jenn developed the initial design build environmental program and worked along TxDOT and TECQ to define the controls of the program, training measures for field crews, hold points for inspection, and steps to correct noncompliance if necessary. **Gordon Peterson, Quality Manager |** As the Quality Manager for the DFW Connector Project, Gordon developed and managed an ISO 9000 certified design build and maintenance quality program. He also worked along with TxDOT to define the controls of the program, established training measures for field crews, hold points for inspection, and steps to correct noncompliance. **Hunter Sydnor, Public Information Officer |** Hunter laid the groundwork for the public information program during the RFP phase by researching the communities to be impacted, identifying stakeholders and developing communication tools. Following project award, she developed the Crisis Communication Plan, the Public Information Plan, and focused on proper staffing and training to manage and execute these plans. She was an active participant in the initial PI/MOT task force, interfaced with the construction team and TxDOT to develop processes for sharing information as the project gained traction.

		Value-Added Personnel | From Section 2.1.3b also on the DFW Connector project include Tim Nelson, Larry Parks, Randy Sanman, Gray Kite, Len Rattigan, Chris Otto, Joe Wingerter, and Sam Gilmore.
III. REFERENCE		
(12)	**Name**	[redacted]
(13)	**Title & Employer (current)**	[redacted]
(14)	**Title & Employer (at time of project/ transaction)**	[redacted]
(15)	**Phone & Email**	[redacted]
(16)	**Location & Time Zone**	[redacted]
(17)	**Other**	[redacted]
IV. TECHNICAL INFORMATION		
(18)	**Construction Value**	$916 million (original)
(19)	**Completion within/above Budget**	Final acceptance value – $991 million. Due to a strong partnership with TxDOT and the exceptional delivery performance, TxDOT entered into multiple additional scope components contracts with the Kiewit-led joint venture in order to improve adjacent infrastructure to the original DFW Connector Project. This included additional scope in capacity improvements for FM 2499 and the SH-121/360 interchange. Additional mobility improvements were made on the Main Street Bypass Ramp and emergency access improvements for City of Grapevine Fire and Police Departments. Even with these additional scope elements the team reached final completion six months early and provided $9 million in value engineering.
(20)	**O&M Value**	Annual – $3.3 million; each 5-year term (three optional terms) – $16.7 million
(21)	**Length of Road under Operation (centerline miles)**	8.4 centerline miles (the FM 2499 contract physically added 1.0 centerline miles to the overall project footprint)

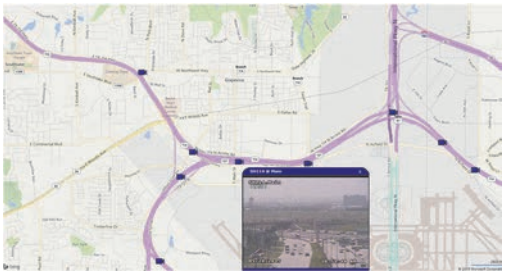
***Challenge*: Maintaining existing number of lanes at the north end of DFWIA**

Solution: With the input of constructability reviews during design and the implementation of detailed work plans that included optimal construction phasing the Kiewit team kept existing lanes of traffic open through this busy interchange throughout construction and maintained access to the north end of DFWIA and access to downtown Dallas from the west side of the DFW area. The dedicated PI team maintained continuous interaction with local stakeholders on a daily basis to inform them of upcoming construction activities and an interactive web page that informed the traveling public of upcoming lane closures, detours, and traffic accidents. If lane closures occurred, alternate lanes and/or routes were made available to accommodate the traffic volume through this corridor.

The ROW boundaries on SH-114 through the city of Grapevine illustrate the confined nature of the project footprint

***Challenge:* Maintaining existing traffic volume through our work zones during demolition**

Solution: The traveling public was always isolated from demolition operations through the use of freeway detours during evening or weekend closures. In addition, the DFW web page informed the traveling public of closures and possible detours to provide information to help eliminate long traffic delays. The project called for the reconstruction of four intersection bridges over SH-114 and SH-121. Reconstruction of these bridges required extensive planning and communication with the cities of Grapevine and Southlake. Rather than demolish these bridges for complete reconstruction, the project team reconstructed the bridges in halves, which allowed these major connecting arterials to remain open.



The team's TMC was instrumental in monitoring motorist behavior and reactions to MOT changes, traffic conditions during peak periods, and facilitating incident identification and notification to first responders

***Challenge*: High traffic volumes adjacent to and through the DFWIA**

Solution: The team's approach to urban traffic management on SH-114, just north of DFWIA was founded on building work on the outside lanes first, inside second. The team built elements of the new facility on the outside first to avoid disrupting existing traffic configurations through a highly traveled corridor. This postponed the need to alter normal driving behavior for motorists until the team was ready to move traffic outside and open up large areas of work on the inside lanes. The Kiewit team monitored traffic using a self-contained traffic management center (TMC) at the HUB (Joint TxDOT/Kiewit DBJV) office which interfaced with the public information team to keep commuters and customer groups (e.g., DFWIA) informed about roadway incidents within the project limits. The team utilized real time video feed to monitor the actual traffic flow. After traffic switches during construction, this TMC

was best positioned to quickly determine if the change to traffic movement had a positive or negative impact on the traveling public, and provide details for adjustments as required.

In addition, if a traffic incident occurred, the team's traffic monitor identified the impact almost immediately within the corridor. Shortly thereafter, first responders were notified and arrived to the scene to assess and assist. The Kiewit team employed a courtesy patrol that provided roadside assistance and/or moved stranded vehicles from open lanes to keep traffic moving.

During holidays and special events, no lanes were closed and design packages were phased to keep the DFWIA access open while continuing to provide safe travel for heavy traffic throughout the construction period. The traffic management plan worked because the team was committed to maintaining a safe work zone, keeping the traffic moving and focusing on "making progress every day".

***Challenge*: Engage the affected communities in the project's success**

Solution: The project included an extensive stakeholder engagement program. The communities of Grapevine and Southlake are directly adjacent to the project site and the team worked closely with these communities and the North Central Texas Council of Government's Regional Transportation Council to obtain input on project details during the design phase. As with I-70 East, the enormity of the project created effects on those closest to the corridor as well as creating regional impacts. A monthly business owner's task force in conjunction with the local chamber, businesses and cities provided a forum for local businesses and stakeholders to come learn about potential impacts and how the work would be built. The design build team together with TxDOT remained open and transparent through these meetings, fostering trust and respect among those directly affected by the work. Several proven forms of communication including the project website, project mobile device applications, Facebook, Twitter and e-mail blasts were used to announce upcoming closures, accidents and unexpected events.

Elegant aesthetic treatments provided the perfect finishing touch and engaged the communities

Parsons Brinckerhoff also worked with the community and stakeholders to incorporate aesthetics into the design to complement the surroundings, and soften of the impacts of such a large project. Many of the large retaining walls were used to visually designate and complement the various regions along the alignment. With Grapevine's history of farming, and having both a historical and current function as railroad hub, full-scale images of trains and windmills were employed on select walls in the Grapevine corridor. Likewise, as drivers approach the airport interchanges and entrances, they are greeted by both large and small images of modern jet aircraft.

Challenge: **Proper interface with future tolling operator during construction**

Solution: The Kiewit team installed the civil infrastructure for the electronic toll collection system (ETCS) managed lanes (ML) portion of the corridor as part of the design and construction scope. This activity required early interface with TxDOT and the operator (NTTA) during construction. A tolling/ITS task force was established during the design period to bring TxDOT, NTTA, and this Kiewit team together to review the conceptual locations of tolling facility elements and if needed, make adjustments to the backbone infrastructure to accommodate MOT, schedule and new ML and GP roadway construction scope. Kiewit's field crews and NTTA crews closely coordinated and forecasted intervals when tolling equipment needed to be installed 9-6-3 months from the operation.

Challenge**: Maintaining ITS functionality during construction**

Solution: A tolling/ITS task force was used to interface with TxDOT ITS staff. During the design period PB had a dedicated ITS specialist to evaluate conceptual ITS locations in relation to new and existing backbone infrastructure. To maintain functionality of the existing system, select elements required temporary poles, signals and cabinets before moving or relocating during construction until the new system was in place. Kiewit and TxDOT had to define a tie-in window where the old system was taken offline and the new system was brought online. Shortly thereafter, a commissioning period was determined to ensure proper timing and functionality of the new system before being opened for highway use.

Challenge**: The original project identified more than 1,000 potential utility conflicts**

Solution: Through coordinated design efforts, the team re-phased portions of the work, limiting the number of utility relocations to approximately 100. The team coordinated with utility stakeholders and other agencies to fast-track many of the supplemental agreements resulting in an accelerated construction schedule. The use of joint task forces and partnering to address utility coordination enhanced communications and resulted in limited delays to the overall schedule. Since the work was near the airport, the team coordinated extensively with DFWIA staff to obtain airport related permits and incorporate FAA clearance requirements in the design. FAA also prohibited detention ponds as part of the storm drainage system because of the potential to waterfowl which could interfere with aviation. As a result, all drainage systems near DFWIA were designed to be self-draining within 24 hours.

Challenge**: Client-led permit applications**

Solution: The Kiewit team was already well-versed with the nuances of permit application and acquisitions in Texas. The team was proactive in applying for contractor-led permits early-on, and in addition, supported TxDOT with the client-led permit applications to avoid risks in delays. Kiewit led the acquisition of permitting for stormwater pollution and protection, industrial stormwater (batch plant), air quality (batch plants and concrete crushers) while the client led acquisitions for NEPA, wetlands, and habitat and wildlife permits.

Challenge**: Unidentified riparian woodland impact in the EIS**

Solution: The project was going to impact woodlands not identified in the EIS. Through participation with USACE, implementing the Water Resources Development Act (WRDA) section 214, the team and TxDOT realigned a portion of the frontage road to minimize riparian woodland impacts. This coordination effort strengthened the partnerships with all Stakeholders, and improved the construction schedule. The team utilized WRDA 2000 (Public

Law No. 106-541) as amended, which allowed the USACE to accept funds from non-federal public entities to provide priority review of their permit applications. Participation in this program expedited USACE permit review and approval process and reduced permitting durations to help achieve the project objectives.

***Challenge*: Maintaining schedule and flexibility with client-led right of way parcel acquisitions**

Solution: Prior to contract execution the client was unable to acquire all parcels identified in the technical provisions, this included an unidentified wetland in the ROW that the team had to accommodate and re-permit to minimize impacts. The Kiewit team also needed to assist in the acquisition of high-priority parcels first to reduce risk of project delays. Parcels were prioritized based on need, as determined by the construction sequencing. Discussions with property owners were critical to maintaining the construction schedule.

The ROW manager used aerial photography overlaid on a map of the entire project footprint to illustrate to each owner the impact to their property. This ROW team routinely brought feedback from property owners back to the ROW task force to explore minimize impacts even further. The ROW task force targeted a 14-month period to achieve 100% right of entry and use. Through collaboration on all levels, the team successfully acquired 54 parcels. Field crews were able to build on all properties within the target and delivered all acquisitions without any impact to the construction schedule.

> *"… the DFW Connector is another tremendous example of what state government can do when local and state entities partner with the private sector to deliver the best possible result to taxpayers. This project will reduce congestion in an extremely busy urban area, ease access to one of our nation's busiest airports, create jobs and promote long-term economic development…"*
>
> *Bill Meadows*
> *Texas Transportation Commissioner (former)*

***Challenge:* Deep excavations within a confined work area**

Solution: Kiewit crews used trench boxes or support of excavation (SOE) techniques for deep excavation operations, which took place on the west side of the corridor within a tightly confined workspace along the City of Grapevine. Traffic was detoured onto temporary pavement to allow traffic to remain open during these excavations. Further, the project included 3.9 million cu. yds. of excavation. Associated with the excavation, the team developed project-specific drilled shaft rating curves for side resistance and end bearings in two types of geologic formations. This reduced required shaft size and length without compromising design life and function.

***Challenge*: Temporary and permanent drainage systems to control stormwater within the project footprint**

Solution: The Kiewit team used various means and methods including, but not limited to, open cut drainage trenches, well point systems, sump pumps, pumps, and temporary drainage structures/pipes to ensure positive drainage during phases of construction and to facilitate

traffic. The team installed 37,000 ft. of box culvert and 130,000 ft. of drainage. These drainage controls eliminated ponding in areas that were unable to drain and prevented flooding of roadways or structures. The team also developed project-specific drainage solutions with input from the supplier, subcontractors, and maintenance personnel allowing for reduced maintenance requirements, fewer laterals, and more pre-casting structures.

***Challenge*: Geotechnical challenges included two very different soil parameters on each end of the corridor**

Solution: Parsons Brinckerhoff's in-house geotechnical was highly familiar with these conditions having such a deep history of work in DFW. The team analyzed the surrounding soils through two statnamic tests: 1) one within the SH-114 interchange and 2) on the west end of the corridor. A detailed geotechnical plan was developed early and approved by TxDOT, reducing the risk of unknown geotechnical conditions that the team was then better prepared for in the field.

Difficult soil conditions required creative approaches. The project site also had expansive clayey soils. Roadway and pavement design developed a straight forward approach to stabilize these soils, breaking the project area into zones, each requiring a specified amount and depth of lime treatment, assuring quality construction.

The expansive soils also provided challenges for the design of foundations for retaining walls and embankment fills. Since the project required removal of concrete from the existing roadway, bridges and drainage structures, the team elected to crush the removed concrete and use the resulting material as a designed ground improvement layer under new embankments and retaining walls.

***Challenge:* Groundwater controls and environmentally sensitive wetland areas**

Solution: This project contained environmentally sensitive wetland areas that required bridge designs to span sensitive areas and environmental constraints necessitated the design to divert drainage into swales or three large detention ponds to treat the stormwater for first flush before discharging to the ultimate outfall. Groundwater was managed with the team's SWPPP management plan and continuous monitoring of the systems by a site-specific groundwater team. This team was on-call 24 hours a day to respond to events or maintenance of the protection plan.

Focus on Sustainability

The Kiewit team recycled pavement on-site for use as pavement subgrade and as processed material within MSE walls.

Challenge: **Crushing operations, batch plant operations, and major equipment usage**

Solution: The team reduced fugitive dust by utilizing water trucks and other continuous processing and stockpile spraying methods. A reliable water supply was also made available for the concrete crushing operation. Kiewit added water spray bars on the jaw crusher to suppress dust generation. To measure its effectiveness, Kiewit hired a specialist to test the plant and the readings were consistently near "zero" opacity readings. Further, the permit-approved batch plant was equipped with a high-grade bag house and monitoring system and was inspected regularly. All major equipment pieces over 100 HP were equipped with tier 4 (interim or final) emissions control systems. In addition, with the use of Kiewit's telematics systems, idling times were significantly reduced.

Challenge: **Due to the proximity of the DFWIA, noise restrictions were minimal; however, the current FM 2499 "add-on" contract rests adjacent to three apartment complexes**

Solution: The majority of FM 2499 construction activity is performed during daytime shifts to coincide with daily stakeholder activity. In cases where nighttime work is necessary, crews implemented best management practices and remained highly cognizant of keeping construction "noise" to an acceptable level to coincide with stakeholder nighttime activity.

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

Kiewit

Submitted as Lead Contractor Project #2

- ☐ Equity Member
- ☒ Lead Contractor: **Kiewit**
- ☐ Lead Engineer
- ☐ Lead Operator
- ☒ Joint venturer in Lead Engineer**: Jacobs**
- ☐ Affiliate(s):

FORM F: PROJECT/TRANSACTION DESCRIPTION

No.	Required Information	Response
I. BACKGROUND INFORMATION		
(1)	**Project Name**	**Southeast Corridor Multi-Modal (T-REX)**
(2)	**Type of Facility**	Interstate highway and light rail transit (LRT) system.
(3)	**Owner/ Procuring Authority**	Colorado Department of Transportation and the Regional Transportation District (CDOT/RTD)
(4)	**Brief Description of Project**	

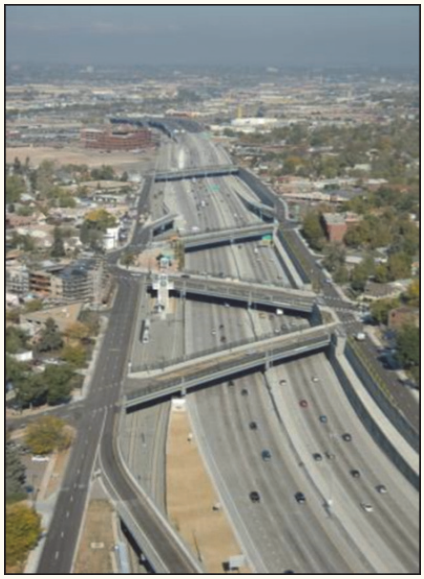
This $1.29 billion Kiewit-led design-build (DB) project involved the expansion of 17-miles of Interstates 25 and 225 with additional traveled lanes and improved ramp movements. The project also included the design and construction of 19-miles LRT system within the ROW. The work included 61 roadway bridges, 14 LRT bridges, three LRT tunnels, approximately 400 utility relocations, drainage improvements, and enhanced pedestrian access. The corridor improvements were completed while keeping over 200,000 vehicles per day moving on I-25 and I-225.

Why we included T-REX:

- Local highway reconstruction under heavy traffic
- Significant stakeholder and community interaction
- Project delivered on time with additional scope by Kiewit as sole contractor

Similar to the partial covered lowered segment of I-70 East, the northern segment of T-REX included full reconstruction and widening of the 2-mile-long "Narrows" section of I-25 from Franklin to Broadway including 30+ ft. of excavation to grade, four new overpass bridges, complex retaining wall systems, deep drainage with a large diameter South Platte outfall, and significant utility relocation work.

Other unique aspects included a proactive public information program, an environmental mitigation plan, 24/7/365 corridor-wide courtesy patrol, development, and implementation of a regional incident management plan and coordinated ITS to manage traffic flow. The project



Completed Narrows section with improved mobility

team has been recognized with a number of awards, including the Marvin Black Excellence in Partnering and the Build America Grand Award, both from the Associated General Contractors (AGC), as well as the PRIDE Award for Outstanding Media Relations and Public Education Program.

(5)	**Contract Term**	DB contract term – 06/2001 – 12/2006
(6)	**Current Status**	Complete – 09/2006

(7) **Key Dates and Milestones**

Contract Milestone	Contracted Dates	Actual
Contract Execution	06/01/2001	06/01/2001
Commencement of Design	0 months 06/2001	0 months 06/2001
Commencement of Construction	3 months 09/2001	3 months 09/2001
Achievement of Substantial Completion	63 months 09/2006	63 months 09/2006
Service/Operations Commencement	67 months 12/2006	66 months 11/2006
Achievement of Final Completion	67 months 12/2006	67 months 12/2006

(8) **Relevance to the Project**

Substantive Evaluation Criteria, Other Relevant Criteria

Significant roadway and interchange reconstruction | T-REX included the expansion and reconstruction of more than 150 lane miles of interstate highway, ramps, and arterial/side street connections requiring interface with seven local jurisdictions along the corridor. Interchange reconstruction included I-25/I-225 (the 14th busiest in the US), University, Colorado, Evans, Hampden, and Arapahoe along with numerous ramp reconfigurations, bridge replacements, and overpass widening.

I-25/I-225 interchange being constructed in phases to minimize impact to traffic

Demolition of existing infrastructure in urban environments | The Kiewit team coordinated and planned with CDOT and the communities. Bridge demolition was scheduled at night to allow highway closures for site safety control and to minimize traffic disruptions. Noise/dust mitigation and stakeholder notification/access plans were put in place as part of the demolition activities. Other significant demolition work included existing

Bridge demolition in the Narrows

drainage structures/pipes, utilities pavements, walls, fences and buildings along the corridor. The I-70 East Project will require similar significant demolition activities.

Major excavation work, with groundwater considerations and drainage improvements | Over 3 million cu. yds. of excavation was done along with major drainage upgrades throughout the project including a 144 in. South Platte River outfall to relieve storm water runoff in the narrows low point at the Logan Street crossing. Other major drainage collection systems were constructed along Buchtel Ave., near the University interchange, at Colorado and Evans, and in and around the I-225/I-25 interchange.

72 in. drainage line installation near University Blvd.

Complex traffic management in urban areas | Kiewit managed and built the entire project while maintaining a minimum of 3 lanes of traffic in each direction on I-25 and I-225 from 5:30 a.m. until 9:00 p.m. Local arterials and side streets also required attention and coordination for construction phasing, signal timing adjustments, and other means to ensure local access mobility was maintained. Many of the same traffic management strategies will be performed on I-70 East.

Construction staging in confined spaces | Given its unique nature, which included highway reconstruction/widening and shoe-horning an entire double track light rail transit system into a common ROW while keeping traffic moving through one of Colorado's most congested corridors. The Narrows section is very similar to the work that will be required for the anticipated partial covered lowered segment of I-70 East.

Beginning of drilled shaft installation for walls in the Narrows

Structures that include ventilation and/or fire life safety considerations | The I-25/I-225 interchange included a number of structures that included ventilation and/or fire life safety considerations relating to a series of covered box structures in the I-25/I-225 Interchange that had to be evaluated for conformity with NFPA 502 criteria. Additionally, with the large number of sound walls and depressed cut sections in the corridor, the project design had to consider and accommodate access/egress issues including openings placed in sound walls for access to hydrant water hook ups. Standpipe connections were also designed and built on the highway crossing structures so the fire departments could access hydrants at grade separated locations.

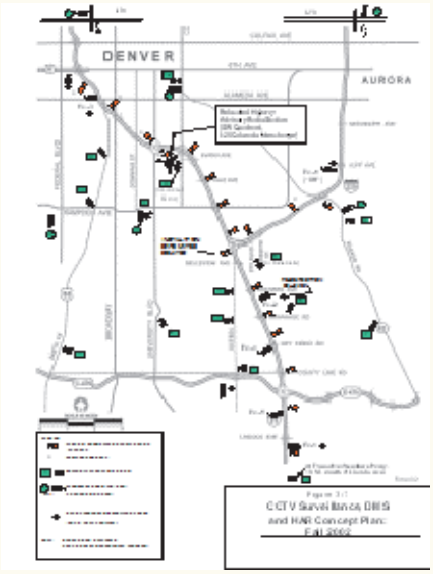
Coordination with railroad and/or utility companies | Railroad interface took place at the Broadway LRT tie-in as the rail maintenance of way is a joint use corridor with the BNSF mainline. T-REX also required the removal of the Denver Rio Grande railroad bridge at I-25/Evans that was donated to the Roaring Fork Transportation Authority. The project relocated nearly 400 utilities and installed almost 200 new power feeds. Utility conflicts were completed with no delay to the schedule.

Depiction of utility relocation near Buchtel

Roadway pavement and associated infrastructure under environmental conditions that are similar to those affecting the project | Over the five year period of the project, Kiewit paved nearly 700,000 tons of asphalt and laid approximately 770,000 sq. yds. of concrete pavement on T-REX. To ensure appropriate stability and durability, this paving work was conducted with attention to the quality from pavement design to material selection, mixing, hauling, and laying operations.

Interface with adjacent road operators | Interfacing with adjacent road operators was required at the north and south terminus of T-REX, and throughout the Project at arterial crossings and the LRT stations. Soon after T-REX was underway, CDOT initiated the Broadway Bridge project to widen these key structures and ensure consistent configuration for the motorist through the elevated segment of I-25 adjacent to T-REX. Traffic phasing, closures, deliveries, and community notifications were closely coordinated between the two projects through a weekly meeting—this meeting was chaired by Tom Howell, our proposed Design Build Manager for I-70 East. Additionally, many of the 13 LRT stations had transit oriented development (TOD) concepts in various stages of planning, design, and construction. Kiewit created a TOD task force to facilitate communication and coordination with these sites as well.

Complex regional network of an integrated intelligent transportation system (ITS) | This included more than $60 million in dynamic message signs, CCTV cameras, freeway and arterial detection, ramp metering, fiber communications network, Interim Traffic Management Center housing an incident information management system, and public information web channels. During the construction phase a project website was established which helped to inform the public of real-time traffic conditions.

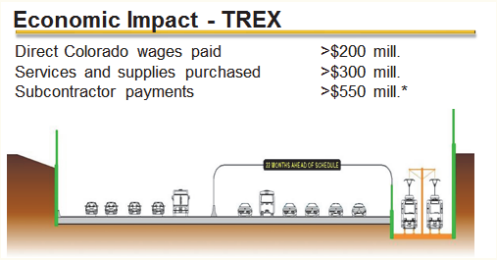


Installed over 300 ITS elements including cameras, VMS, highway advisory radio, and ramp metering

Workforce development and partnerships with local community organizations and/or apprenticeship programs | The Kiewit-led JV had a peak work force of approximately 800 people on the project. These employees received site-specific safety, quality, and environmental compliance

training. Refresher courses and additional training were provided throughout the project term – this proved to be instrumental for growing a pool of highway construction craft and professional employees in the Colorado market.

Throughout the project, Kiewit partnered with the Denver Hispanic Chamber of Commerce, Colorado Black Chamber of Commerce, Rocky Mountain Indian Chamber of Commerce, Colorado Women's Chamber of Commerce, Asian Chamber of Commerce, and the Minority & Women's Chamber Coalition for interface with membership, subcontracting opportunity notification, various training seminars, and employment announcements. This partnership between the local Kiewit team and these important community organizations has continued through the delivery of other important local projects and ongoing collaboration for I-70 East has already been initiated.



Includes more than $200 million in payments to DBE and small businesses and more than 40 design firms

Achievement of or exceeding goals relating to participation of disadvantaged businesses, small businesses and/or other business that are subject to equivalent programs | The project team maximized work opportunities throughout Colorado's DBE community. The Kiewit team was awarded a Good Faith Effort award for the $168 million paid to DBE contractors (14.55%). Approximately 160 of the 400 subcontractors/supplier partners on the project were certified DBEs. CDOT's certified DBE roster grew 34% as a result of T-REX as the team proactively worked to increase the number of certified firms in the state helping to build DBE capacity.

Air quality monitoring and mitigation | Kiewit was granted a construction permit under the Air Quality Control Commission, Regulation 3 to prevent off-site transport of dust emission. Five sites along the corridor were continuously monitored. Dust control measures included continuous watering of dust generating activities, covering of stockpiles, and limited equipment engine idling.

Hotel vouchers provided for residents in the "Eligibility Zone" mitigated impacts during demolition

Noise monitoring and mitigation | Kiewit implemented a program on T-REX that set a new standard for highway construction within an urban environment. A unique nighttime noise mitigation program was developed that included a number of measures, including the deployment of mobile sound walls and hotel vouchers for qualifying residences (within a calculated "eligibility zone") impacted by major structure activities (demolition, girder setting) that otherwise could not be accomplished during daylight hours and with freeway lane availability constraints.

Relevance to the I-70 East Project (as described in Sections 8 and 22)		
☐ TIFIA closed by developer	☐ PABs	☐ Highway/road financing
☐ Financed/located in North America	☐ Availability payment model	☒ Rdwy/IC exp/reconstruction
☒ Construction staging, confined space	☒ Road operator interfaces	☒ Urban infrastructure demo
☒ Ventilation/fire life safety	☒ Workforce development programs	☒ Major excavation work
☒ RR/utility coordination	☒ Meet/exceed DBE	☒ Complex urban traffic mgmt.
☒ Infra w/similar env conditions	☒ Air quality monitoring/mitigation	☒ Noise monitoring/mitigation

II. DESCRIPTION OF TEAM MEMBER INVOLVEMENT

(9)	**Proposer Team Member(s) Involved**	Kiewit Construction Company (KCC), is a 80% member of the project's lead contractor. KCC was reorganized as KIC in 2010.
(10)	**Role of Proposer Team Member(s)**	Kiewit Infrastructure Co. – **Lead Contractor** (Managing Partner) Jacobs Engineering, Inc.– Owner's Engineer The following team members also participated in this project: Sturgeon Electric – Electrical, Signals Anderson Drilling – Drilled Shafts Iron Woman – Trucking Shannon & Wilson – Geotech Engineering HCL Engineering – Surveying and CAD
(11)	**Key Personnel Involved, Roles, Responsibilities**	**Tom Howell, Construction Manager** | Tom was a senior manager on T-REX from the original DB estimate/proposal through final acceptance. After contract execution, he was the deputy project director with responsibility for overseeing the management team during design and ensuring construction activities were effectively planned and executed. Tom completed the assignment as the project director. **Gordon Peterson, Lead Quality Manager |** Gordon was the lead quality manager for state certified Kiewit materials and testing lab. He was responsible for oversight of the testing, reporting, and documenting of materials incorporated into the paving materials for the project. He also served on a working group that developed the initial Kiewit DB quality management plan (QMP). **Hunter Sydnor, Community and Public Relations Manager |** Hunter was the south segment (Hampden to Lincoln) public information (PI) manager and supported the development of the initial public involvement/information program alongside CDOT/RTD and a broad customer group base, in addition to establishing interfaces with local emergency responders and the team's MOT and Community Stakeholder Task Forces. **Kevin Custy**, **Utility Manager |** Kevin was the utility manager for CDOT/RTD on T-REX. With 27 years in the industry, he is one of

		Colorado's most knowledgeable and experienced professionals in identifying and mitigating utility conflicts in congested urban transportation projects. **Value-Added Personnel** | From Section 2.1.3b also on the T-REX project included Barry Thoendal, Tim Nelson, Greg Fischer, Larry Parks, Tim Mackin, Landon Beard, Chet Haptonstall, Van Groves, Randy Sanman, Joe Wingerter, Sam Gilmore, and Randy Pierce.
III. REFERENCE		
(12)	**Name**	[redacted]
(13)	**Title & Employer (current)**	[redacted]
(14)	**Title & Employer (at time of project/ transaction)**	[redacted]
(15)	**Phone & Email**	[redacted]
(16)	**Location & Time Zone**	[redacted]
(17)	**Other**	[redacted]
IV. TECHNICAL INFORMATION		
(18)	**Construction Value**	$1.18 billion
(19)	**Completion within/above Budget**	Final Contract Value: $1.29 billion (9% increase) CDOT/RTD, taking advantage of the resources and expertise of the Kiewit-led team, added over $100 million of change order work to the project. The goal was to deliver additional elements to enhance the overall effectiveness and value of the public investment of the project. These change orders primarily involved scope enhancements (many requested by third parties) with the addition of the Colorado and Hampden bridges, Arapahoe parking/maintenance facility reconfiguration, additional pedestrian bridges, increased drainage capacity, LRT station upgrades, and other light rail improvements. All change order work was completed within the original project schedule timeframe. Total change orders – 358 • 325 Owner Initiated: $117 million • 23 Contractor Initiated: $4 million • Total Value Engineering: 10 (Total Savings: $3 million) • Total Claims: $0
(20)	**O&M Value**	N/A

(21)	**Length of Road under Operation (centerline miles)**	17 centerline miles 18 miles of double track LRT

(22) **Key Technical Challenges and Solutions Implemented**

Challenge: **Maximizing the delivery of high priority Mega-Project: coordinating and performing the sheer magnitude of work required to complete 17 miles of highway improvements and 19 miles of new LRT construction in a corridor that included significant utility relocations, drainage improvements, excavation, paving, walls, bridge construction, track and electrification, lighting, signing, ITS, and landscaping while keeping traffic moving (~200,000 ADT), neighborhood/business access, and minimizing impacts—all within the 5 plus year schedule commitment.**

Solution: The project had the required resources (under the direction of our proposed I-70 East Design Build Manager Tom Howell) including; a 300+ person design team that produced almost 10,000 plan sheets, a $21 million project specific equipment fleet, more than 150 construction managers, engineers and superintendents, over 300 craft and hundreds of subcontractor/supply agreements. These resources were orchestrated through the implementation of an 8,000-activity Critical Path (CPM) schedule that included detailed method of handling traffic (MHT) plan, work phasing, and public information notification logic links to guide the ultimate successful delivery of the project.

Challenge: **Developing a technical solution that met/exceeded the project highway/LRT standards while delivering maximum scope within the CDOT/RTD budget constraints.**

Substantial Savings through ACCs

The Kiewit-led team developed 90+ Alternative Configuration Concepts—more than 20 were approved—for total savings of nearly $35 million.

Solution: The Kiewit-led DB team evaluated over 90 Alternative Configuration Concepts (ACCs); more than 20 were approved with a total savings to the project of nearly $35 million. After award the team continued to seek additional innovations and combined an ACC and with a value engineering (VE) concept to refine the reconfiguration of the I-25/I-225 interchange, providing a more functional interchange, and saving the project nearly $6 million.

Challenge: **Demolition of existing infrastructure in urban environments—perform the demolition of a dozen bridges spanning I-25/I-225 while safely maintaining required interstate traffic and local mobility and in compliance with required environmental health and safety criteria.**

Solution: Kiewit's team conducted detailed MHT planning including notification, signing, and signal timing of pre-approved detour routes. They performed detailed planning of the demolition activities, including closures, detours, equipment/personnel pre-positioning for the night closures of the Interstate. They also

"Washington Street Bridge – removing metal railing prior to structure demolition

ensured the mobilization of sufficient resources to complete full bridge demolition with minimum number of nights for closure (typically a single night).

Kiewit also obtained a nighttime noise variance from City and County of Denver by implementing comprehensive nighttime noise mitigation program including mobile noise barriers, hotel voucher program, and backup alarm/engine noise reduction devices on equipment among other measures. Additional mitigation measures to minimize the impact to the community included conducting site assessment for hazardous materials (asbestos coating/lead paint for legacy piping on bridges) and remediation when required, vibration monitoring at nearby structures with operational modifications made as appropriate, continuous dust suppression during demolition, and directing work site lighting away from local residences.

Challenge: **Geology for both T-REX and I-70 corridors are underlain by alluvial and windblown soils on top of the Denver Formation bedrock; additionally a high groundwater table exists in areas along both corridors. The design solution and construction applications needed tailored solutions:**

- **Geometry: deep excavations in urban area with limited ROW, high retaining walls, station lids, bridges with high capacity foundations, and interstate pavement**
- **Tunnels: deep open channels or large diameter pipe excavation**

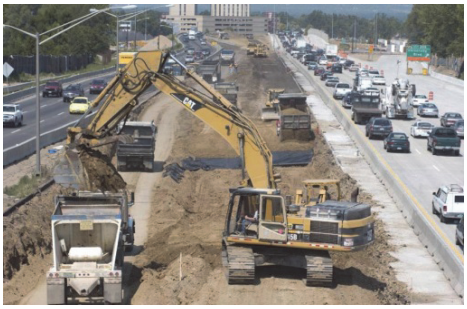
Geotechnical Solutions: Similar to segments of the I-70 roadway, widening and reconstruction in the tight T-REX urban area with a limited ROW necessitated the implementation of high cantilever retaining and tied-back walls (where ROW allowed for anchors). Drilled shaft walls were used to provide stiff enough elements to reduce bending. The Kiewit team (including our I-70 East geotechnical sub consultant Shannon & Wilson) completed soil-structure finite difference modeling to evaluate structural capacity of walls, as well as deformations at wall face and for assets behind the walls. Our design coupled the soil with the structure, instead of treating each element separately, resulting in a more accurate estimate of earth pressures and shaft capacity. We also completed pressure meter testing in the soil and rock to determine lateral soil/rock parameters for modeling ground behavior instead of the typical default parameters from commercially available programs.

Drainage Solutions: An example of one innovative element was the ACC that was approved to combine the I-25 outfall and the Mississippi Ave. outfall into a single higher capacity drainage system to reduce the overall length of the drainage alignment by one third, avoiding costly ROW acquisitions and diverting the tunnel away from potentially hazardous materials along the original route. However, tunneling under the high groundwater table passing several feet beneath a major City of Denver active storm drain along Mississippi Ave. presented some unique considerations. To resolve this, a tunnel-boring machine was used to construct the 12-foot diameter, 800 ft. long section of the outfall under Mississippi Ave. Traditional dewatering was not possible because of active traffic along Mississippi Ave. and the need to maintain business access. There was also a concern that dewatering would result in settlement and create differential pressures on the City of Denver storm drain. To address these challenges, tunneling was completed using an earth pressure balance machine to avoid widespread dewatering, control groundwater pressures at the tunnel face, and minimize ground movements along the alignment.

This ACC saved the project about $1 million.

Challenge: **Facilitating major excavation work in an urban environment: the project had nearly 3 million cu. yds. of mass excavation. Due to phasing requirements, the majority of this material had to be safely hauled by trucks entering/exiting live traffic to/from project embankment areas and designated waste areas.**

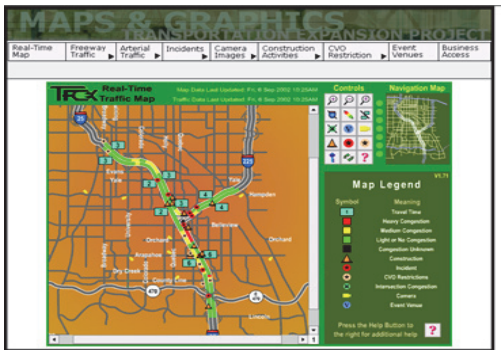
Solution: To minimize the impact to traffic and to ensure that maximum production efficiency for these excavation operations the work was performed in a barrier-separated work area with designated access/egress locations and/or done at night when traffic was lighter. To facilitate these operations the following steps were taken: proper advanced notification of affected communities and businesses, approved traffic management/MOT plans, MUTCD access/egress setup and monitoring, environmental mitigation procedures (dust, noise, light mitigation), appropriate Storm Water runoff measures, and establishment of site specific Best Management Practices *(BMPs).*



Efficient and safe work zone while minimizing traffic impacts

Challenge: **Traffic Management Strategy Solutions**

Solution: Recognizing that generally no viable alternative routes existed for the heavy volume of traffic on the corridor; arterial streets were already at (or near) capacity and that the corridor had extended peak periods with heavy demand in both directions, we implemented a number of traffic management solutions throughout the corridor during the five plus year construction period including:



Corridor traffic real time congestion from project website

- Implementing an early delivery, temporary HOV lane (ACC No. 6) from County line to Evans to encourage car-pooling and provide continuous throughput for bus and transit.
- Incorporating early ITS elements including an innovative Arterial Detection System (ACC No. 24) implementing over 300 cameras on corridor and regional arterial road networks.
- Establishing and staffing an interim Traffic Management Center (co-located at the CDOT CTMC) specific to monitoring and proactively managing the traffic conditions on T-REX corridor.
- Working closely with CDOT and local agencies through a weekly Traffic Management task force receiving input and support for the corridor Traffic Management Strategy Report and associated work site-specific MHT plans.
- Effectively implementing of a 24/7/365 corridor wide courtesy patrol.
- Robust PI and communication plans provided monthly, weekly, and daily updates on traffic conditions and upcoming phase shifts.

One of our top priorities was to establish and maintain a consistent MHT plan that followed federal and local standards while minimizing the impact to the more than 200,000 vehicles that traveled through the work zone each day. As a tactical measure to support this goal, our MHT

crews moved more than 216,000 feet of concrete barrier and other MUTC channeling devices to accommodate more than 6,500 overnight traffic shifts. The project's 2006 overall approval rating of 92% demonstrated team success for achieving the stated project goal to minimize inconvenience to the traveling public.

Challenge: **Assess and consider nearly 800 separate utility conflicts throughout the T-REX corridor.**

Solution: Although there were nearly 800 possible conflicts identified through the diligent pre-bid utility identification work that CDOT performed, we implemented an engaged design process that allowed many of the potential conflicts to be designed around and ended up with approximately 400 actual utility relocations. We established a joint task force to work closely to coordinate with more than 20 individual utility owners to implement the provisions of Colorado Senate Bill 203 and the "master" relocation agreement, or project-specific-utility-relocation-agreement (PSURA) for each utility company. The recently passed legislation required a new level of cooperation and coordination among CDOT, utility companies, and the Kiewit team, and provided a solid foundation for success for this key project element.

The Kiewit team set an early work activity to pothole every utility conflict on the project, gaining valuable additional subsurface utility engineering (SUE) data. This data was the basis for the utility task force and one-on-one meetings with each utility company where detailed cost estimates and schedules were established. Some of the major relocations included Denver Water transmission lines ranging from 16 in. – 84 in., Aurora's 42 in. water line, a 36 in. Metro Sewer line, 16 in. Denver Wastewater lines, 20 in. HP gas lines (by PSCo), and two large Century Link line relocations that included nearly a year of splicing by the utility. PSCo also relocated nearly every gas and electric facility they had within the project limits. Most of the major utility lines were on structures and had to be phased with the bridge construction that had seasonal construction constraints adding to the complexity. As a result, there were no utility relocation surprises, no issues, no major utility strikes, and no delay to the overall project schedule. There were no additional costs to the project owners and the utility companies. Rather, the project reportedly saved nearly 25% of CDOT's original utility budget.

Utility Approach Resulted in Substantial Savings

The project saved nearly 25% of CDOT's original utility budget.

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

Kiewit

Submitted as Lead Contractor Project #3

- ☐ Equity Member
- ☒ Lead Contractor: **Kiewit**
- ☐ Lead Engineer
- ☐ Lead Operator
- ☒ Joint venturer in Lead Engineer: **Parsons Brinckerhoff,** Technical Advisor to Concessionaire
- ☒ Affiliate(s) of **Kiewit Infrastructure Co**.

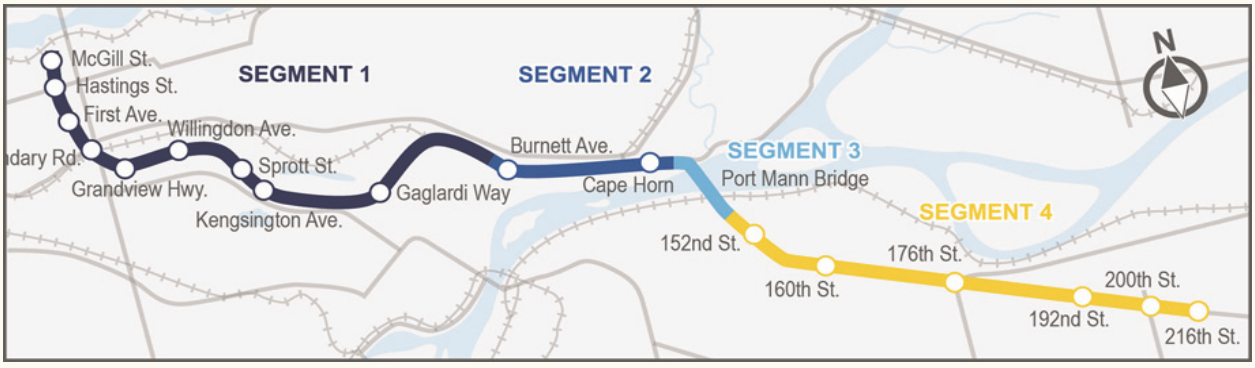
FORM F: PROJECT/TRANSACTION DESCRIPTION

No.	Required Information	Response
I. BACKGROUND INFORMATION		
(1)	**Project Name**	**Port Mann and Highway 1 Improvements (PMH1)**
(2)	**Type of Facility**	Highway expansion, construction of the Port Mann Bridge and Fraser Heights connector, improvements to multiple interchanges, and separate over- and underpass structures.
(3)	**Owner/ Procuring Authority**	Transportation Investment Corporation (TICorp)
(4)	**Brief Description of Project**	

The $1.96 billion (C$2.46 billion in 2009) design build Port Mann Bridge/Highway 1 Improvements is the largest single transportation project awarded in British Columbia's history. The project consisted of improving a 23-mile section of Highway 1 corridor, adding one lane in each direction west of the new Fraser River Crossing, and adding two lanes in each direction east of the crossing. PMH1 included significant upgrades to 17 interchanges and 28 over- and underpass structures located between Surrey and Vancouver. This massive project included the construction of a new iconic ten-lane bridge crossing the Fraser River. This stretch of highway is the most heavily travelled in Vancouver, carrying more than 250,000 vehicles each day during peak travel hours, similar to I-70 East's ADT.

Why we included Port Mann/Hwy. 1:

- One of the largest highway and bridge projects in North America
- Built under heavy traffic load in an urban environment
- Significant railroad and utility relocation coordination
- Interface with roadway O&M provider
- Toll system and ITS integration



Kiewit meridiam PARTNERS

The project was bid and awarded as a P3. However, due to a challenging financial closing process in the face of the 2008/2009 global financial crisis, TICorp a Crown corporation wholly-owned by the Province became the authority and concessionaire overseeing the implementation of the Project. As the lead contractor on the winning P3 team, TICorp decided to negotiate a design build contract with the Kiewit-led team to complete the project. During the development phase, Kiewit was actively involved with the concessionaire, the toll systems operator, and maintenance provider to develop innovative technical solutions that met or exceeded the requirements for the life of the project.

(5)	**Contract Term**	DB contract term : 06/2008 – 12/2014
(6)	**Current Status**	Substantial Completion has been achieved

(7) **Key Dates and Milestones**

Contract Milestone	Contracted Dates	Actual
Contract Execution	08/2008	03/2009
Commencement of Design	2 months 10/2008	(4 months)* 10/2008
Commencement of Construction	10 months 06/2009	4 months 7/2009
Achievement of Tolling Commencement	65 months 12/2013	46 months 12/2012**
Achievement of Substantial Completion	65 months 12/2013	70 months 12/2014***
Achievement of Final Completion	77 months 12/2014	78 months 08/2015***

* A limited notice to proceed (LNTP) for design was issues 4 months prior to the design build contract execution
** To provide the maximum benefit to the client, Kiewit committed to opening the new toll bridge one year earlier than the required date under the original contract. During the bid stage, the date was in 2013, but Kiewit agreed to change the date to 2012 before the prime design build contract was executed. This provided a significant benefit to TICorp and allowed for early tolling and revenue collection.
**To achieve the early start to tolling, Kiewit accelerated the Port Mann bridge construction; with TICorp concurrence some of the adjacent non-tolling work was deferred and revised substantial/final completion dates were established.

(8) **Relevance to the Project**

Substantive Evaluation Criteria, Other Relevant Criteria

Similar to I-70 East, PMH1 involved upgrades to existing transportation infrastructure and construction of new infrastructure. Expertise and knowledge gained from the PMH1 project on matters such as environmental stewardship, relationships with DBEs such as First Nations, stakeholder management, traffic management of the corridor which has over 250,000 vehicles per day, minimizing impacts to traveling public, management of subcontractors, coordination with rail road and utility companies, training local work force, and public communications will be valuable on I-70 East. To accommodate future traffic, the project design included congestion-reduction measures such as HOV lanes, improvements to the bicycling network, electronic tolling, and future light rail transit.

Unique and challenging aspects of this project similar to the ones expected on I-70 East include working in an urban environment and interacting with environmental agencies to obtain required

approvals in a timely manner, challenging geotechnical issues, working within and adjacent to a major urban highway and railway, as well as managing the acquisition of ROW properties.

> *"The drilling and blasting work has gone flawlessly, primarily due to the intense front-end preparation and rigorous planning of the events. Along with protection measures for fish as part of the blast procedures, the entire operation has been very successful."*
>
> *—Garry Dawson, Project Manager, Port Mann Bridge Replacement, Transportation Investment Corp.*

- **Roadway expansion and reconstruction, including interchange reconstruction |** Port Mann included widening of the Hwy. 1 corridor to improve 23 miles of access and safety. Work included upgrading 17 interchanges and 28 over- and underpass structures along with more than 1.3 million tons of base materials and over 700,000 tons of asphalt paving.
- **Demolition of existing infrastructure in urban environments |** Numerous highway infrastructures had to be demolished along Hwy. 1 including the existing 1.3-mile-long Port Mann Bridge, which involved blasting operations for portions of the massive concrete substructure elements.
- **Major excavation work, including groundwater considerations and/or drainage requirements |** Nearly 3 million cu. yds. of excavation was required and approximately 850,000 cu. yds. of surcharge. To expedite schedule by reducing surcharge times, approximately 390,000 cu. yds. of an expanded polystyrene (EPS) fill was used throughout the project. Many of the excavation sites for substructures, drainage, and EPS fills were below the groundwater table elevation and appropriate dewatering activities had to be undertaken.
- **Complex traffic management in urban areas |** With an ADT of 250,000 in some areas of the project, PMH1 is the busiest stretch of highway in British Columbia. The contract included a strict traffic management regimen that limited the times during which highway lanes could be closed. Kiewit developed detailed traffic management plans to limit lane closures to the specified times.
- **Construction staging in confined spaces |** Throughout the corridor, the improvements were made within a dense corridor with tight ROW lines, ongoing traffic, and numerous utility conflicts. An example of this was the full reconstruction that was required in several of the congested interchange areas. Additionally some of the box culverts were installed at nearly 100' below roadway grade in very tight and constrained spaces.
- **Structures that include ventilation and/or fire life safety considerations |** The B5913 Tunnel was designed and constructed with provisions for a supplemental water supply to provide additional water availability for the fire department to aid with fire suppression in the event of fire within the tunnel.

- **Coordination with railroad and/or utility companies |** During design, the team coordinated with 19 private and public utility owners, 3 railways, and 7 municipalities. During construction, Kiewit coordinated the work for several rehabilitated structures that crossed over railways or conflicted with third party utilities. This required continuous communication with the railway and finding work-arounds for several daily track crossing closures. Crews were often only given a 10-minute notification of an approaching train, which meant crews were well prepared for clearance of the railway ROW. This required continuous railway safety training for all personnel working within this footprint. Coordination involved the presence of a railroad flagger/spotter or even a representative of the company during construction. With a wide variety of utilities ranging from simple water lines to more complex jet fuel pipelines throughout the project, coordination with utility companies was imperative to the job's success.

"Threading the needle" at the convergence Highway 1 and Lougheed Highway, and the Canadian National Rail line

- **Roadway pavement and associated infrastructure under environmental conditions that are similar to those affecting the Project |** Under the design build contract Kiewit was required to provide a total of over 3 million sq. yds. of bridge and roadway surfacing throughout the corridor. These concrete decks and asphalt surfacing was put in place in an environment that included a range of freeze/thaw cycles and significant rain, snow, icing not unlike the I-70 East.

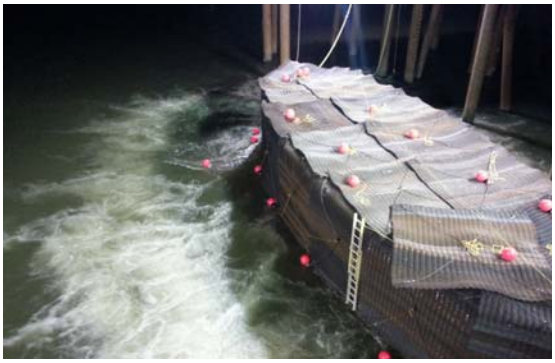
- **Interfaces with adjacent road operators |** Kiewit worked with other contractors at Kensington Avenue, Government Street, and Cariboo under other Ministry prime contractors. The team also interfaced with the Province's roadway maintenance contractor throughout the term of the contract.

- **Workforce development programs, including partnerships with local community organizations and/or apprenticeship programs |** In addition to maintaining local relationships, the DB team provided opportunities to train and educate the next generation of engineers. These efforts included project tours for local colleges and employing interns from many of the Canadian provinces, including students from Montréal. The Craft Mentoring Program recognized the benefits of pairing up trainees and apprentices with experienced craftsmen and foremen. Mentors are identified as individuals with strong communication skills along with knowledge and experience. Mentors are themselves provided training on how to pass on work skills and how to provide the trainees with opportunities to perform work under the correct level of supervision.

- **Achievement of or exceeding goals relating to participation of disadvantaged businesses, small businesses and/or other business that are subject to equivalent programs |** Kiewit exceeded the labor requirements (person-years) and First Nations' Contractor Opportunities Value requirements for members of the Identified First Nations groups in the contract. (More details are provided in Section 22.)

Air quality monitoring and mitigation in urban environments | In performing construction work next to live traffic it was imperative to mitigate dust – not only for the traveling public but also for the demolition of structures near fish-bearing water.

Noise monitoring and mitigation in urban environments | Recognizing noise restrictions, Kiewit monitored and mitigated noise when performing work near residential areas, especially during night shift operations. Measures such as rescheduling more noise intensive operations to daylight hours, working behind barriers, ensuring properly functioning equipment engine muffling, and adjusting operation when monitored levels exceeded certain thresholds for nearby sensitive receptors were all undertaken.



Kiewit implemented bubble curtains, fish deterrents, and comprehensive monitoring to protect aquatic wildlife during the demolition of large piers on the existing Port Mann bridge

Environmental program and controls | Given the proximity of the fish-bearing waters and other sensitive environmental areas, a detailed Project Environmental Mitigation Plan was developed that included a range of best management practices (BMP) implementation and monitoring measures along with additional commitments to replace impacted environmental habitats with an equal amount prior to construction while considering all environmental conditions during design development.

Relevance to the I-70 East Project (as described in Sections 8 and 22)					
☐	TIFIA closed by developer	☐	PABs	☐	Highway/road financing
☐	Financed/located in North America	☐	Availability Payment model	☒	Rdwy/IC exp/reconstruction
☒	Construction staging, confined space	☒	Road operator interfaces	☒	Urban infrastructure demo
☒	Ventilation/fire life safety	☒	Workforce development programs	☒	Major excavation work
☒	RR/utility coordination	☒	Meet/exceed DBE	☒	Complex urban traffic mgmt.
☒	Infra w/similar env conditions	☒	Air quality monitoring/mitigation	☒	Noise monitoring/mitigation

II. DESCRIPTION OF TEAM MEMBER INVOLVEMENT

(9) **Proposer Team Member(s) Involved**

Peter Kiewit Sons Co. (PKSC), is a 75% member of the project's **Lead Contractor**. PKSC was reorganized as Peter Kiewit Infrastructure Co. (PKIC) in 2010.

PKIC is a wholly owned subsidiary of Kiewit Infrastructure Group (KIG), Kiewit Infrastructure Co.'s (KIC) Financially Responsible Party.

PKIC's experience will be made available to and applied by KIC in the context of I-70 East as both entities share the same senior management.

(10)	**Role of Proposer Team Member(s)**	PKIC was involved as the managing partner (75%) joint venture member of the project's lead contractor. As the leading partner of the DBJV, Kiewit managed the design and construction of the project and was responsible for overall project delivery. Kiewit coordinated with the entire team of subcontractors, the concessionaire, tolling system operator, maintenance operator, and stakeholders to successfully deliver the project. The following team member, Shannon & Wilson, also participated in this project.
(11)	**Key Personnel Involved, Roles, Responsibilities**	No Key Personnel were involved. **Value-Added Personnel |** From Section 2.1.3b also on the Port Mann project include: Sam Gilmore, Craig Briggs, Greg Fischer, Joe Wingerter, Tom Cooper.
III. REFERENCE		
(12)	**Name**	[redacted]
(13)	**Title & Employer (current)**	[redacted]
(14)	**Title & Employer (at time of project/ transaction)**	[redacted]
(15)	**Phone & Email**	[redacted]
(16)	**Location & Time Zone**	[redacted]
(17)	**Other**	[redacted]
IV. TECHNICAL INFORMATION		
(18)	**Construction Value**	$1.96 billion (C$2.46 billion in 2009)
(19)	**Completion within/above Budget**	Completed within budget
(20)	**O&M Value**	N/A
(21)	**Length of Road under Operation (centerline miles)**	23 miles

(22) Key Technical Challenges and Solutions Implemented

Challenge: **Roadway expansion and reconstruction, including interchange reconstruction**

Solution: PMH1 included construction of a new ten-lane Port Mann Bridge and 23 miles of highway widening (including 18.6 miles of new HOV lanes). Scope of work included replacement of nine complex highway interchanges and widening of seven overpasses.

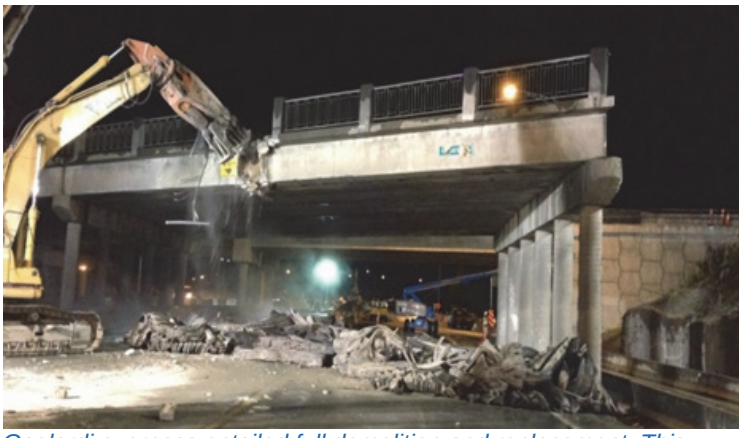
Kiewit was involved in constructing new foundations for overpasses and ramps. To perform foundation support on rehabilitated bridges, Kiewit used specialized equipment and material. For the First Avenue overpass, partial excavation replaced the in-situ soils with a cement-bentonite (CB) mixture. To allow for construction access, the slope wedges under the bridge at both abutments were temporarily excavated and shored using shotcrete walls before ground improvements were made.

Ground improvements beneath First Avenue adjacent to existing columns were designed to account for local seismic activity

Challenge: **Project required full or partial demolition of existing structures within aggressive schedule.**

Solution: The project included a variety of challenging demolitions and rehabilitations along the corridor. Each one was approached independently, some requiring a full, traditional demolition, while others were value-engineered to allow for partial demolition only.

Despite the staged work involved in the demolition process, only four-hour windows for full highway closures were given. Kiewit continuously looked for innovative methods to maximize work during the short time frame. For example, during the Gaglardi demolition, a temporary haul road for dump trucks was constructed with rubble from the demolished bridge. This allowed Kiewit to relocate the rubble to the roadside, focusing the four-hour closure window on demolition. The temporary road allowed the complete demolition in three days—half the allowable duration.



Gaglardi overpass entailed full demolition and replacement. This operation required high levels of coordination, notice, closures, and planning to complete in just three days.

Challenge: **This complex project included demolition of existing 1.2-mile-long, 66 ft. wide steel truss bridge, including the 1,969 ft. main span that was completely over water and approaches of 3,280 ft. over land and 1,640 ft. over water. Bridge demolition included 18,078 tons of structural steel. Demolition of concrete piers, pedestals, and foundations was included.**

Solution: Over-land demolition used a conventional hoe ram method, but the over-water demolition required additional planning and precautions. Extensive preparation included constructing a temporary trestle and dredging to allow marine equipment access. Deck demolition included saw and wire cutting of concrete over the river, during which crews fully contained debris and slurry. In some cases, the team implemented a technique that used an oxy-lance torch system to cut through the 12 ft. steel girders in approximately 20 minutes significantly reducing the schedule and associated environmental impacts.

Demolition of the exisitng Port Mann bridge was done with detailed planning and attention to protecting the environment

To completely demolish the complex main span arch bridge, the team elected to disassemble the bridge in a reverse manner to the original construction sequence. Kiewit installed temporary bracing in the tower arches of each side span while temporary stay cables supported the center span arch and back span deck. Before proceeding with the main bridge side span demolition, crews installed temporary support bents at each footing along with additional bracing in the lower arch sections. To protect the existing rail switch yard, the team installed netting over the railway to manage risk associated with overhead work. Crews communicated with railway personnel when working overhead, and spotters were on site as necessary.

Challenge: **Maintaining continuous dewatering of groundwater and stormwater infiltration into significant areas of open excavations throughout the project**

Solution: A specific project dewatering plan was created. The dewatering plan included the installation of a system of french drains and temporary sump pumps to manage groundwater infiltration into the excavation sites. Discharge locations were identified and sediment management processes were developed to comply with environmental management plans. An example of a particularly sensitive operation included the project sites where the base of the EPS fills was below the groundwater table elevation.

Given the buoyancy of EPS, the work area must be kept free of water until there is enough fill placed on top of the EPS to keep it from floating. Rainwater can also be a challenge when working with EPS, so mitigation measures such as sand bag berms and earth berms were used around the perimeter to keep the rainwater from flowing into the excavations. Kiewit had specific dewatering/pumping crews working around the clock to ensure all pumping and dewatering operations continued uninterrupted to maintain the project schedule.

Challenge: **Vancouver, BC rests between coastal and mountain range boundaries which mean the soils within this footprint are under heavy coastal and seasonal snowmelt influence. This created ongoing occurrence of a highly saturated footprint due to seasonal rainfall that had the potential of creating delays and challenging working conditions.**

Solution: These conditions were especially disruptive during pile drilling operations when crews would pierce a water "seam" below grade, causing the activity to shut down. To mitigate this, the team was continuously recalibrating pile drilling operations as this remained a critical path activity. As conditions allowed, pile work was given priority status within the footprint to keep the critical path on track.

Challenge: **It was important to keep traffic flowing through the highly urban area – including in the case of special events. The corridor carries approximately 250,000 vehicles per day, so traffic management was integral.**

Solution: With a traffic management plan and a community relationship program, the team created a plan to meet the community's needs for continuous traffic flow. The team developed design and construction work plans early in the process to address special events such as the 2010 Vancouver Olympics. The team also maintained flexibility for unforeseen events such as the Vancouver Canucks' Stanley Cup playoffs in 2011.

Planning Ahead Keeps Traffic Moving

The team planned long-lead closures months in advance to avoid surprise and keep traffic flowing, including special events.

Kiewit's goals for traffic management were to keep traffic flowing and enhance road safety. Daily coordination meetings with the traffic task force allowed proper levels of closures, delineations, and attenuations along the 23-mile stretch of Hwy. 1, also known as "the river" for its constant, water-like flow of traffic.

Long-lead closures such as full-ramp and highway closures were coordinated months in advance. Understanding this major scheduling and traffic management challenge, Kiewit avoided surprises by embedding all related activities into daily logistics. The team planned long-lead closures based on lane locations, their uses, characteristic traffic flows, and the planned work. For example, outside slow lanes might shut down at 9:00 p.m. for access to shoulder work, while fast and center lane closures for milling and paving operations typically began at 11:00 p.m. with strategically placed signage communicating these highway modifications to drivers.

Challenge: **Meeting our commitment to finish Port Mann Bridge one year ahead of the owner's planned schedule required innovative construction methods.**

Solution: The team elected to use the precast segmental method for the bridge approaches. The ability to mass-produce the 1,158 precast segments at an off-site yard improved work safety and product quality while accelerating the schedule. Kiewit erected precast bridge sections of the bridge using two different methods with a purpose-built self-launching gantry crane. The first method was span-by-span and typically held 14 segments at a time that were tensioned together to become 148 ft. spans.

The second method with the gantry crane utilized the balanced cantilever method, which fed the segments from land using job-engineered delivery trucks. The team selected this method to

construct the marine spans and spans over buildings using longer, 295 ft. spans on the north side of the bridge. This method avoided delivering segments by water and where it was hindered by buildings.

To meet the deadline for early tolling, the team constructed the project using a two-phase approach. Kiewit constructed eight of the ten lanes of the bridge and approaches, closed the existing bridge, and then opened the newly constructed portion of the bridge to traffic. Phase two was the completion of the remaining two lanes, permitting the client to begin tolling on the new bridge while construction was still underway.

Challenge: **Keeping roadway activities progressing in an efficient manner while the Port Mann Bridge was being accelerated for early revenue collection:**

Solution: Some of the most significant impacts resulting from the acceleration request were realized in Segment 2 of the project. The distinguishing characteristic of this segment is a major interchange of Hwy. 1 and Lougheed Highway, in addition to the presence of a Canadian National Railway (CN Railway) line "threading the needle" through this major interchange despite a year-long utility delay relocation. Having to re-sequence the work within a highly confined footprint adjacent to a heavily traveled corridor presented significant safety and productivity challenges. To facilitate these challenges to the original schedule and work with the TICorp constraints we essentially completed two years of work in 10 months by:

Hwy. 1 and Lougheed Highway – highly congested area for traffic and significant coordination required to facilitate the construction

- Implementing weekly P6 schedule updates to determine resource allocation given that there were twelve critical or near critical paths that were controlling the outcome. A meeting that included all of the segment's senior managers was held every Monday at 1p.m. to review the past week's progress and set a path forward for the next three weeks.
- Ramping up the resources to complete over $560 million worth of work in 2012, with $230 million in segment 2 alone. Both of these numbers are significant in the fact that Kiewit was able to coordinate and support the build-out of major features of work in a mostly dense urban corridor while maintaining functionality of the highway and arterials for public use.

Scheduling Resources Appropriately

Kiewit completed two years of work in 10 months by implementing weekly P6 schedule updates and ramping up resources.

Another example of our ability to keep the project moving despite the discovery of unknown conditions occurred during the 152nd on-ramp excavation, the team discovered waste materials from the 1986 Vancouver World Exposition. Kiewit immediately contacted local authorities who investigated and gave authorization for disposal. Kiewit's local office quickly mobilized additional resources to support this unexpected project effort and determine how and where to properly dispose of this waste by

identifying certified dump truck services, recycling facilities, and traffic control. This local knowledge helped Kiewit be responsive to the disposal challenge.

Challenge: **Performing construction work in an environmentally sensitive area as well as preservation and enhancement of habitat.**

Solution: There were 100 fish-bearing watercourses that required relocation and numerous ecosystems to protect. Kiewit addressed each of these environmental challenges by developing and then enforcing the Environmental Quality Management Plan (EQMP) which ensures all environmental laws are followed.

Challenge: **This project required both the installation of new ITS and ties into existing ITS.**

Solution: As the lead, Kiewit worked with the design team to ensure systems were integrated into the final project design. Kiewit was responsible for the construction of conduits, manholes, and other civil scope required for the ITS.

ITS deployed on the project supports the current regional transportation initiatives and improves monitoring of freeway traffic conditions and incidents along the highway corridor. The ITS features CCTV cameras providing real-time monitoring of freeway and ramp traffic to the new Regional Transportation Management Center (RTMC), as well as images for the public via the BC Ministry of Transportation and Infrastructure's DriveBC website. Seismic monitoring instrumentation systems provide the Province and other agencies with real-time ground motion data and structural health monitoring data during post seismic events. Kiewit and the team worked with the owner's third party tolling operator to integrate their system into both the design and construction processes. The project team worked with the owner to develop the civil aspects of the tolling infrastructure and to integrate with the existing ITS systems.

Challenge: **This project was located in the traditional territory of six distinct First Nations who are aboriginal people of Canada. First Nations are identified as a designated group under Canada's Employment Equity Act and the team had to ensure that employment opportunities were made available to First Nations individuals in these communities.**

Solution: To manage the relationship, Kiewit employed a First Nations employment and training coordinator who served as a liaison between field personnel and the First Nations communities. The coordinator hired by the project team began his career with Kiewit as a field supervisor. This experience helped him in working with individuals and field personnel when dealing with day-to-day issues. The responsibilities included:

- Working directly with the project managers, field supervisors, and foremen to ensure that barriers to First Nations employment were recognized and managed.
- Working with the existing support systems from the First Nations communities to ensure First Nations employees receive the support required to retain their positions and develop their skills on the project.

The Kiewit-led team exceeded the contract goal by more than 4 times the required participation amount with over $13 million in subcontracting with identified First Nations businesses and joint ventures in areas such as water taxi services, trucking, landscape/planting contracting, land lease, and equipment rentals. In addition, employment has exceeded 200-person-years with identified First Nations individuals.

Challenge: **Air quality monitoring and mitigation in urban environments.**

Solution: The team developed an Air Quality and Dust Control Plan (AQDCP) to address construction-related air quality requirements. The plan described air quality sensitivities and corresponding mitigation measures, including dust control measures. Mitigation was customized as needed to meet site-specific conditions, such as proximity to sensitive receptors. The AQDCP required an air quality monitoring program, including the monitoring of nuisance dust and ambient particulate matter.

Challenge: **Noise monitoring and mitigation in urban environments.**

Solution: The team developed a Noise Management Plan (NMP) to establish temporary and permanent measures to minimize community impacts and predispose community acceptance of unavoidable construction noise. Construction noise mitigation and monitoring concentrated on construction activities in the vicinity of previously identified noise sensitive enclaves and focused on achieving regulatory requirements. Proactive noise mitigation NMPs were implemented where practical to minimize the levels of construction noise.

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

Kiewit

Submitted as Lead Contractor Project #4

- ☐ Equity Member
- ☒ Lead Contractor: **Kiewit**
- ☐ Lead Engineer:
- ☐ Lead Operator
- ☒ Joint venturer in Lead Engineer: **Parsons Brinckerhoff, Jacobs**
- ☒ Affiliate(s) of Lead Contractor: **Kiewit**

FORM F: PROJECT/TRANSACTION DESCRIPTION

No.	Required Information	Response
I. BACKGROUND INFORMATION		
(1)	**Project Name**	**Denver Union Station (DUS) Transit Improvements**
(2)	**Type of Facility**	New underground bus concourse (bus box), new light rail and commuter rail concourses, infrastructure for future developments.
(3)	**Owner/ Procuring Authority**	Denver Union Station Project Authority (DUSPA): RTD, CDOT, City and County of Denver, Denver Regional Council of Governments, DUS Metropolitan District
(4)	**Brief Description of Project**	

In May 2009, a Kiewit Design-Build (DB) team began work under a $336 million contract to build the transportation elements for the historic Denver Union Station (DUS) turning it into a multi-modal transportation hub. This project is a part of RTD's voter-approved FasTracks program and serves as the hub for FasTracks as almost every line in the program connects through DUS.

Scopes of the project included the construction of an underground bus concourse at 23 ft. below grade with complex ventilation systems and fire life safety considerations that includes 22 bus bays and a 44,000 sq. ft. passenger concourse, an eight-track commuter rail train hall, relocation of the light rail station, extension of the 16th Street Mall Shuttle, and new access ramps for buses from CDOT's HOV lanes directly into the underground bus concourse. Several streets were built or expanded and new pedestrian-friendly plazas and walks were built with design input from the stakeholders.

Construction efforts also included connections to existing BNSF and UPRR.

Why we included DUS:

- Major demolition and deep excavation work in a dense urban environment
- Coordination with utility and railroad companies
- Partnered to mitigate challenging environmental conditions
- Underground bus terminal with integrated ventilation and fire life safety considerations
- Local experience

Union Station building through the opening of the canopy

Kiewit's proactive approach and early planning allowed for necessary reviews, input, and approval from the rail lines. This complex project covering 40 acres and integrating bus, commuter rail, light rail, and Amtrak services has truly turned the historic DUS into a vibrant transportation hub.

Kiewit worked with Denver Union Station Neighborhood Company, the master developer, and area stakeholders early on to determine the best locations for the transit elements and how to build them in a congested downtown area. In 2008, the Denver Union Station Project Authority (DUPSA) was established. This non-profit corporation with members from CCD, RTD, CDOT, DRCOG, and the DUS Metropolitan District, could provide the financing using multiple sources of funding. The project was the first to use TIFIA and RRIF funds jointly which was due in part to the high degree of confidence that the credit committees had in the ability of the project team to successfully execute the project. This project received the 2014 Build America award from the National AGC and the Project of the Year from the Design Build Institute of America.

(5) **Contract Term** DB contract term – 04/2009 – 04/2014

(6) **Current Status** Complete – 04/2014

(7) **Key Dates and Milestones**

Contract Milestone	Contracted Dates	Actual
Contract Execution	4/30/2009	4/30/2009
Commencement of Design	1 month 5/2009	1 month 5/2009
Commencement of Construction	12 months 4/2010	12 months 4/2010
Achievement of Substantial Completion	60 months 4/2014	58 months 2/2014

(8) **Relevance to the Project**

Substantive Evaluation Criteria, Other Relevant Criteria

This multi-modal transportation project included many elements similar to the Colorado I-70 East Project including demolition of existing infrastructure, complex utility relocations, major excavation work, complex traffic control, coordination with both utilities and railroads, and very complex staging processes in a limited, confined space located in the heart of downtown Denver.

Major stakeholders, some of whom will also be a part of I-70 East, included:

City & County of Denver – our team worked closely with City Public Works and Denver Fire to ensure a smooth permitting process and all fire/life safety issues were addressed for a below-grade concourse.

CDOT – working with CDOT involved focus on the transportation components and related design criteria for providing direct access from the I-25 HOV lanes into the underground bus concourse.

RTD – was the ultimate owner of the transit elements built during this project and all design specs and construction criteria were developed to meet their operational needs and requirements.

DRCOG – provided funding for the project and participated in oversight to ensure the functional aspect and the traveler's experience was maintained throughout the Regional transit hub.

Denver Union Station Neighborhood Company – our team coordinated with the developer from the initial master development stages to create useful transit elements and space for a thriving mixed-use development that created a sense of place, enhancing the architecture and aesthetics of the public areas, landscaping, hardscaping, and structures.

Project environment program | In addition to being a complex technical project, the environmental aspects were particularly challenging. This provided an opportunity for an implementation of an Environmental Excellence Program that met or exceeded contract requirements and stakeholder expectations. In addition, significant collaboration was developed with the EPA Region 8 office. The project was committed to 100% compliance, 100% of the time.

Roadway expansion and reconstruction, including interchange reconstruction | Five major streets—18th, 17th,16th, Chestnut Place, and Wewatta Street—around the historic Union Station building had to be reconfigured and reconstructed to accommodate a new layout of the LRT station as well as a new plaza around the station. Also, new plaza spaces were built along Wynkoop in front of the historic building. Kiewit constructed an access ramp which provided connectivity to and from CDOT's managed lane system adjacent to I-25 from the underground bus station.

Demolition of existing infrastructure in urban environments | Extensive demolition work for the construction of the underground bus concourse and the new commuter rail train hall. The old light rail station, 16th Street Mall Shuttle, and turn around were demolished as was the overhang/glass enclosure that was attached to the historic DUS building. Parts of Chestnut Street, Wewatta Street and 17th Street were demolished and rebuilt. More details on this scope of the project are available under section 22.

Major excavation work, including groundwater considerations and/or drainage requirements | Consisted of excavation below the ground water elevation for the underground bus concourse behind the Union Station building and placing excavated material into a stockpile for reuse or hauling it offsite to waste if material was not suitable for future use. This operation required intensive dewatering with the right pumps and equipment. The excavation was done in two phases to maintain traffic and current transit elements.

Complex traffic management in urban areas | This is relevant due to a location in the middle of congested downtown Denver. Kiewit mitigated potential traffic shut downs and reduced the time of each impact through careful planning throughout the construction period. The team also redesigned the stormwater system on Market Street to eliminate impact to the road, thus reducing inconvenience to the traveling public.

Construction staging in confined spaces | A 1,100 ft. long, 160 ft. wide, 23 ft. deep underground bus concourse with complex electrical and mechanical elements was built in a confined space. The project team coordinated and shared space with multiple adjacent construction projects in an ever shrinking work environment as construction was growing.

- **Structures that include ventilation and/or fire life safety considerations |** Major ventilation and FLS systems were installed down in the bus box and more details are provided under section 22.

- **Coordination with railroad and/or utility companies |** BNSF and UPRR coordination during the Amtrak cut-over and also for the OCS and track build-out in the North CRT area. All of the major utilities (water, sewer, electrical) required close coordination since they were all impacted with the excavation and construction of the underground bus concourse.

- **Roadway pavement and associated infrastructure under environmental conditions that are similar to those affecting the project |** This project included hauling and managing large quantities of contaminated soil and the mitigation of contaminated water during the excavation for the bus bay and associated roadways. As further discussed in Section 22, DUS implemented an Environmental Excellence Program which included regular staff trainings, craft toolbox talks, program incentives, and advertisement.

- **Interfaces with adjacent road operators |** The team interfaced and coordinated with RTD's LRT, 16th Street Mall Shuttle services, BNSF, UPRR, Amtrak rail lines, and CDOT's I-25 HOV lane system. Maintaining traffic movements through LoDo was a top priority for the DUS project. LRT, north/south traffic, pedestrian access, 16th Street Mall Shuttle, and Amtrak service all had to be maintained during construction. All street and lane closures were coordinated with CCD and the other contractors in the area including utility contractors. DUS project team members attended the CCD Downtown Construction Coordination meetings held by the Public Works Department.

  As the DUS project progressed, the development on nearly all of the surrounding parcels began. Some of those developments were adjacent to the DUS project, requiring significant coordination. Kiewit developed an internal coordination team to interface with the nearby developments, actively taking the lead to protect the client's interests. Stakeholders, including CDOT, DRCOG, CCD, RTD and the master developer, were invited and attended the weekly client meetings, as well as the weekly discipline task force meetings. They were able to provide input early in the process which kept the project moving forward expeditiously.

- **Workforce development programs, including partnerships with local community organizations and/or apprenticeship programs |** Kiewit, along with its subcontractors and consultants, provided opportunities for positions such as carpenters, operators, and electricians to be enrolled in an approved trainee or apprenticeship program. Kiewit aspired to have 25% of the trainees or apprentices in each craft position to be in their first year of apprenticeship training. To support this commitment, Kiewit voluntarily implemented the newly created Workforce Initiative Now (WIN) program.

- **Achievement of or exceeding goals relating to participation of disadvantaged businesses, small businesses and/or other business that are subject to equivalent programs |** DBE participation was set at 15% for design and 16% for construction. The goals were surpassed with 24% for construction and 15.5% for design.

- **Air quality monitoring and mitigation in urban environments |** The team developed and implemented a project environment excellence program to monitor and report on fugitive

dust emissions and air quality best management practices, which exceeded the City and County of Denver requirements. This also included utilizing ERM to perform independent testing and documentation.

Noise monitoring and mitigation in urban environments | Each activity was carefully planned with consideration for neighboring residents and businesses and in coordination with multiple concurrent and adjacent projects. Night work was limited in scope and duration to reduce noise impacts. The project team was sensitive to the ongoing operations and made efforts to decrease interruptions due to noise, dust, power outages, access changes, and traffic flow configurations**.**

Relevance to the I-70 East Project (as described in Sections 8 and 22)		
☐ TIFIA closed by developer	☐ PABs	☐ Highway/road financing
☐ Financed/located in North America	☐ Availability payment model	☒ Rdwy/IC exp/reconstruction
☒ Construction staging, confined space	☒ Road operator interfaces	☒ Urban infrastructure demo
☒ Ventilation/fire life safety	☒ Workforce development programs	☒ Major excavation work
☒ RR/utility coordination	☒ Meet/exceed DBE	☒ Complex urban traffic mgmt.
☒ Infra w/similar env conditions	☒ Air quality monitoring/mitigation	☒ Noise monitoring/mitigation

II. DESCRIPTION OF TEAM MEMBER INVOLVEMENT

(9)	**Proposer Team Member(s) Involved**	Kiewit Infrastructure Co. (Kiewit) was the sole member of the **Lead Contractor**. Parsons Brinckerhoff, Inc. (PB) Jacobs Engineering Group, Inc. (Jacobs)
(10)	**Role of Proposer Team Member(s)**	Kiewit – **Lead Contractor** Parsons Brinckerhoff – Owner's Design Consultant Jacobs – Program Management Assistance for RTD The following team members also participated in this project: Sturgeon Electric – Electrical Anderson Drilling – Drilled Shafts Iron Woman – Trucking, Utilities, Disposal
(11)	**Key Personnel Involved, Roles, Responsibilities**	**Tom Howell**, **Project Manager |** Tom provided management oversight of the construction scoping/cost estimating and was also involved in the design assistance process. **Hunter Sydnor**, **Public Information Officer** | Hunter executed a strategic communications plan which included media relations and public outreach. She was also responsible for communicating construction activities to the public. **Jenn Bradtmueller Environmental Manager** | Jenn oversaw stormwater control, dewatering of contaminated groundwater, hazardous and non-hazardous waste management, asbestos and lead-based paint management, air quality control, and compliance with the Emergency Planning Community Right to Know Act. Under Jenn's

		hands-on management, DUS won the Colorado Contractor Association's (CCA) Environmental Excellence Award. **Kevin Custy**, **Utilities Manager for RTD under contract from Jacobs** | Kevin's duties included supervising staff utility team members and performing utility senior leadership duties for FasTracks. **Value-Added Personnel |** From Section 2.1.3b also on the DUS project included Barry Thoendal, Tim Mackin, Chet Haptonstall, Randy Sanman, Craig Briggs, Joe Wingerter, and Sam Gilmore.
III. REFERENCE		
(12)	**Name**	[redacted]
(13)	**Title & Employer (current)**	[redacted]
(14)	**Title & Employer (at time of project/ transaction)**	[redacted]
(15)	**Phone & Email**	[redacted]
(16)	**Location & Time Zone**	[redacted]
(17)	**Other**	[redacted]
IV. TECHNICAL INFORMATION		
(18)	**Construction Value**	$336 million
(19)	**Completion within/above Budget**	$39 million (11.6%) above original contract due to owner-initiated change orders. This includes major scope addition such as $33 million for public realm improvements that were not a part of the original contract, owner allowances for the treatment of contaminated soil, water and asbestos abatement that was discovered during excavation for the bus box.
(20)	**O&M Value**	N/A
(21)	**Length of Road under Operation (centerline miles)**	N/A

(22) **Key Technical Challenges and Solutions Implemented**

Challenge: **Phasing and coordination required for the construction of the 1,100 ft. long, 160 ft. wide, 23 ft. deep bus box in confined space that included work near historical building, utility conflicts, hazardous materials, dewatering, and traffic/pedestrian access**

Solution: This is a complex multi-modal transportation hub that was built in several phases in an extremely tight urban area. One of the most complex and intricate staging aspects involved the

construction of the underground bus concourse (bus box) which was broken down into two phases. Before any excavation activities started, we moved all utilities in the west side of Wewatta Street to the east side of Wewatta Street. Then we shifted all traffic to the east side of Wewatta Street and closed adjacent Chestnut Street. We excavated and built the first half of the bus box. Then we rebuilt Chestnut Street on top of the enclosed section of the bus box. Traffic was then detoured to Chestnut Street and Wewatta Street was closed. All of the utilities were relocated from the east of Wewatta Street to the west (on top of the bus box). Then the second phase of the construction began and we built the remainder of the bus box.

Slab pour of the first half of the bus box

Nearly every parcel of property surrounding the DUS site was being developed during the DUS construction, including the renovation of the historic building itself. Significant coordination was required with the contractor along with all of the other contractors building adjacent to the bus box and the 17th Street Plaza. Kiewit implemented an internal developer coordination team to manage this entire process.

Excavation of existing CRT platforms behind the historic building

Challenge: **Performing demolition work involving unknown underground conditions**

Solution: The demolition on the east side of Wewatta Street for the second half of the underground bus concourse and the commuter rail train hall consisted of removal and demo of the existing Amtrak tracks, and light rail tracks as well as all the platforms and the 16th Street Mall Shuttle bus turn around. Numerous tunnels below the platforms including the main pedestrian tunnel provided access from the inside of DUS to the west side of the old platform and baggage tunnels. This demo work consisted of lead paint mitigation, asbestos abatement (the entire exterior of this tunnel was waterproofed with an asbestos latent waterproofing membrane), and also had some challenging temporary construction device elements to it. To the north and south of the main passenger tunnel were old baggage tunnels. These tunnels were abandoned and not shown on the drawings because all public records did not have accurate elevations.

Some of the hardest demolition work was done in the area north of the CRT station, the track "throat." An abandoned steam pipe that was roughly 12 in.-15 in. diameter, was insulated with asbestos and inside a 4x4 ft. concrete box. This demolition required working in a confined space while managing asbestos abatement. Numerous abandoned utilities throughout the throat did not show up on any drawings but with careful planning and detailed work plans we were able to mitigate these issues.

Challenge: **Disturbance to the historic building's facade was strictly prohibited during complex demolition work**

Solution: The removal of the glass enclosure structure that was attached to the historic Union Station building was planned with detail and care in advance of the needed demolition. A pre activity structural survey was conducted to establish the condition of the building and to provide data for the basis of the removal plan. Crews methodically removed the structure in pieces so not to damage the building. Equipment was also evaluated and modified to ensure there was no vibration damage to the foundation.

Challenge: **Having to excavate and move more than 200,000 yards of material out of a tight space**

Solution: Mass excavation within an urban compact setting can be problematic. By using conveyors and stackers, the project team was able to excavate over 200,000 yards of material efficiently. The use of conveyors reduced construction truck traffic in the downtown area as reusable soil did not need to be hauled off site.

Conveyor system used for mass excavation work behind DUS

Challenge: **Major excavation work had to be done adjacent to the historic Union Station building without causing any damage**

Solution: The team performed mass excavation activities within eight ft. of the historic Union Station without damaging the building or having it shift. A 23 ft. soldier shoring wall was constructed to support the historic building. Kiewit monitored the building for any potential settlement or construction activity damage using vibration monitors 24/7 and conducting periodic survey analysis and inclinometers that monitored any shoring wall movement. Finally, Kiewit used the shoring wall as a form for the underground bus station so that it would become a permanent fixture in the bus concourse.

Challenge: **Treating and discharging 400 gallons per minute of contaminated groundwater to keep the excavation dry so the below-grade bus concourse could be constructed**

Treatment system for handling the contaminated dewatering

Solution: Unexpected high levels of dissolved iron and arsenic made it difficult to meet the effluent limitations imposed by the Colorado Department of Public Health and Environment (CDPHE). The team partnered with CDPHE to find the most efficient way to clean the water before it was released into the stormwater system. New water quality restrictions were put into place during

the project. Arsenic levels were required to be at drinking water standards before discharging. This project was the first to de-water to the new standards.

Challenge: **Large quantities of contaminated soil needed to be removed during excavation activities behind the DUS building**

Solution: The area west of the historic Denver Union Station building was used as a train facility for over 100 years and substantial coal ash was in the excavated soil. Working with RTD, the team manifested and hauled the contaminated soil to a predetermined landfill. Kiewit also identified and abated asbestos throughout the site prior to commencing with work activities.

Challenge: **Managing large stockpiles of excavated material in the urban environment**

Solution: Mass excavation for the underground bus concourse required moving a considerable amount of dirt. The team took extraordinary measures to mitigate any impact on downtown businesses and residents. Kiewit achieved this through several innovative practices, including use of dirt glue on the dirt piles and cut slopes, magnesium chloride to keep the dust settled, daily street sweeping around the project site, and equipment wash-pads placed at every entrance of the project site. Our team will take all the appropriate measures to monitor air quality for the I-70 Project and mitigate any harm or disturbance to the surrounding community.

Challenge: **Minimal to no impact to all traffic during construction in an urban setting**

Solution: The project team constantly coordinated with the City of Denver to monitor potential changes from construction to pedestrians, vehicular traffic, and RTD bus operations. At the end of the first phase of construction, a LRT cutover was required to make the new light rail and 16th Street Mall Shuttle station operational. The work required the removal of the old track, pavement, and catenary poles from 16th Street and replacing them at the new station. RTD originally planned multiple weekend and night shutdowns of the LRT to facilitate the cutover of the new station. The project team proposed an aggressive three-week LRT shutdown to complete the cutover work while maintaining transit services. This proposal minimized the impact to the travelling public, enabled LRT maintenance work, and coordinated with other RTD LRT projects.

> *"…Kiewit has been a great partner on Denver Union Station – during the infrastructure work they were diligent and responsive to every challenge. Their programs and resource pool are all quite impressive, but their people are what made the difference at DUS"*
>
> *Mark Falcone*
> *CEO Continuum Partners*

Challenge: **Rail traffic management**

Solution: The DUS project required rail traffic management much like vehicular traffic management. The light rail service was maintained throughout the project except for the brief three-week shutdown for the cutover. Construction activities for the new light rail tracks occurred while maintaining freight rail traffic that was adjacent to the work. Crews also maintained Amtrak service and coordinated with freight service in the throat area just north of the DUS station. This required absolute focus on the planning efforts to ensure no interruptions occurred to any of the freight and commuter rail traffic through the project.

Challenge: **Complex ventilation system and fire life safety considerations for underground bus box**

Solution: The below-grade bus drive lanes and concourse are protected with automatic wet and dry sprinkler systems, a fire alarm, a mass notification system throughout, and a roadway ventilation and smoke management system.

Ventilation towers for underground bus terminal located in LRT station plaza

The bus concourse ventilation system allows for constant ventilation of the diesel fumes within the bus concourse. The system was also designed and built to evacuate smoke within the concourse in an emergency situation. The system can detect smoke and concentrate the 450,000 cfm of air flow in a specific area to allow for all 44,000 potential occupants to safely evacuate the concourse. The below grade smoke management system has six smoke zones providing exhaust capability based on fire modeling produced by the design team.

In addition to the exhaust system serving the bus drive lanes for normal heat/emission management and emergency smoke management, the concourse is provided with 100% outside air to pressurize the concourse relative to the roadway, utilizing the air handling units that condition the space. This pressurization is intended by the design as a supplemental support to the roadway smoke management response.

For considerations of FLS, an integrated PA/mass visual communications system between bus concourse, LRT, and CRT was installed. The system contains standard messages for typical emergency situations (i.e., tornado, fire). The system has an on-demand function to say and/or display anything. The different areas (bus concourse, LRT, and CRT) can each have their own messages displayed, (i.e., CRT occupants are directed to proceed down into the bus concourse for safety and the bus concourse occupants are directed to stay at their current location).

Challenge: **Coordination with railroad and utility companies**

Solution: Some of the coordination efforts for the project included working closely with RTD's light rail and commuter rail operations as well as Amtrak to produce a fully integrated rail system. Many construction activities occurred adjacent to freight rail traffic and required close interfacing with BNSF and UPRR. Kiewit's proactive approach and early planning allowed for necessary reviews, input, and approval from the rail lines.

As part of working in a highly congested, active urban site, the project team facilitated close coordination with numerous public utility providers, city officials, and half a dozen private development teams working on adjacent projects concurrently, meeting on a weekly basis to ensure the project schedule remained on track and within budget. Kiewit had 81 utilities to coordinate including chilled water lines, Comcast, CenturyLink, Sprint, Level 3, Xcel Electric, Xcel Gas, Xcel Steam, Waste Management District Sanitary/Storm, and Denver Water.

Coordination efforts included providing a place for a new or future utility, removing existing utilities, protecting existing utility during new construction, and relocations.

Challenge: **Meeting a 15% DBE participation goal for design and a 16% goal for construction**

Solution: The project team worked together and coordinated closely with RTD to ensure that the project DBE participation goals were met or exceeded. As the contract amount changed, so did the need for DBE participation.

The team managed the process and ended the project with a construction DBE participation of 24% or $80 million. We contracted with 123 certified construction DBEs to achieve our goal, far surpassing the goal.

DBE subcontractor participation was 24%, surpassing the goal.

Kiewit held and participated in several outreach events over the life of the project and developed work packages to accommodate DBE work-loads. Through their experiences on DUS, the DBEs gained business knowledge, safety/quality experience, increased bonding capacity, and built their resumes showing experience on such a prominent Denver project. The team had open communication with RTD's Small Business Office, including a monthly meeting to review progress.

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

Kiewit

Submitted as Lead Contractor Project #5

- ☐ Equity Member
- ☒ Lead Contractor: **Kiewit**
- ☐ Lead Engineer:
- ☐ Lead Operator
- ☒ Joint venturer in Lead Engineer: **Parsons Brinkerhoff**
- ☐ Affiliate(s):

FORM F: PROJECT/TRANSACTION DESCRIPTION

No.	Required Information	Response
I. BACKGROUND INFORMATION		
(1)	**Project Name**	**Downtown Tunnel/Midtown Tunnel/Martin Luther King Extension (Midtown Tunnel)**
(2)	**Type of Facility**	Interstate toll facility of new and rehabilitated tunnels, roadway, and interchange.
(3)	**Owner/ Procuring Authority**	Virginia Department of Transportation (VDOT)
(4)	**Brief Description of Project**	

This $1.46 billion DBFOM project is located in the communities of Portsmouth and Norfolk, VA. Over the years, daily volumes through the Midtown Tunnel have swelled, making it the most heavily traveled two-lane road east of the Mississippi. To provide additional capacity and to increase the leverage of the private sector's technical and financial resources, VDOT bundled the design and construction of the second Midtown Tunnel, the rehabilitation of the existing Midtown Tunnel, the improvements and enhancements to the Downtown Tunnel, and the expansion of the MLK Freeway through Portsmouth, as a single P3 procurement.

Why we included Midtown Tunnel:

- Greater than $1B DBFOM project
- Fire and life safety design and construction for new tunnel
- Extensive utility and railroad coordination
- Major deep excavations including groundwater considerations

The new Midtown Tunnel creates a much needed improvement to a vital link in Tidewater, Virginia

Key components of the project include:

- Design and construction of a two-lane 4,198-ft. immersed-tube tunnel adjacent to the existing Midtown Tunnel
- Rehabilitation and upgrading of the existing Midtown and Downtown Tunnels
- Construction of a 1-mile extension of the MLK Freeway, including a new interchange with I-264, an interchange with High Street, and upgrades to aesthetics and lighting

- Relocation of 7,200 ft. of a 36-in. diameter water main under the Elizabeth River
- Installation of integrated ITS for all of the tunnels and along the MLK Freeway and I-264, including interface with VDOT's tolling contractor

Integrated life cycle analysis between development, design, construction and O&M

(5)	**Contract Term**	DBFOM contract term (full term) – 12/2011 – 04/2070 DB contract term – 04/2012 – 08/2018 O&M contract term – 09/2017 – 04/2070
(6)	**Current Status**	Under construction (72% complete)

(7) **Key Dates and Milestones**

Contract Milestone	Contracted Dates	Actual
Contract Execution	12/05/2011	12/05/2011
Financial Close	5 months 04/2012	5 months 04/2012
Commencement of Design	5 months 05/2012	4 months 04/2012
Commencement of Construction	8 months 08/2012	8 months 08/2012
Achievement of Substantial Completion	77 months 05/2018	69 months 09/2017 (anticipated)
Service/Operations Commencement	69 months 09/2017	69 months 09/2017 (anticipated)
Achievement of Final Completion	80 months 08/2018	72 months 12/2017 (anticipated)
End of Service/Operations	58 years 04/2070	58 years 04/2070 (anticipated)

(8) **Relevance to the Project**

Substantive Evaluation Criteria, Other Relevant Criteria

Roadway expansion and reconstruction, including interchange reconstruction | This project was a one-mile extension of the existing MLK including two major interchanges at I-264 and High Street. This portion of the project included 23,000 linear ft. of concrete girders, 61,500 sq. ft. of retaining walls, 48,100 sq. ft. of noise barriers, and 2,400 concrete foundation piles. Roadway expansion also included a new two-lane 4,198 ft. immersed-tube parallel tunnel adjacent to the existing Midtown Tunnel. The new freeway extension will improve traffic access to Naval Station Norfolk and VA Port Authority's facilities, two of the major employment centers in Tidewater, VA. Like I-70, the Downtown and Midtown tunnels provide critical connectivity in the region.

Demolition of existing infrastructure in urban environments | Removal of an existing pedestrian bridge on I-264 and multiple commercial and residential structures to facilitate the extension of MLK. Other demolition work included removal of ceiling tiles in the confined spaces of the existing tunnels for the rehabilitation work.

Major excavation work, including groundwater considerations and/or drainage requirements | Excavation and drainage systems were required at both approaches to the tunnel, similar to the lowered section anticipated on I-70. This work included over 23,000 tons of sheet pile, 111,000 cu. yds. of excavation, and a major dewatering system because excavation was below the Elizabeth River water table. The work included a complex drainage system to control stormwater runoff along with flood gates and high retaining walls to protect the tunnel against potential flooding of the Elizabeth River. Other excavation similarities include 315,000 cu. yds. required for the MLK extension and associated interchange work.

Support of excavation used on the Norfolk approach

Complex traffic management in urban areas | Tie in of the new MLK expressway at I-264 and High Street, the tie in of each side of the new tunnel roadways, and work in the existing tunnels all required detailed maintenance of traffic (MOT) plans. This work included nightly single lane closures, full night and weekend freeway closures, and multiple traffic switches to accomplish the work—all while minimizing impacts to the public.

Construction staging in confined spaces | Working inside the new and existing tunnels. Once the new Midtown Tunnel is installed, the roadway finishing, utilities, electrical, and mechanical elements will be completed within the two-lane tunnel's confined space. The rehabilitation work inside the existing tunnels is further restricted by traffic closures required to maintain traffic flow through the tunnels. In addition to the tunnel work, the tunnel approaches required work inside a confined coffer dam, which will be similar to the tight work area anticipated in the lowered section of I-70.

Structures that include ventilation and/or fire life safety considerations | Extensive ventilation and fire life safety considerations were part of the design of the new Midtown Tunnel. Additional work included upgrading the existing Midtown and Downtown Tunnels to meet the same design considerations. The design incorporates features that respond to input provided by police, fire, ambulance, and first responders—addressing safety aspects above and beyond code requirements. Enhanced emergency response and evacuation readiness were built into the design of the new tunnel through the inclusion of a confined exit traffic corridor for fire and evacuation purposes, jet fans, a deluge-type sprinkler system that impedes fire growth, fire sensors, fireproofing, fire alarms, extinguishers and hose connections, motorist-aid phones, and video monitoring for traveler safety.

New jet fans installed in the existing tunnels are an upgrade to meet current NFPA fire life safety requirements

Coordination with railroad and/or utility companies | Construction of the approach structures and the MLK extension over and around railroads included crossing CSX's intermodal yard at the Port of VA. This busy yard is similar to UPRR's yard just south of the I-70 corridor. In addition, coordination with over a dozen utility companies was required to facilitate multiple utility relocations (including a new 7,200 ft., 36-in. water main under the Elizabeth River).

The 4,500 linear ft. subaqueous section of the new 36-in. water main was assembled on the Portsmouth side of the river and installed in one weekend, minimizing impact to the public

Roadway pavement and associated infrastructure under environmental conditions that are similar to those affecting I-70 East | MLK extension infrastructure work—including roadway paving, bridges, and retaining walls—was designed to accommodate a variety of environmental conditions similar to I-70 including weather, traffic volumes, noise restrictions, utility conflicts, special event considerations, and public access.

Environmental conditions like snow removal are coordinated as part of maintenance operations during construction

Interfaces with adjacent road operators | The developer, Elizabeth River Constructors (ERC), oversees maintenance operations during construction, and similar to I-70, tolls the tunnels. Through coordination and task force meetings, the Kiewit team interfaces with ERC regularly to alleviate conflicts between construction and maintenance activities. The team also coordinates with VDOT to minimize conflicts with other construction and maintenance operations in the area. Like I-70, the interfaces often focus on coordinating traffic closures to minimize impacts to the traveling public.

Workforce development programs, including partnerships with local community organizations and/or apprenticeship programs | The project includes a goal to hire 70 people (with no previous construction experience) and train them in trades throughout the project. Through outreach programs similar to what will be used on I-70, the team is projecting to exceed the apprenticeship program goal.

Achievement of or exceeding goals relating to participation of disadvantaged businesses, small businesses and/or other business that are subject to equivalent programs | There is a DBE goal of 12% and a SWaM (small, women, and minority) goal of 23% partnership. The project is currently expected to exceed these goals which will total over $300 million. The goals were achieved through community outreach, solicitations, local events, and coordination with the Virginia Department of Small Business and

Supplier Diversity. We anticipate a similar requirement on the I-70 project and will use similar programs to exceed the goals.

Air quality monitoring and mitigation in urban environments | Kiewit's environmental program meets or exceeds all state and federal requirements. As part of the program, air quality is monitored during all excavation and demolition activities and water suppression is used to control dust during these operations. Kiewit also controls exhaust emissions by not allowing any piece of equipment to idle for more than five minutes. We anticipate similar and additional requirements on I-70 and will use the same programs to ensure compliance.

Noise monitoring and mitigation in urban environments | Portions of this project are in urban and residential environments with strict noise requirements at night and daily allowable maximums. Noise monitors were set up during construction activities that risked getting close to those requirements and real-time emails were sent to the construction crews as well as the quality control team if the limits were met or exceeded to ensure mitigation measures were implemented. Design work for noise mitigation included modeling sound attenuation using FHWA's traffic noise model (TNM) program.

Hazardous material investigation and mitigation | Hazardous materials were investigated and mitigated throughout, including asbestos removal during the structures demolition for the MLK extension and lead contamination mitigation during the excavation for the tunnel approaches.

Tolling infrastructure and operations | The new tunnel and MLK extension will be integrated into the area's existing tolling infrastructure. During design, integration took place with the toll systems provider to ensure all elements are compatible with the existing infrastructure. The Midtown Tunnels, Downtown Tunnels, and MLK extension will be tolled with fixed rates for peak and off-peak travel hours.

Intelligent transportation systems (ITS) | This work includes over 62,000 linear ft. of concrete-encased duct bank and the rehabilitation of the existing control rooms to integrate the new tunnel and MLK extension with the existing downtown system. The overall goal for congestion relief will be accomplished by controlling the traffic between the Midtown and Downtown Tunnels through the new ITS.

Relevance to the I-70 East Project (as described in Sections 8 and 22)		
☒ TIFIA closed by developer	☒ PABs	☒ Highway/road financing
☒ Financed/located in North America	☐ Availability Payment model	☒ Rdwy/IC exp/reconstruction
☒ Construction staging, confined space	☒ Road operator interfaces	☒ Urban infrastructure demo
☒ Ventilation/fire life safety	☒ Workforce development programs	☒ Major excavation work
☒ RR/utility coordination	☒ Meet/exceed DBE	☒ Complex urban traffic mgmt.
☒ Infra w/similar env conditions	☒ Air quality monitoring/mitigation	☒ Noise monitoring/mitigation

II. DESCRIPTION OF TEAM MEMBER INVOLVEMENT		
(9)	**Proposer Team Member(s) Involved**	Kiewit Infrastructure Co. (Kiewit) is a 40% member of the project's Lead Contractor Parsons Brinckerhoff, Inc.
(10)	**Role of Proposer Team Member(s)**	Kiewit – **Lead Contractor** Parsons Brinckerhoff – **Lead Engineer** The following proposer team members also participated in this project: Barclays was the Underwriter
(11)	**Key Personnel Involved, Roles, Responsibilities**	**Douglas Andrew, Design Manager |** Doug was responsible for oversight of schedule, budget, and staffing, including coordination with VDOT and monitoring compliance with the DBE program. **Value-Added Personnel |** From Section 2.1.3b also on the MTT project include Joe Wingerter, Sam Gilmore, and Vincent Casey.
III. REFERENCE		
(12)	**Name**	[redacted]
(13)	**Title & Employer (current)**	[redacted]
(14)	**Title & Employer (at time of project/ transaction)**	[redacted]
(15)	**Phone & Email**	[redacted]
(16)	**Location & Time Zone**	[redacted]
(17)	**Other**	[redacted]
IV. TECHNICAL INFORMATION		
(18)	**Construction Value**	$1.46 billion (original)
(19)	**Completion within/above Budget**	The project is currently 2.4% over the original construction value. Currently $34.7 million in change orders with $31.7 million in owner-initiated changes and $3 million in contractor-initiated changes.
(20)	**O&M Value**	N/A (Kiewit is not responsible for O&M)
(21)	**Length of Road under Operation (centerline miles)**	The length of road under construction is 1.3 miles for the new Midtown Tunnel and 1.1 miles for MLK, for a total of 2.4 total miles. The total length of road under operation is 8.5 miles.

(22) Key Technical Challenges and Solutions Implemented

***Challenge*: A major technical challenge for the job was how to construct and deliver the 16,000-ton precast concrete tunnel segments to the project.**

***Solution*:** Based on past experience in the area, the Kiewit-led team devised a plan early in the development phase to cast the segments offsite at an existing graving dock in Baltimore, MD called Sparrow's Point. The graving dock allowed four elements to be constructed at one time in "the dry." These elements averaged 345 ft. long, 54 ft. high, and 28.5 ft. tall. Once constructed, temporary bulkheads made out of beam and lagging walls were installed on each end of the tubes. The graving dock is then flooded and the tunnel elements float in place with only about three feet of freeboard above the water. A tug fleet then tows each element one by one 220 miles down the Chesapeake Bay to the project dock in Portsmouth, VA.

Precast tunnel segment are built quickly at the Sparrows Point dry dock

When the segments are ready to be installed in the tunnel, they are delivered and placed with a "lay barge" which is capable of receiving, supporting, and lowering the elements into place. To lower into place, four temporary water ballast tanks are filled with water inside the tunnel segment, allowing them to sink. The lay barge lowers and guides the segment into place where it can be backfilled.

***Challenge:* Excavation for the new tunnel on the river bottom without disturbing the existing Midtown Tunnel.**

Solution: Parsons Brinckerhoff designed and implemented an elaborate vibration monitoring system in the existing tunnel to continuously monitor vibrations throughout the excavation, setting, and backfill of the new tunnel.

***Challenge:* Excavation for the new tunnel on the river bottom was in close proximity to a protected oyster reef.**

Solution: The oyster reef had to be protected from exposure to sediment. This was done by placing silt screens around the reef and using a special clamshell bucket during dredging to limit the amount of sediment that escaped when each load was hoisted out of the water.

Beginnings of the Portsmouth approach pump station

***Challenge:* Poor soil conditions existed throughout the project.**

Solution: The team performed an elaborate geotechnical investigation early on to identify the areas of poor soil. Parsons Brinckerhoff and Kiewit worked together to develop mitigation measures including concrete pile foundations and over-excavation sections. By implementing an innovative strategy to use excavated material from the tunnel approaches to surcharge previously identified areas, the team eliminated the need for concrete piles. In addition, EPS foam was used as lightweight

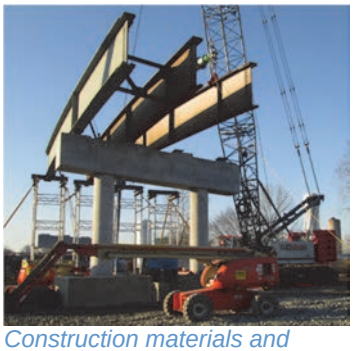
backfill to overcome compressible peat and clay layers. The weight of the roadway section, including pavement and walls, was designed to be no greater than the weight of the several feet of overburden excavated prior to construction.

Challenge: **With a low point in the tunnel well below the water surface, controlling storm water runoff in the tunnel was a challenge.**

Solution: As a result of the integrated task force meetings, Parsons Brinckerhoff designed a storm drainage system that included a pump station at each tunnel approach to pump water from within the tunnel through a storm drain below the road to the existing storm drain network outside of the tunnel. The pump stations operate automatically when water is collected in the drainage within the tunnel.

Challenge: **The design of each tunnel approach needed to accommodate the control of ground water and river water infiltration during construction.**

Solution: The team constructed a 250,000 sq. ft. sheet pile cofferdam along with deep dewatering wells at each tunnel approach to control water infiltration. The water pumped from the deep wells is captured and filtered onsite and discharged or recycled and used for other project operations.



Construction materials and equipment were test fit to ensure constructability and maintainability

Challenge: **To develop a traffic management plan to minimize impacts to the traveling public in this urban area**

Solution: To communicate and coordinate traffic closures required for the different project operations, maintenance of traffic (MOT) coordinators were established for each portion of the project. These coordinators planned and scheduled closures in advance and communicated with the rest of the construction team, as well as VDOT, to ensure minimal impact to the traveling public. Major closures, including full freeway closures needed for girder erection and demolition, were coordinated well in advance and communicated with the public at least two weeks ahead of time. Construction was phased with the intent of minimizing traffic closures and therefore minimizing impacts. For example, the rehabilitation work in the existing Midtown Tunnel will not happen until the new tunnel is fully operational.

Challenge: **Unique to the project was the need to maintain marine traffic on the Elizabeth River, home to extensive Port of VA facilities and Naval Station Norfolk, the world's largest naval base.**

Solution: Days and times for excavation operations were coordinated with all entities involved with ships using the federal channel. This was planned and communicated well in advance of the operation. Excavation crews had a contingency plan in place if there was an emergency and a Navy ship needed to come through the channel during a scheduled excavation.

Construction of the MLK extension required extensive coordination with both utility companies as well as the CSX railroad to avoid impacts

Challenge: **Additional concrete needed for fire protection would increase the weight of the tunnel segments, which would impact their ability to float and mobilize from the Sparrow's Point casting yard.**

Solution: The design and construction team met with all parties involved to work on an innovative solution. The construction team proposed the use of a fireproofing material called Promat to be placed on the concrete interior of the tunnel after tunnel construction. This solution, combined with the jet fans and sprinkler system, met the requirements to control a major fire in the tunnel and eliminated the need for additional concrete in the tunnel segments. An exit corridor was also implemented to create an evacuation space in case of a major fire.

High tech approach to identifying utility line locations

We used electro-magnification to determine the exact location of the 42-in. sewer line. Once the location was confirmed, design of the tunnel proceeded without impacting the utility.

Challenge: **The location of a 42-in. sewer line, which potentially impacted the excavation of the tunnel, was unknown due to inconsistent sets of as-built records.**

Solution: To determine the exact location of the line, the Kiewit team hired RedZone Robotics, a specialty Texas subcontractor with an innovative approach to utility identification. The firm used electro-magnification to determine the exact location of the line. With a confirmed location outside of the new tunnel alignment, the line did not need to be relocated or protected.

Challenge: **The MLK extension included a major bridge over the existing CSX railroad intermodal yard at the port of Virginia. Construction plans had to minimize impacts to railroad operations.**

Solution: To minimize railroad impacts, the design included temporary grade crossings to facilitate access to the work. The team coordinated with CSX to bring them into the design, planning, and construction of the girder erection sequence, placement of cranes, and laydown areas.

Rehabilitation work in the Downtown Tunnels occurred on the weekend with limited impact to traffic

Challenge: **Adjacent construction activity.**

Solution: VDOT has other major bridge and tunnel construction activities in the Hampton Roads region. With the number of traffic closures needed for the rehabilitation and MLK extension work, extensive coordination with other operators was necessary to assure major crossings were always available to motorists.

The Kiewit team worked closely with VDOT to coordinate work activities with adjacent project operators to identify conflicting closures. Coordination happened early on and closures were scheduled well in advance to minimize delays and conflicts.

Challenge: **An initial challenge was how to meet the DBE/SWaM goals because the majority of the project includes the construction of new Midtown Tunnel, which is highly specialized, work not often done by small firms.**

Solution: In addition to extensive community outreach, solicitations, local events, and coordination with local agencies, the project team looked at large portions of work that could be opportunities for participation. The team identified the MLK extension as a key aspect of work that could be contracted to DBE and SWaM firms, providing opportunity to grow the expertise and capacity of the DBE community in VA. The majority of the work on the MLK extension is now being built by these firms, which is contributing to the project exceeding the participation goals.

Noise and vibrations were monitored during concrete pile driving operations to limit noise impact to the surrounding community

Challenge: **Located in an urban environment, the noise from nightly construction operations had the potential to impact several sensitive receptors like the Sentara Cancer Institute next to the Norfolk tunnel approach—a location that would require night and day sheet and concrete pile driving operations.**

Solution: The project team used temporary noise blankets and set up noise monitors in sensitive locations to provide real time noise information. Project representatives met with Sentara Cancer Institute representatives to discuss operations and address their concerns. In addition to having a noise monitor at the edge of the construction site, we also placed a monitoring device on the hospital property to perform additional measurements to ensure the mitigation efforts are effective.

Placing tunnel segments was scheduled to maintain marine traffic from the world's largest naval base in Norfolk

Challenge: **Geotechnical investigations showed the majority of the soil to be excavated for the tunnel approaches was contaminated with lead.**

Solution: Rather than remove and discard the material in hazardous material waste facilities, the Kiewit team looked for innovative solutions to mitigate the lead. An EPA approved material called Fesi Bond was used to bond with the lead so it would not leech when contacted with water. After application, the material was tested to confirm the Fesi Bond had bonded correctly, re-categorizing the soil as non-hazardous. This allowed the Kiewit team to utilize the soil onsite or haul offsite.

Challenge: **The DB scope included design and construction of the infrastructure for the new tolling and ITS systems. A separate entity would install, interface, and integrate the new system into the existing system.**

Solution: The Kiewit team was experienced in providing tolling infrastructure and ITS and began coordinating with the developer, VDOT, and the tolling providers to communicate

requirements and understand schedules to ensure there were no delays to the project. This was accomplished through design development task force meetings early on in the project.

Challenge: **There are multiple residential, commercial, and historical structures along the alignment of the project that are sensitive to vibration intensive operations such as demolition and pile driving.**

Solution: During vibration intensive operations, the Kiewit team set up vibration monitors on all structures that could be impacted. The structures were monitored throughout the construction operation for vibrations, which were checked against pre-construction levels to verify there was no additional impact. Recognizing the sensitivity of the historic Calvary Baptist Church in the Portsmouth community, the team kept vibrations monitors installed on the structure throughout the project's duration. Due to proper planning and analysis of construction operations, the project has not exceeded any vibration level requirements.

Challenge: **As a large-scale project involving work in an open water channel, potential impacts to the environment were numerous.**

Solution: The Kiewit team made minimizing environmental impacts while meeting local regulations a high priority. In doing so, the project was awarded the *2015 Silver Medal for the Virginia Governor's Environmental Excellence Award* recognizing significant contributions of environmental conservation. This achievement was accomplished by implementation of the following detailed programs:

1. The project holds a 99% recycle/reuse rate. Only 1% of the project's waste ends up in a landfill.
2. The project uses a self-contained concrete washout system that reduces water use by reusing the wash water and filtering it before each use.

The state of the art water filtering and recycling system maintained the quality of aquatic life in Chesapeake Bay.

3. The project fosters oyster beds in cages aligned on the car float. Once the spats grow, they are transplanted to oyster beds in the area.
4. Oyster boxes are constructed out of waste concrete to construct new oyster habitats in the area.
5. For the past two years, the project has sponsored the local Chesapeake Bay Foundation's Clean the Bay Day on the Elizabeth River. Each year over 60 volunteers from the project join the local community to remove over 300 tons of trash.

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

Kiewit

Submitted as Lead Contractor Project #6

- ☐ Equity Member
- ☒ Lead Contractor: **Kiewit**
- ☐ Lead Engineer
- ☐ Lead Operator
- ☒ Joint venturer in Lead Engineer: **Parsons Brinckerhoff, Jacobs**
- ☐ Affiliate(s):

FORM F: PROJECT/TRANSACTION DESCRIPTION

No.	Required Information	Response
I. BACKGROUND INFORMATION		
(1)	**Project Name**	**I-225 Rail Line (LRT)**
(2)	**Type of Facility**	Light rail line, bridge, and road work.
(3)	**Owner/ Procuring Authority**	Regional Transportation District (RTD)
(4)	**Brief Description of Project**	

The I-225 LRT is a design build project to construct 10.5 miles of light rail line. The rail line passes through the urban area of Aurora requiring close coordination with the city and CDOT- approximately one-third of the line is located in the I-225 right of way. This $410 million project is a part of RTD's FasTracks plan to expand transit throughout the Denver metro region. The line will provide key connectivity to RTD's Nine Mile Station, built by Kiewit as part of the T-REX project, with the planned Peoria Station where it will connect to RTD's future East line. The project also consists of reconstruction of approximately 10 lane-miles of roadway, construction of eight new stations along the new rail line, which will provide connectivity to University of Colorado Anschutz Medical Campus, Children's Hospital, the new VA Hospital, and Denver International Airport through a transfer at Peoria Station to the East Rail Line.

Why we included I-225:

- Provided a technical/financial solution to optimize the scope of the project
- Urban location of the project
- Extensive coordination with surrounding businesses and residents
- Complex utility relocation

Colfax Avenue Bridge built over traffic with local agency and community interface and engagement

As an unsolicited proposal, Kiewit teamed with the Royal Bank of Canada and offered a financing solution that fell within the RTD debt ceiling for issuing tax-exempt bonds. RTD ultimately decided to issue the bonds in-house utilizing the analysis and fixed inputs provided by Kiewit and RBC Royal Bank. Kiewit's assistance in facilitating a scope and delivery solution will allow RTD to complete the I-225 LRT beyond the previously funded station at Iliff.

(5)	**Contract Term**	DB contract term 08/28/2012 – 07/22/2016
(6)	**Current Status**	Under construction (65% complete)

(7) **Key Dates and Milestones**

Contract Milestone	Contracted Dates	Actual
Contract execution	8/28/2012	8/28/2012
Commencement of design	0 months 9/2012	0 months 9/2012
Commencement of construction	5 months 2/2013	6 months 3/2013
Achievement of Substantial Completion	47 months 7/2016	In progress – projected to finish on schedule

(8) **Relevance to the Project**

Substantive Evaluation Criteria, Other Relevant Criteria

The I-225 LRT represents a major success in Kiewit's ability to work with clients and third parties to provide solutions that optimize scope. Similar to I-70 East, I-225 is being constructed in a congested urban area with significant utility conflicts, traffic handling/phasing requirements, and intense coordination with adjacent contractors, local governments, and businesses.

> *"… Kiewit's local experience has been helpful for the project, from knowing local subcontractors to providing a knowledgeable workforce. They know the Colorado work environment and have been a good partner to RTD to keep this project moving forward."*
>
> – Chris Hinton, PE
> I-225 LRT Deputy Project Manager
> of Construction

Roadway expansion and reconstruction, including interchange reconstruction | Segments of the roads and intersections had to be reconfigured to accommodate the future I-225 LRT. Scope of work includes building 10.5 miles of rail in Aurora, Colorado, connecting the I-225 corridor with the existing rail systems, construction of 17 at-grade vehicle crossings and three pedestrian at-grade crossings, and eight new light rail stations with platforms and canopies, including an elevated station over Colfax Avenue (US Highway 40). The I-225 LRT has many retaining structures including 175,000 sq. ft. of MSE walls, 2,300 ft. of cantilever walls, and 12,000 sq. ft. of soil nail walls. The project's construction of eight bridges include a pre-fabricated steel pedestrian bridge over I-225 and a 285-ft.-long bridge over Mississippi Avenue, which was approved as an alternative technical concept during the proposal phase.

To accommodate track alignment along I-225, Mississippi Avenue on and off ramps along NB I-225 were reconstructed to the west, and requiring coordination with CDOT and the City of Aurora. Mississippi Avenue ramps were designed and constructed to accommodate future expansion of I-225.

Demolition of existing infrastructure in urban environments | Major portions of the track alignment go through the streets of Aurora. The track is center-running on Exposition and

Ellsworth avenues, requiring demolition and reconstruction of the streets. Numerous commercial and residential buildings had to be demolished, including three apartment buildings, a gas/service station, a commercial building, a tire shop, and two restaurants, as well as demolition performed for reconstruction/extension of the existing Highline Canal concrete box culvert.

Reconstruction of Highline Canal box culvert

- **Major excavation work, including groundwater considerations and/or drainage requirements |** In addition to excavation and embankments for rail bed and bridge abutments, there were numerous interface and improvements to the City of Aurora's drainage systems.

- **Complex traffic management in urban areas |** Requires our team to constantly coordinate and engage with businesses, inform the public about upcoming closures, and provide project updates via website, emails, public meetings and a hotline to reduce any inconvenience to the traveling public. Several large arterial roads are impacted by construction and require some short- and long-term closures. The team coordinates closure and detour plans with the City of Aurora to ensure minimal impacts to traffic and access to surrounding businesses is maintained. Kiewit has coordinated closures and detours with hospitals in the area so hospital staff is aware of detours for their first responders. There will be overnight full closures of I-225 for the installation of the pedestrian bridge at the Florida Station. The team is coordinating with CDOT and the City of Aurora for detours to reduce the impact of this operation.

- **Construction staging in confined spaces |** Light rail alignment goes through congested city streets with limited space available for construction work and requires staging of work. Several at-grade crossings through major intersections will require full closures and extensive detouring during the summer of 2015. Through detailed planning and coordination efforts, the team is able to progress work regardless of limited space. Kiewit works with the City of Aurora to implement full closures of intersections one at the time. When full closures are required, the team uses mobile trailers for immediate access to tools and materials at the site and eliminate back and forth trips and the need for staging space.

- **Structures that include ventilation and/or fire life safety considerations |** All bridge structures and new stations are being designed in compliance with city fire safety code. In order to obtain system safety certification criteria, the team will proactively implement a compliant fire and life safety/evacuation plan for the rail system.

- **Coordination with railroad and/or utility companies |** Requires close coordination with the City of Aurora, Aurora Water, Xcel and other private utility companies. Of the approximately 270 utility conflicts, one of them was the relocation of a major Xcel transmission tower near Fitzsimons which required close coordination with Xcel. Coordination with these stakeholders includes participation at the weekly task force meetings

and reviews on all design packages. Weekly meetings are also held with utility companies to coordinate their relocates, current work location, and construction schedules.

- **Roadway pavement and associated infrastructure under environmental conditions |** The 10 lane miles of pavement reconstructions meets the specifications of CDOT, the City of Aurora, and other local agencies.

- **Interfaces with adjacent road operators |** Kiewit is sharing site access with other contractors working under separate contracts for CDOT, CCD, and RTD.

- **Workforce development programs, including partnerships with local community organizations and/or apprenticeship programs |** The contract with the owner contains 8% Workforce Initiative Now (WIN) program participation requirements. The WIN program helps job seekers, companies, and local communities through the creation of career opportunities in the transportation and construction industries. So far, the WIN program participation is at 9%, surpassing the required percentage.

Since 2013 we have conducted quarterly "Koffee with Kiewit'" events to provide the local DBE/SBE subcontractors with information for participation opportunities

- **Achievement of or exceeding goals relating to participation of disadvantaged businesses, small businesses, and/or other business that are subject to equivalent programs |** I-225 LRT has a 25% SBE participation requirement. Over $100 million of the contract value is committed to SBE firms. The current SBE participation is 26%, which is higher than the required goal. Monthly meetings are held with RTD's Small Business Office to keep communication open and review progress. To date, the team has successfully contracted with 128 SBE companies. Kiewit intends to continue this trend of exceeding the 25% goal. The team will continue SBE outreach and appreciation events throughout the life of the project to increase participation. Kiewit sends opportunities to minority organizations for distribution to their members, attend outreach events such as the RTD's MOU Stakeholder event and "Koffee with Kiewit". This is an outreach event that allows the small subcontractor community to meet and talk with Kiewit management and estimators to learn about upcoming opportunities. This event is hosted by Kiewit and includes participants such as RTD, connect2DOT, Black Construction Group, COMTO, City of Aurora Small Business Development Center, DIA, City and County of Denver, Hispanic Contractors of Colorado and other organizations that promote small business participation and provide resources to small businesses. I-70 East has been featured at previous events and the team is committed to stay engaged with the small business community and provide them with an opportunity to be a part of local projects.

- **Air quality monitoring and mitigation in urban environments |** Proximity to multiple properties and businesses requires constant monitoring and controlling of dust caused by

construction activities. Water trucks are used to mitigate fugitive dust that might be a nuisance to the traveling public and the surrounding community.

Noise monitoring and mitigation in urban environments | Managed through construction activity scheduling, performing noisy work during the day. Comprehensive communication efforts including weekly construction updates, public meetings, and community involvement by the I-225 team, ensures the potentially impacted community is aware of upcoming major noisy operations. The I-225 team follows local and state requirements and noise ordinances doing construction during designated hours.

Right of way aquisiton support | The Kiewit team is responsible for the assembly acquisition packages for 128 ROW parcels, including appraisals, RTD approvals, and negotiations.

Commitment to environmental excellence | To mitigate any environmental issues, a full-time environmental coordinator is on-site ensuring that best practices are implemented and permits are followed. The environmental coordinator holds a bi-weekly environmental task force meeting with their counterpart from RTD to discuss all environmental topics including the status of mitigations. They also tour the project on a regular basis with the stormwater permitting agency, the City of Aurora.

Relevance to the I-70 East Project (as described in Sections 8 and 22)					
☐	TIFIA closed by developer	☐	PABs	☐	Highway/road financing
☐	Financed/located in North America	☐	Availability Payment model	☒	Rdwy/IC exp/reconstruction
☒	Construction staging, confined space	☒	Road operator interfaces	☒	Urban infrastructure demo
☒	Ventilation/fire life safety	☒	Workforce development programs	☒	Major excavation work
☒	RR/utility coordination	☒	Meet/exceed DBE	☒	Complex urban traffic mgmt.
☒	Infra w/similar env conditions	☒	Air quality monitoring/mitigation	☒	Noise monitoring/mitigation

II. DESCRIPTION OF TEAM MEMBER INVOLVEMENT

(9)	**Proposer Team Member(s) Involved**	Kiewit Parsons Brinckerhoff, Inc. Jacobs Engineering Group Inc.
(10)	**Role of Proposer Team Member(s)**	Kiewit – **Lead Contractor** Parsons Brinckerhoff – Project Manager for RTD during PE/Planning phase Jacobs – Program Manager for RTD The following team members also participated in this project: Sturgeon Electric – Electrical, Signals Anderson Drilling – Drilled Shafts Iron Woman – Trucking Shannon & Wilson – Geotech Engineering RBC- Financial Solutions Advisor

(11)	**Key Personnel Involved, Roles, Responsibilities**	**Tom Howell, Principal-in-Charge** | Tom led the estimate and proposal efforts for the project. Currently, he serves as the project director and provides oversight for all aspects of the design build contract. **Hunter Sydnor, Public Information Officer** | Communicates construction activities and impacts to the stakeholders. She works with the construction team to lead the development of the communication plans that identify stakeholders, potential impacts, communication tools, and timing of messaging. Tools can vary by stakeholder group and can include signage, website, social media, printed materials, personal contact, presentations, and videos. **Jenn Bradtmueller, Environmental Manager** | Oversees stormwater control, dewatering of contaminated groundwater, hazardous and non-hazardous waste management, asbestos and lead-based paint management, air quality control, and compliance with the Emergency Planning Community Right to Know Act. **Kevin Custy, Utilities Manager for RTD under contract from Jacobs** | Supervises staff utility team members and performing utility senior leadership duties for FasTracks. **Value-Added Personnel |** From Section 2.1.3b also on the I-225 project include: Tim Mackin, Pete Remington, Greg Fischer, Randy Sanman, Craig Briggs, Joe Wingerter and Sam Gilmore.
III. REFERENCE		
(12)	**Name**	[redacted]
(13)	**Title & Employer (current)**	[redacted]
(14)	**Title & Employer (at time of project/ transaction)**	[redacted]
(15)	**Phone & Email**	[redacted]
(16)	**Location & Time Zone**	[redacted]
(17)	**Other**	[redacted]
IV. TECHNICAL INFORMATION		
(18)	**Construction Value**	$410 million
(19)	**Completion within/above Budget**	$52 million and 14.8% above original contract value Difference of $52 million is primarily due to alignment changes that were facilitated through interface with the stakeholder's (including Aurora, Fitzsimons Redevelopment Authority, Anschutz Medical

		Center) to better serve the needs of the transit users and the local facilities.
(20)	**O&M Value**	N/A
(21)	**Length of Road under Operation (centerline miles)**	The light rail spans 10.5 miles along I-225 Includes approximately 10 lanes miles of roadway reconstruction
(22)	**Key Technical Challenges and Solutions Implemented**	

Challenge: **Colfax Bridge abutment design**

Solution: A ROW parcel north of Colfax was a difficult long-lead procurement, which could potentially delay the Colfax Bridge construction. To avoid any delay, our team brainstormed to design the Colfax abutment to allow the bridge, which is also the station platform, to be built without the walls in place that extend north from the abutment onto the private parcel.

Iliff Bridge construction which included an alignment modification to reduce impacts and facilitate accelerated delivery of this key element

Challenge: **Construction of curved Iliff Bridge**

Solution: A slight realignment of the Iliff Bridge allowed for a straight bridge rather than a curved structure providing a more constructible design.

Challenge: **Realignment at Tollgate Creek north crossing**

Solution: The original design for the north crossing over Tollgate Creek was a curved steel structure. Curved steel girders have a long-lead time for procurement. The original bridge was also in the flood plain. Great collaboration with RTD during task forces helped determine a new alignment, avoiding the flood plain, smoothing the curves providing improved rideability, and straightening the bridge allowed pre-cast concrete girders to be used.

Challenge: **Major excavation work, including groundwater considerations and/or drainage requirements**

Solution: Much of the excavated material for the project needed to be imported to meet the strict soils specifications of the rail guideway envelope. To efficiently address this, Kiewit identified, tested and established a material processing site adjacent to the project to replace the existing soils that did not meet the specifications. This activity, saved the project time and money as the alternative solution was to import soils from a source well off the Project limits. Kiewit has processed more nearly 50,000 cu. yds. from this processing location.

Major excavation operations were also required for the addition of 108 in. and 96 in. storm lines for the City of Aurora Sable Boulevard corridor construction. The excavation required coordination between multiple disciplines, stakeholders, public and private owners, local/state governments, and multiple designers.

Significant groundwater infiltration was encountered during the relocation of a 66 in. waterline along Abilene Street. Kiewit established a dewatering system that included pumping the groundwater into Baker Tanks allowing the suspended particles to settle prior to testing the water before discharging in accordance with permit requirements.

Challenge: **Significant underground work at the Exposition Avenue and Sable Boulevard intersection required several lane closures for extended duration**

Solution: With teamwork and cooperation with the City of Aurora and RTD, we were allowed to fully close the intersection and detour all traffic. This allows us to reduce the impacts to the traveling public by completing the work faster.

Challenge: **Construction of the Colfax Bridge with minimal impacts to traffic**

Solution: Our team utilized innovation and proposed alternatives to mitigate traffic disruption for construction of the Colfax Bridge. Original design of the bridge required a two-span structure with a center column placed on Colfax Avenue which is heavily traveled. To place the column in the middle of this busy street would have required lane closures that would last for more than a month. Our team came up with an alternative solution, to turn a two-span bridge into a one-span structure with longer girders, eliminating the need for the center column. By doing this, we finished the work early and only had to fully close Colfax for two nights to set girders instead of prolonged lane closures.

Challenge: **Sharing site and interfaces with adjacent road operators**

Solution: During the I-225 LRT construction, CDOT had a concurrent project to widen I-225 from Parker Road to Mississippi Avenue, which required a significant amount of coordination with that contractor. Our construction sites were immediately adjacent, even sharing drainage facilities. This CDOT project is now complete.

Coordination with Adjacent Road Operators

Kiewit initiated and led coordination meetings, including all construction companies and agencies to ensure none of the contractors were delaying the others and that traffic control plans were coordinated.

On Colfax Avenue, directly under our elevated station bridge structure, CDOT is replacing the Colfax Bridges over Tollgate Creek. This takes significant coordination for both design and construction, including drainage facilities, traffic control and site access.

Another concurrent project was the Peoria Bridge Flyover over the existing UPRR tracks and future RTD East Rail commuter line north of 33rd Avenue. That project was built prior to our construction starting in that area, but we expedited the design and construction of a waterline lowering in 33rd Avenue to avoid the need to remove the new pavement that they were installing. Kiewit also initiated and led a regularly scheduled coordination meeting with that team.

Our end of line Peoria Station is directly adjacent to the East Line commuter rail station. There has been significant coordination and regularly scheduled meetings with the Denver Transit Partners team to integrate access and construction at these stations.

Challenge: **Construction in environmentally sensitive area**

Solution: The team is working closely with the owner to ensure all the environmental best practices are implemented and rules and regulations for permits are followed. Located in an environmentally sensitive area, some of the project's environmental mitigation efforts included removal of prairie dogs throughout the light rail corridor. The PI team worked with RTD's Prairie Dog Coalition to communicate the relocation of the prairie dogs from the Iliff Station area and the use of passive relocation whenever possible. Also part of environmental process is the protection of migratory bird especially during nesting season, which requires constant monitoring and inspection. The team also managed the 404 permit process for wetlands and the SB 40 permit process for wildlife affected by the project.

The project also involved handling hazardous materials and asbestos abatement. Asbestos was found in the existing soil, as well as in select buildings that were demolished and was removed per removal specifications.

Challenge: **Ability to adapt to major design changes**

Solution: The most significant design change on the project involved the Anschutz Medical Campus request reconsider the placement of the LRT system in Montview Avenue due to the concerns over the electromagnetic interference between the LRT trains and the Medical Campus. To avoid expensive mitigations to the interference, Kiewit partnered with the University of Colorado Medical Center, the City of Aurora, RTD, and the Fitzsimons Redevelopment Authority to jointly research and evaluate several options and collectively agree on the best solution for all parties involved. After numerous task force meetings (including a range of detailed design and construction analysis') the team decided to move the alignment from Montview Avenue to Fitzsimons. This realignment met the stakeholder's needs by providing an LRT station close to the expanding Medical Campus, improving RTD's headways, and proved to be more cost-effective than implementing specific electromagnetic interference mitigation measures in the original corridor.

Successful Design Change

The Kiewit team realigned the track to prevent electromagnetic interference with the Anschutz Medical Campus.

RTD and Kiewit conducted an open book and transparent negotiation process for sharing of information and costs for this contract modification.

Lead
Engineer

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

PARSONS BRINCKERHOFF

Submitted as Lead Engineer Project #1

- ☐ Equity Member
- ☒ Lead Contractor: **Kiewit**
- ☐ Lead Engineer
- ☐ Lead Operator
- ☒ Joint venturer in Lead Engineer: **Parsons Brinkerhoff; Jacobs** (GEC)
- ☐ Affiliate(s): **Kiewit**

FORM F: PROJECT/TRANSACTION DESCRIPTION

No.	Required Information	Response
I. BACKGROUND INFORMATION		
(1)	**Project Name**	**Dallas/Fort Worth (DFW) Connector**
(2)	**Type of Facility**	The convergence and capacity improvement of State Highways (SH) 114 and 121 designed and constructed to interstate standards, and included connectivity and expansion of the local managed lanes network.
(3)	**Owner/ Procuring Authority**	Texas Department of Transportation (TxDOT)
(4)	**Brief Description of Project**	

The $991 million DFW Connector project consisted of the development, design, construction, and maintenance improvements along SH-114 in Tarrant County from SH-114L Business to east of International Parkway and SH-121 from FM 2499 to SH-360, including tolled managed lanes along SH-114 from east of FM-1709 to east of International Parkway. Procured using a lump sum fixed price, best value format and executed using design-build-maintain (DBM) delivery, the 8.4-mile long corridor is located near the intersection of DFW's four most populous counties and is a vital connection for the economic viability of North Texas' business, commercial, and recreational interests.

The project term began on 10/06/2009 and was scheduled for completion in 04/2014 (the first of three maintenance terms began in

Why we included DFW Connector:

- Similar urban freeway construction in confined environment in large US city
- Coordination with railroads
- Innovative solutions to utility challenges and preserving historic structures
- Innovative MOT design in high traffic area

Proximity to DFW Airport and existing heavy traffic conditions required a detailed MOT plan and continual communication with the public and stakeholders

Kiewit meridiam PARTNERS

11/2013 and will conclude in 11/2018). The project was substantially completed in November 2013, nearly a full year ahead of the contracted final completion date. The scope of work included innovative maintenance of traffic (MOT) design to minimize disruption to 200,000 vehicles per day near the north entry/egress of DFW International Airport (DFWIA).

At completion, 43 new bridge structures (including two interchanges and five overpasses) with 2,000 girders and several with post-tensioned straddle bents were designed by Parsons Brinckerhoff. The design also included six large bridge class culverts and 150,000 ft. of drainage line.

There are 37 new bridges, 68 retaining walls of over 800,000 sq. ft. and the project included 3.9 million cubic yards of earthwork and 1.6 million sq. yds. of concrete paving for frontage roads, ramps, mainline and managed lanes.

(5)	**Contract Term**	DB contract term – 10/2009 – 04/2014 O&M contract term – 11/2013 – 11/2018
(6)	**Current Status**	Complete – 11/2013 O&M contract term – 11/2013 – 11/2018; the contract includes provisions for two additional 5-year maintenance terms at the discretion of TxDOT

(7) **Key Dates and Milestones**

Contract Milestone	Contracted Dates	Actual
Contract execution (CE)	10/06/2009	10/06/2009
Commencement of designs	0 months 10/2009	6 months early 04/2009
Commencement of construction	10/2009	10/2009
Achievement of Substantial Completion	60 months 10/2014	49 months 11/2013
Service/Operations Commencement	60 months 06/2014	49 months 11/2013
Achievement of Final Completion	60 months 10/2014	54 months 04/2014
End of Service/Operations	120 months 06/2019	114 months 11/2018

(8) **Relevance to the Project**

Substantive Evaluation Criteria, Other Relevant Criteria

Roadway expansion, reconstruction or interchange | This project bears a tremendous similarity to the Colorado I-70 East Project due to a 8.4 mile corridor which included reconstruction and widening of four highways, two major interchanges, five overpasses, 37 bridges, new direct connect ramps, and continuous frontage roads. There are 24 general-purpose (GP) lanes at the widest point along the corridor, and two electronic toll managed lanes in each direction.

Demolition of urban infrastructure | This project element is relevant to the I-70 East corridor based on the degree of demolition work that was required before this new facility could take shape. The design required demolition of 35 bridges and more than 500K sq. yds. of pavement. Demolition activities were performed at night and during permitted weekend closures to reduce the impacts to weekday morning and evening peak travel periods for the traveling public, prevent impacts to motorists traveling to and from DFWIA during peak operational periods, and protect these motorists from potentially hazardous demolition operations.

Concrete bridges were simple to erect and provide durable, low maintenance structures.

Major excavation work | The relevance of this project is evidenced by approximately 3.9 million cubic yards of earthwork activity that was ultimately balanced through a re-distribution of earthwork across the project footprint. During the initial MOT stage, Kiewit coordinated with adjacent projects to acquire fill material and further enhance the project's commitment to sustainable construction practices. This opened other areas for major excavation within the SH-114 interchange and allowed Parsons Brinckerhoff to develop a new interchange configuration. Located adjacent to the DFW International Parkway toll road just south of the SH-114 interchange, this area featured the second largest cut operation on the project. Excavated material was transported using legal haul trucks outfitted with telematics systems. This system established an "invisible barrier" around the project footprint to track haul routes, haul speeds, fuel consumption and air quality, and served as part of a continued method analysis for operational efficiency. An additional measure Kiewit used to enhance operational effectiveness was to forecast long-hauls over public highways around the peak travel periods.

Demolition activities were kept isolated from mainline traffic and predominately performed at night

Complex urban traffic management | The existing roadway was over 30 years old and carried over 200,000 vehicles per day though the DFW Connector corridor. Similarities to the I-70 East Project include a comprehensive MOT plan that was intuitive for drivers and focused on mobility. During the course of construction, more than 340 traffic switches were implemented, with an average of 160-280 man-hours per night shift and 100 man-hours per day shift spent setting

Airport access was maintained at all times to accommodate the peak operational air travel periods

up/taking down closures and sign maintenance. Traffic Management was paired this with a comprehensive and award-winning public outreach campaign so motorists and project stakeholders had a realistic expectation when traveling the corridor. Communication tools included daily and weekly e-mail alerts and TxDOT's first project mobile application, which provided real-time traffic map and closure information.

Coordination with DFWIA was one of the key elements of the MOT. Design packages and construction were phased to keep access open to the airport while continuing to provide safe travel for heavy traffic throughout the construction period. We intend to use the experiences of the DFW outreach campaign to support CDOT's project specific outreach program on I-70 East.

Construction staging in confined space | A confined footprint is a common trait shared with the I-70 East Project. Where SH-114 rests adjacent to the City of Grapevine, the corridor becomes significantly confined however, this stretch of the corridor still features 24 GP lanes and two electronic toll managed lanes in each direction "book-ended" with MSE walls. Added to that complexity is the delivery itself. Demolition, concrete recycling (crushing), earthwork, drainage, structures, and paving operations had to be carefully staged without safety risk to workers or the traveling public, while avoiding traffic volume impacts.

Careful staging resulted in an improved roadway through the confines of the City of Grapevine

Coordination with railroad and/or utility | Multiple railroad crossings and a highly congested utility footprint are major similarities with the I-70 East Project. Coordination with the Fort Worth and Western Railroad (FWWR), Dallas Area Rapid Transit (DART), and the Fort Worth Transportation Authority (FWTA) began following contract execution. Led by our railroad coordinator, a Railroad Task Force was established to maintain continuous interface with the railroad. Together, railroad crossing areas and ROW boundaries with multiple facility crossing were identified while construction procedures around railroad lines were co-developed. One crossing area is located in a highly confined space of SH-114 through the City of Grapevine, while the second crossing area is located in "bridge city" just north of the SH-121/SH-114 interchange. Railroad crossing work plans were a direct result of these meetings, which were then submitted to FWWR, DART, and FWTA for approval. This collaboration provided solutions to potential conflicts in the field and vetted out procedures for working around railroad to protect workers and maintain the integrity of railroad assets that intersect new roadway elements.

City streets, GP lanes, railroad ROW and a congested utility footprint required thoughtful planning and a highly communicative team to mitigate challenges within this confined workspace.

The project also required 13 master utility adjustment agreements (MUAAs) and 58 supplemental agreements. To avoid utility impacts, the team re-phased certain portions of the work and coordinated with utility owners and agencies to fast-track many of the supplemental agreements. Utility types included telecommunications, electric transmission and distribution lines (overhead and underground), natural gas, and water/wastewater. Further, the project received the 2014 FHWA Excellence in Utility Award in the Project Development category. Kiewit-Meridian Partners will utilize a similar railroad/utility task force on I-70 East.

Geotechnical challenges | As anticipated for I-70 East, the more than eight-mile project length of the DFW Connector required designs that accommodated a variety of subsurface conditions. Having extensive experience in the Dallas-Fort Worth Metroplex, Parsons Brinckerhoff's in-house geotechnical could anticipate the geotechnical conditions and challenges to be encountered. Realizing that a detailed and early subsurface testing program would help reduce bid risk, Parsons Brinckerhoff developed a project-specific field testing program. The program addressed customizing drilled shaft designs and the treatment of the expansive soils found within the project limits. The expansive soils also provided challenges for the design of pavements, foundations for retaining walls, and embankment fills. A stabilization program for the expansive clays and reuse of removed concrete pavements and structures as crushed fill provided cost-effective solutions.

Roadway operator interfaces | During construction of the corridor, the Kiewit-led joint venture served as the roadway operator responsible for maintenance and repair of existing roadway failures, third party damages, and litter disposal. One year prior to substantial completion, the team began meeting with the North Texas Tolling Authority (NTTA) during monthly tolling task force meetings. Upon achieving substantial completion, operational responsibility of the managed lanes portion of the corridor was placed into the jurisdiction of the NTTA. As the current maintenance service provider with TxDOT, this Kiewit-led team relied on scheduled monthly interface with the NTTA and the ETCS contractor for these managed lanes and uses co-developed protocols for maintenance incidents requiring interface with the NTTA. These characteristics are quite similar to those anticipated during the I-70 East Project.

TWC named Kiewit JV the Employer of the Year
Team hired underserved and targeted populations to build long-term careers, and provided training opportunities

Workforce development programs | In 2011, the Texas Workforce Commission (TWC) named this Kiewit-led joint venture the Employer of the Year. The project team worked with the Texas Workforce Commission and Workforce Solutions Greater Dallas to hire underserved and targeted populations to build long-term careers. Similar to the measures anticipated for the I-70 East Project, the team provided training opportunities for entry-level employees to improve skills and increase their on-the-job responsibilities. Tools used for this effective program, including bi-lingual hiring managers, training, and outreach are planned for the I-70 East Project.

Meet or exceed DBE participation goals | Similar to the efforts anticipated for the I-70 East Project, this Kiewit-led team surpassed the 12.12% goal with 12.69% DBE

Participation. For the main portion of the $916 million contract, this equated to over $125.6 million in DBE participation. The team worked diligently on outreach and giving DBE firms an opportunity in every scope of work. Non-DBE subs and suppliers were asked to also meet the 12.12% goal as 2nd tier DBEs were qualified participants. A strong team and focus on subcontractor and supplier management allowed for successful relationships with DBE subcontractors for the duration of the project.

- **Fire life safety considerations |** The project team held regular coordination meetings the with the Fire Departments and first responders for the City of Grapevine and South Lake to review Fire and Life Safety Access points both during construction (as part of the weekly MOT meetings) and for final design. As an example, this input from the local Fire and Life Safety representatives led to design modifications adding additional access points to the barrier-separated managed lanes.
- **Minimizing noise impacts to the communities |** Most DFW Connector construction activity was performed during daytime shifts to coincide with daily stakeholder activity. In cases where nighttime work was necessary, crews implemented best management practices and remained highly cognizant of keeping construction "noise" to an acceptable level.
- **Maintaining air quality throughout the project** | The team reduced fugitive dust by using water trucks and other continuous processing and stockpile spraying methods. Kiewit added water spray bars on the jaw crusher to suppress dust generation. To measure its effectiveness, Kiewit hired a specialist to test the plant and the readings were consistently near "zero" opacity readings.
- **Similar environmental conditions |** DFW Connector rests in a corridor that offers a variety of surrounding features similar to I-70 East. For instance, the alignment from end-to-end sits adjacent to several mixed-use shopping centers, residential developments, business parks, and medical centers. In addition, on the east end of the project rests DFW International Airport. This feature is very much similar to the I-70 East alignment with Denver International Airport positioned northeast of the project footprint. T

  The DFW Connector included the presence of a riparian habitat much like the water features crossing the I-70 East alignment. From the standpoint of year-around weather conditions, the DFW area endures a spectrum of weather behavior. With its proximity to the Gulf, DFW experiences high humidity factors year around and during the winter and spring seasons, endures sometimes violent weather patterns due to the clash of cold dry air from Canada and warm humid air from the Gulf. This fluctuation in temperature and precipitation during these seasons is very similar to those found in the Denver area.

Relevance to the I-70 East Project (as described in Sections 8 and 22)		
☐ TIFIA closed by developer	☐ PABs	☐ Highway/road financing
☐ Financed/located in North America	☐ Availability Payment model	☒ Rdwy/IC exp/reconstruction
☒ Construction staging, confined space	☒ Road operator interfaces	☒ Urban infrastructure demo
☒ Ventilation/fire life safety	☒ Workforce development programs	☒ Major excavation work
☒ RR/utility coordination	☒ Meet/exceed DBE	☒ Complex urban traffic mgmt.
☒ Infra w/similar env conditions	☒ Air quality monitoring/mitigation	☒ Noise monitoring/mitigation

II. DESCRIPTION OF TEAM MEMBER INVOLVEMENT		
(9)	**Proposer Team Member(s) Involved**	Parsons Brinckerhoff Kiewit Jacobs
(10)	**Role of Proposer Team Member(s)**	Parsons Brinckerhoff – **Lead Engineer**; performed 100% of relevant work for the project Kiewit – **Lead Contractor** (Managing Partner) Jacobs – General Engineering Consultant
(11)	**Key Personnel Involved, Roles, Responsibilities**	**Tom Howell, First DB Estimate Lead/Maintenance Lead |** Played an instrumental role within both the second design build estimate and O&M estimate teams, which were responsible for developing the team's Alternative Technical Concepts. The team's maintenance estimate is currently on budget during the first optional 5-year maintenance period agreement. Following project award, Tom worked alongside the project's project director and TxDOT to leverage best practices from I-25 T-REX and plant the seeds of partnership and transparency. Further, Tom played an active role with the team's leadership during early MOT scheming and sequencing of work around the DFWIA. **Jenn Bradtmueller, Environmental Compliance Manager |** Jenn developed the initial design build environmental program and worked along TxDOT and EPA to define the controls of the program, training measures for field crews, hold points for inspection, and steps to correct noncompliance if necessary. **Gordon Peterson, Lead Quality Manager |** As the Quality Manager for the DFW Connector Project. Gordon developed the design build and maintenance quality program and worked along TxDOT to define the controls of the program, training measures for field crews, hold points for inspection, and steps to correct noncompliance if necessary. **Hunter Sydnor, Public Information Officer |** Hunter laid the groundwork for the PI program during the RFP phase by researching the communities to be impacted, identifying stakeholders, and developing communication tools. Following project award, she developed the Crisis Communication Plan, the PI Plan, and focused on proper staffing and training to manage and execute these plans. She was an active participant in the initial PI/MOT task force, interfaced with the construction team and TxDOT to develop processes for sharing information as the project gained traction. **Value-Added Personnel** | From Section 2.1.3b who were also involved in DFW Connector include Tim Nelson, Larry Parks, Randy Sanman, Len Rattigan, Gray Kite, Chris Otto, Joe Wingerter, and Sam Gilmore.

III. REFERENCE		
(12)	Name	[redacted]
(13)	Title & Employer (current)	[redacted]
(14)	Title & Employer (at time of project/ transaction)	[redacted]
(15)	Phone & Email	[redacted]
(16)	Location & Time Zone	[redacted]
(17)	Other	[redacted]

IV. TECHNICAL INFORMATION		
(18)	**Construction Value**	$916 million (original)
(19)	**Completion within/above Budget**	Final acceptance value – $991 million. The original construction value was $916 million; however, due to a strong partnership with TxDOT and the exceptional delivery performance of a nationally recognized DBM model for other states to follow, TxDOT entered into multiple additional scope components contracts with the Kiewit-led joint venture in order to improve adjacent infrastructure to the original DFW Connector Project. The $89 million FM 2499 scope addition and $17 million SH-121/360 scope addition bring the total project value to $1.097 billion. These included mobility improvements such as the Main Street Bypass Ramp and emergency access improvements for City of Grapevine Fire and Police Departments, as well as client-directed eligible risk assignment changes. Even with these additional scope elements the team reached final completion six months early and provided $9 million in value engineering and scope reduction savings.
(20)	**O&M Value**	Annual – $3.3 million; each 5-year term (three optional terms) - $16.7 million
(21)	**Length of Road under Operation (centerline miles)**	8.4 centerline miles (the FM 2499 contract physically added 1.0 centerline miles to the overall project footprint)

***Challenge*: The original project identified more than 1,000 potential utility conflicts**

Close coordination of utility design with DFWIA ensured compliance with airport needs

Solution: Through coordinated design efforts, the team re-phased portions of the work, limiting the number of utility relocations to approximately 100. The team coordinated with utility stakeholders and other agencies to fast-track many of the supplemental agreements resulting in an accelerated construction schedule. The use of joint task forces and partnering to address utility coordination enhanced communications and resulted in limited delays to the overall schedule. Since the work was near the airport, the team coordinated extensively with DFWIA staff to obtain airport related permits and incorporate FAA clearance requirements in the design. FAA also prohibited detention ponds as part of the storm drainage system because of the potential to waterfowl which could interfere with aviation. As a result, all drainage systems near DFWIA were designed to be self-draining within 24 hours.

***Challenge*: Geotechnical challenges included two very different soil parameters on each end of the corridor**

Solution: Parsons Brinckerhoff's in-house geotechnical was highly familiar with these conditions having such a deep history of work in DFW. The team analyzed the surrounding soils through two statnamic tests: 1) one within the SH-114 interchange and 2) on the west end of the corridor. A detailed geotechnical plan was developed early and approved by TxDOT, reducing the risk of unknown geotechnical conditions that the team was then better prepared for in the field.

TxDOT's standard designs for drilled shaft foundations were enhanced for use on the DFW Connector. Following an extensive subsurface investigation program, Parsons Brinckerhoff developed project specific drilled shaft rating curves based on the in-situ soils. Curves reflected side resistance and end bearing for the two main types of geologic formations found within the project limits. This approach reduced required shaft size and length without compromising design life and function. The design approach using the customized curves was validated with a field testing program on the constructed drilled shafts.

***Challenge:* Expansive clay conditions throughout the corridor**

Solution: Difficult soil conditions required creative approaches. The project site has expansive clayey soils. Roadway and pavement design developed a straight forward approach to stabilize these soils, breaking the project area into a few zones, each requiring a specified amount, depth and time between placements of lime treatments. The consistency of approach to the lime treatment across all zones improved the constructability and simplified verification of construction quality. Once stabilized, the team used state of the art compaction equipment that measured and monitored its compaction energy, validating that designed compaction levels were achieved.

The expansive soils also provided challenges for the design of pavements, foundations for retaining walls and embankment fills. Using detailed analysis techniques and empirical data of installed concrete pavements, the team was able to develop an optimum pavement design that will provide excellent long term performance. Since the project required removal of concrete from the existing roadway, bridges and drainage structures, the team elected to crush the removed concrete and use the resulting material as a designed ground improvement layer under new embankments and retaining walls. This approach avoided costs associated with movement and disposal of the existing material and also reduced the amount of new material required.

Segmenting the project based on soil classification improved constructability

***Challenge*: Riparian woodland impacts not identified in the EIS**

Solution: The project was going to impact woodlands not identified in the EIS. Through participation with USACE, implementing the Water Resources Development Act (WRDA) section 214, the team and TxDOT realigned a portion of the frontage road to minimize riparian woodland impacts. This coordination effort strengthened the partnerships with all Stakeholders, and improved the construction schedule. The team utilized WRDA 2000 (Public Law No. 106-541) as amended, which allowed the USACE to accept funds from non-federal public entities to provide priority review of their permit applications. Participation in this program expedited USACE permit review and approval process and reduced permitting durations to help achieve the project objectives.

Challenge: **Groundwater controls and environmentally sensitive wetland areas**

Solution: This project contained environmentally sensitive wetland areas that required bridge designs to span sensitive areas and environmental constraints necessitated the design to divert drainage into swales or three large detention ponds to treat the stormwater for first flush before discharging to the ultimate outfall. Groundwater was managed with the team's SWPPP management plan and continuous monitoring of the systems by a site-specific groundwater team. This team was on-call 24 hours a day to respond to events or maintenance of the protection plan.

The project office housed key designers, contractor and TxDOT staff facilitating coordination and teamwork

Challenge: **Maintain schedule on a fast-paced complex project**

Solution: Rather than mobilize the majority of the design team to the project office Parsons Brinckerhoff used a centralized management team with dispersed production centers for project delivery. About 25 total design staff made up of discipline leads and the project management team was co-located with the contractor and TxDOT in the project office. Project

work was organized to meet the construction schedule geographically and assigned to design teams composed of staff from multiple Parsons Brinckerhoff offices across the U.S. as well as staff from our Dallas based sub-consultants. This approach provided quicker and more efficient mobilization of design staff and saved the cost and effort of mobilizing a 200 person design production center but this approach required standardization of approach and good communication.

A Primavera P6 design schedule was developed and contained all of the over 300 design packages required for the project. The P6 schedule was integrated with the construction schedule so the status of the overall project could be easily monitored. Phased design packages were developed to release progressive elements of the project in sync with the ROW acquisition and construction schedule. Construction of the new longer overpass bridges at Main Street, Texan Trail and William D. Tate were critical path items and the top priority. Other early efforts included traffic control to construct temporary pavement to shift traffic and create larger, more efficient work zones.

> *"… the DFW Connector is another tremendous example of what state government can do when local and state entities partner with the private sector to deliver the best possible result to taxpayers. This project will reduce congestion in an extremely busy urban area, ease access to one of our nation's busiest airports, create jobs and promote long-term economic development…"*
>
> *Bill Meadows*
> *Texas Transportation Commissioner (former)*

Given the importance of an efficient production start-up to meeting the project's schedule goals, time was invested to train the design team on the established design criteria, sample plans for each discipline and the project's CADD standards. To reduce the number of plan sheets required, standardized cut sheets and match lines locations were used across all disciplines. This standardization also improved interdisciplinary coordination since regardless of discipline information could be easily found on the same relative sheet in the plan set.

Early on, the design and construction teams worked on task forces to address critical project elements, provide constructible outcomes and incorporate life-cycle maintenance requirements. Regular meetings (discipline task force meetings, managers meetings, task force leaders meetings, lead designer meetings) were held every week at the same scheduled time. Meeting minutes were published and distributed including action items to be addressed by the next meeting. Web based management tools as well as software to control and manage design drawing development were utilized. Because not all staff was in the same location, conference calls as well as webinars were used extensively, but supplemented with face-to-face meetings at key junctures in the project development.

As the design development progressed, the project team used "over-the-shoulder reviews" (OTSRs) with TxDOT to ensure that all prior comments have been addressed prior to the final design review before the plans are released for construction. This practice minimized the formal

Over the Shoulder Reviews:

- Minimized formal review time
- Reduced number of comments
- Expedited acceptance release for construction of design packages

review time, reduced the number of comments to address and expedited the acceptance release for construction of design packages.

Because of an initial delay in TxDOT issuing the notice to proceed, the team chose to proceed at risk, developing preliminary designs and beginning field work to support design activities to maintain the project schedule. During this advanced start, TxDOT participated in reviews and task forces and kept the team objectively informed. This advanced start allowed the project to proceed and accelerate the schedule, achieving final completion almost a year ahead of schedule.

Challenge: **Maintain quality design deliverables using a multi-office approach**

Solution: To achieve the Project's aggressive construction schedule, Parsons Brinckerhoff employed design services from numerous office locations. While this approach allowed for the integration and use of the most qualified design staff regardless of their location, it also brought with it a need for better communication and a robust quality control program.

Created specifically for this project, the Design Quality Management Plan (DQMP) centered on a philosophy of integrating quality into designs throughout development, rather than attempting to add it after design completion. The DQMP includes procedures for Discipline Reviews, Independent Checks, Inter-disciplinary Reviews and Constructability Reviews. All members of the design team were trained and required to adhere to the DQMP. At the core of the DQMP was the quality control function, comprising numerous complementary elements:

- Detailed checking process;
- Independent technical reviews;
- Inter-disciplinary reviews; and
- Constructability reviews performed by the Kiewit-led construction JV.

Just as importantly, the DQMP emphasized independence of quality control and quality assurance functions, exemplified by the requirement for quality assurance audits on all deliverables prior to submittal. Quality assurance audits were performed by the design quality assurance manager, an individual with no design production responsibilities. Every production center was audited several times during the design process.

Success with this approach is attributable to high level of communications and adherence to the DQMP.

- The management team traveled to the various Parsons Brinckerhoff and subconsultant offices for kick-off meetings and obtained staff commitment to project goals, schedule and budget.
- Time was invested in training the staff on the established design criteria, on sample plans for each discipline, the project's CADD standards and the DQMP.
- Web-based management tools were used extensively. ProjectSolve was used as a common platform for storage deliverables, meeting minutes and other project records. ProjectWise, a document control program was used for all drawing development and allowed any designer in any office to see the current design in real time.
- Face-to-face meetings were also held as needed by either staff traveling to the project office, or project staff traveling to a supporting office.

- The QC/QA Program included multiple unannounced site visits by the Designer, Contractor and Owner to any supporting office throughout the design process to enhance communication and to ensure compliance with the quality standards.
- Except for a single paper record copy of plans, all deliverables were made electronically. Check prints for all deliverables were scanned and stored in ProjectSolve, accessible to any team member
- The team created a Virtual Plan Table so project personnel could electronically access any of the 8,000 released-for-construction drawings. This tool improved quality by streamlining design drawings, while providing the most current, accurate information to the field so crews could work effectively.

Virtual Plan Table Improved Quality
- Streamlined design drawings
- Provided current, accurate information

Implementing the DQMP, performing a good interdisciplinary review, and auditing the efforts ensured quality submissions.

Challenge: **Due to the proximity of the DFWIA, noise restrictions were minimal; however, the current FM 2499 "add-on" contract rests adjacent to three apartment complexes**

Solution: The majority of FM 2499 construction activity is performed during daytime shifts to coincide with daily stakeholder activity. In cases where nighttime work is necessary, crews implemented best management practices and remained highly cognizant of keeping construction "noise" to an acceptable level to coincide with stakeholder nighttime activity.

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

PARSONS BRINCKERHOFF

Submitted as Lead Engineer Project #2

- ☐ Equity Member
- ☐ Lead Contractor
- ☐ Lead Engineer
- ☐ Lead Operator
- ☒ Joint venturer in Lead Engineer: **Parsons Brinckerhoff**
- ☐ Affiliate(s):

FORM F: PROJECT/TRANSACTION DESCRIPTION

No.	Required Information	Response
I. BACKGROUND INFORMATION		
(1)	**Project Name**	**Dallas Horseshoe (The Horseshoe) Design Build**
(2)	**Type of Facility**	Interstate freeway widening and interchange reconstruction.
(3)	**Owner/ Procuring Authority**	Texas Department of Transportation (TxDOT)
(4)	**Brief Description of Project**	

The Dallas Horseshoe DB project upgrades the aging bridges carrying IH 30 and IH 35E traffic over the Trinity River, and widens and improves the Dallas "Mixmaster" interchange.

The $718 million project includes full reconstruction of the IH 30/IH 35E interchange in Dallas as well as construction of a signature bridge designed by architect Santiago Calatrava (the Margaret McDermott Bridge). Approximately 80% of the 73 lane miles of the project are on an elevated roadway section. Rated the seventh most congested roadway in Texas and with an ADT of approximately 380,000 vehicles, the IH 30/IH 35E corridor is one of the largest interchanges in the state.

When completed, the project will correct existing geometric deficiencies, repair and replace the deteriorating structures, and add capacity to the interchange and frontage roads.

Why we included The Horseshoe:

- Similar urban freeway construction in confined environment in large US city
- Coordination with railroads
- Innovative solutions to utility challenges and preserving historic structures

(5)	**Contract Term**	DB contract term – 2/2013 – 08/2017
(6)	**Current Status**	In construction (55% complete)

Kiewit meridiam PARTNERS

(7) Key Dates and Milestones

Contract Milestone	Contracted Dates	Actual
Contract Execution	2/20/2013	2/20/2013
Commencement of Design	1 week 2/2013	1 week 2/2013
Commencement of Construction	6 months 8/2013	6 months 8/2013
Achievement of Substantial Completion	48 months 2/2017	48 months 2/2017 (anticipated)
Achievement of Final Completion	54 months 8/2017	54 months 8/2017 (anticipated)

(8) Relevance to the Project

Substantive Evaluation Criteria, Other Relevant Criteria

Like the I-70 East Project, The Horseshoe required reconstruction of a heavily traveled, fully operational urban interstate.

The reconstructed Horseshoe will provide improved travel times for Dallas residents

Roadway/interchange expansion or reconstruction | Roadway expansion included widening the road to 23 lanes at its widest, the addition of 73 new lane miles on IH 30 and IH 35E and the reconstruction of the existing interchange. The work focused on widening the roadways and enhancements to the system-to-system interchange between these two major urban interstates. Included are new direct connectors for major movements within the interchange, EB IH 30 to SB IH 35E and NB IH 35E to WB IH 30. Similarities to I-70 East include widening the roadway as well as widening through system to system interchanges and interchanges with arterial streets.

Demolition of urban infrastructure | Constructing the new work required demolition of portions of the existing infrastructure. In concert with the traffic management plan, staged removal of existing bridges and roadways was designed to allow safe traffic shifts and provide efficient work areas. For example, the main IH 35E bridge over the Trinity River was constructed so that northbound traffic was shifted to the new bridge and then the southbound bridge was completed. Existing bridges and roadways were removed, often over multiple project phases, to make room for the new work which is a common work item for all projects like Horseshoe and I-70 East.

Complex urban traffic management | Transporting 380,000 vehicles per day through the interchange during construction required a detailed traffic management plan. More than 23 lanes across and geometric shifts requiring modifications greater than 10 ft. to the existing roadway elevations, earthwork, and excavation were carefully coordinated efforts within the project's compressed footprint. Parsons Brinckerhoff developed detailed traffic phasing plans to enable deep excavations for foundations, bridge piers, utility relocations, and pavement roadway alignments while always maintaining full traffic flow under properly lit and safe driving conditions.

Parsons Brinckerhoff developed a detailed traffic management plan which proposed construction from the "outside-in," an approach that allowed the maximum amount of the work to be constructed with the least impact to the traveling public, including initial phases of the construction performed without any impacts to traffic. A similar approach to maintaining traffic will be used for I-70 East, especially in the area of the viaduct.

"Outside-In" construction allowed the existing roadways and bridges to remain in service during construction

Major excavation work | While the Horseshoe did not have the magnitude of bulk excavation expected on I-70 East, the foundations, drainage, and structure tie-ins require a coordinated excavation effort throughout the Horseshoe corridor. These experiences with phased earthwork, site access, and traffic safety will transfer directly to the conflicts and challenges of I-70.

Construction staging in confined space | As with most urban infrastructure projects, the project was designed and sequenced to allow construction staging within confined spaces along the corridor. Access points were identified early in the design process and integrated into the traffic management plan. The outside-in approach allowed for greater access in the initial phases of the work. Temporary crossings of the Trinity River were used to simplify access to both sides of the waterway. Priority was placed on well signed and safe travel flows while maintaining the maximum number of lanes possible during construction. This priority placed restrictions on the available work areas but with proper coordination and design details, the project provided a strong meshing of construction needs with public access and safety.

Design for access and staging were essential to build in the heart of Dallas

Fire and life safety considerations | The Horseshoe project team held regular coordination meetings with the fire departments and first responders for the City of Dallas to review fire and life safety access points for the maintenance of traffic plans that were developed for construction.

Coordination with RR and/or utility | Planned improvements required relocation of facilities owned by approximately 25 utility agencies and included gas, fiber optic, and sanitary sewer lines. Within the project limits there were six sanitary sewer lines constructed in the 1930s and 1940s that ranged in diameter from 54 to 90 inches. These lines were deemed "no-touch" because of the major impact construction could have to

these vital sewer lines. Utilities were identified using plan records supplemented with subsurface investigations. Close coordination with the utility agencies from design inception though construction was vital to the success. The ability to avoid utility impacts through coordination, cooperation, and avoidance will expedite the work on I-70 East.

Near the east edge of the project, IH 30 crosses under both the Union Pacific Railroad (UPRR) and the Dallas Area Rapid Transit (DART) Red and Blue lines. Parsons Brinckerhoff's design accommodates significant railroad work restrictions such as limited access, 24-7 site monitoring, uninterrupted rail line service, and extensive night time work as the team weaved new roadway segments into the IH 30 corridor.

Infrastructure under similar environmental conditions | The project's environmental conditions vary with high temperatures in summer followed by snow, ice, and freezing temperatures in winter. The project corridor experienced significant snow and ice events in the winter of 2014/2015 which provided MOT challenges during construction, particularly related to Dallas drivers' lack of experience driving in snow.

Interface with adjacent operators | The Horseshoe has required extensive coordination with numerous municipal entities and operators. The team coordinated with the City of Dallas for all arterial connections. Significant coordination was undertaken with the City of Dallas Trinity River levee system operator for the Trinity River regarding the bridge crossing and construction activities. The project team also coordinated with NTTA regarding the design and construction of the Trinity Parkway Toll Road and Dallas County Department of Public Works regarding their Riverfront Parkway.

Workforce development | The project team participated in training programs to bring new workers into the construction industry.

Air, noise, and environmental | The Horseshoe design team developed stormwater prevention plans and other BMPs to minimize environmental impacts during construction.

Meet or exceed DBE participation goals | Use of DBE consultants was strongly pursued and beneficial to the overall design during concept development, preliminary engineering, and final design. The existing pool of DBE designers within the Dallas region brought forth strong and specialized talents to address utility conflicts, ROW coordination, ITS, survey, structural design, pavement profiles, and public involvement.

Relevance to the I-70 East Project (as described in Sections 8 and 22)		
☐ TIFIA closed by developer	☐ PABs	☐ Highway/road financing
☐ Financed/located in North America	☐ Availability Payment model	☒ Rdwy/IC exp/reconstruction
☒ Construction staging, confined space	☒ Road operator interfaces	☒ Urban infrastructure demo
☒ Ventilation/fire life safety	☒ Workforce development programs	☒ Major excavation work
☒ RR/utility coordination	☒ Meet/exceed DBE	☒ Complex urban traffic mgmt.
☒ Infra w/similar env conditions	☒ Air quality monitoring/mitigation	☒ Noise monitoring/mitigation

II. DESCRIPTION OF TEAM MEMBER INVOLVEMENT		
(9)	**Proposer Team Member(s) Involved**	Parsons Brinckerhoff
(10)	**Role of Proposer Team Member(s)**	Parsons Brinckerhoff **– Lead Engineer**; performed 100% of relevant work for the project.
(11)	**Key Personnel Involved, Roles, Responsibilities**	No Key Personnel are involved. **Value-Added Personnel** | From Section 2.1.3b who were also involved in The Horseshoe include Tom Cooper and Len Rattigan.

III. REFERENCE		
(12)	**Name**	[redacted]
(13)	**Title & Employer (current)**	[redacted]
(14)	**Title & Employer (at time of project/ transaction)**	[redacted]
(15)	**Phone & Email**	[redacted]
(16)	**Location & Time Zone**	[redacted]
(17)	**Other**	[redacted]

IV. TECHNICAL INFORMATION		
(18)	**Construction Value**	$718 million
(19)	**Completion within/above Budget**	On track for completion within the contract price
(20)	**O&M Value**	N/A
(21)	**Length of Road under Operation (centerline miles)**	3.5 centerline miles

(22)	**Key Technical Challenges and Solutions Implemented**

Challenge: **Reconstruction of a heavily traveled, fully operational urban interstate and minimize impacts to traffic**

Solution: The Horseshoe is one of the largest interchanges in the state of Texas and required construction while maintaining full traffic flow in all directions. The ultimate cross-section is 23 lanes across at its widest. To accomplish the widening, geometric shifts and profile adjustment sometimes exceeding 10 feet were required meaning that traffic control, earthwork, excavation, temporary work, and the need to maintain intelligent traffic control devices within the project's compressed footprint had to be integrated into our approach.

In addition to using our "outside in" approach, Parsons Brinckerhoff's design minimized the time spent constructing each phase of the work and thus reduced the impact to the traveling public while the improvements were built. Design innovations used to expedite the work included:

Designs which are easy to construct, maintainable, and durable save money now and in the future

- Increasing use of recycled and sustainable materials—less hauling and less removal resulted in faster construction;
- Geometric improvements—modifications to eight ramps to remove braiding bridges and at the same time increasing sight distances and safety
- Foundation selection—site-specific drilled shaft designs to meet small footprint construction requirements
- Traffic safety—improved advanced warning systems and channelization to improve traffic flow through the construction zone
- Simplification—structural designs to maximize the use of standard concrete girders, formwork, and configurations, avoiding changes to piers, abutments, and bridge lengths. Ideas like these plus hundreds more from past projects will be reviewed to determine how we can apply our experiences to I-70 East.

Elegant yet simple-to-repeat designs provided a cost-effective solution

Challenge: **Design around "no-touch" utilities**

Solution: Included in the project limits are six large sanitary sewer lines, 60 to 70 years old and from 54 to 90 inches in diameter. Because disturbing or taking these lines out of service was not feasible, TxDOT deemed these lines as "no-touch". To avoid impacting these facilities, Parsons Brinckerhoff designed bridges with straddle foundations to span over the lines. Drilled shaft foundations were located so the sewer lines were outside of the zone of influence. To eliminate the risk of damage during construction, Parsons Brinckerhoff developed a design for protection slabs to span over the utility.

Using straddle piers over the "no-touch" utilities avoided costly utility relocations

Challenge: **Construct around busy rail and transit lines**

Solution: Near the east edge of the project, IH 30 crosses both UPRR and DART facilities. The UPRR line carries over a dozen freight trains a day and provides access to Dallas's nearby AMTRAK station and the DART Red and Blue lines convey thousands of daily commuters to downtown Dallas. Parsons Brinckerhoff's design accommodates significant railroad work restrictions such as limited site access; the need for round-the-clock site monitoring; uninterrupted rail line service; and the need to perform extensive night time work as the team weaved new roadway segments into the restricted IH 30 corridor, often referred to as the "canyon" because the of the partially lowered profile of this segment of the roadway.

Maintaining rail, street, and transit connections across the IH 30 "canyon", maintained mobility throughout the work

Challenge: **Accommodate future planned projects in the same corridor**

Solution: The Dallas Horseshoe crosses the Trinity River in two locations and Parsons Brinckerhoff prepared its designs with both existing and future conditions in mind. The need for the Horseshoe to be forwardly compatible with future developments such as the planned Trinity Lakes and Riverwalk projects is similar in the need to accommodate future development along I-70 East, such as an additional cover east of Steele/Vasquez. Parsons Brinckerhoff's design uses splice girder structures to accommodate the low flow Trinity River channel while minimizing impacts to the future floodplain. This design also limits the impact to future park amenities as the design considered the aesthetic appearance from within the Trinity River area.

Our "outside-in" approach to the work preserved the historic Houston Street Bridge

Challenge: **Preserve a historic bridge**

Solution: Maintaining traffic required the manipulation of existing and new traffic lanes through the existing arched portals of the Houston Street Bridge, an iconic and historic viaduct. Because it would not be feasible to replace such a unique and historic structure, Parsons Brinckerhoff designed a construction sequence to retain the structure while facilitating the phased construction. With diligent detailed construction phasing and the development of step-by-step procedures that were then carefully monitored throughout construction, this task was successfully managed. As with the other portions of the work, am outside-in approach was used at Houston Street.

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

JACOBS

Submitted as Lead Engineer Project #3

- ☐ Equity Member
- ☐ Lead Contractor
- ☐ Lead Engineer
- ☐ Lead Operator
- ☒ Joint venturer in Lead Engineer: **Jacobs**
- ☐ Affiliate(s):

FORM F: PROJECT/TRANSACTION DESCRIPTION

No.	Required Information	Response
I. BACKGROUND INFORMATION		
(1)	**Project Name**	**I-4 Ultimate Project**
(2)	**Type of Facility**	Reconstruction of 21-miles of interstate highway with 15 major interchanges, construction of over 145 bridges, addition of 4 variable priced toll express lanes in the median, and complete reconstruction of the general use lanes along the entire corridor.
(3)	**Owner/ Procuring Authority**	Florida Department of Transportation (FDOT)
(4)	**Brief Description of Project**	

I-4 Ultimate is a Public Private Partnership in Central Florida that traverses downtown Orlando through Orange and Seminole counties. The $2.32 billion project includes the reconstruction of 21 miles of limited access interstate facility along with significant modifications to appurtenant arterials alongside and crossing the interstate. This includes reconstructing 15 major interchanges and over 145 bridges. The concession agreement sets the concessionaire's responsibility to design, build, finance, operate, and maintain for 40 years.

I-4 project limits

Why we included I-4:

- Extensive reconstruction in confined corridor in highly urban area
- 200,000 ADT
- Managed lanes
- Largest TIFIA loan ever for availability based P3
- Extensive stakeholder involvement

The project's focus is to provide commuters a transportation choice by adding four variable priced toll express lanes in the median. Congestion pricing will ensure that the combined toll and general-purpose lanes operate at optimum throughput and will generate sufficient revenue so that toll users will fund the construction and operation of the choice lanes. By combining needed improvements to the highway system with the express lane project, commuters will also receive a completely rebuilt general-purpose highway system along the entire corridor.

Kiewit meridiam PARTNERS

Similar to the I-70 East project, the I-4 project is a complex highway project situated along a strategic corridor; a 4.2 mile segment passes through a confined urban area (downtown Orlando) with high daily traffic (200,000 ADT); extensive roadway, bridge and interchange reconstruction work; added managed / tolled lanes located within the roadway median; and extensive stakeholder engagement with expectations of an iconic project.

Furthermore, I-4 was recognized by "Infrastructure Journal and Project Finance" magazine as the "Deal of the Year" in the transport category. This recognition reflects the project's status as the largest availability-based P3 in the U.S. to date and the largest transportation project in Florida history. The project also received the largest TIFIA loan ever for an "availability based" P3 project.

(5)	**Contract Term**	DBFOM contract term (full term) – 09/2014 – 09/2054 (40 years)
(6)	**Current Status**	Under construction – 5% complete In operation – 0% Complete – 11% of overall contract

(7) **Key Dates and Milestones**

Contract Milestone	Contracted Dates	Actual
Contract Execution	09/2014	09/2014
Commencement of Design	3 months early 06/2014	3 months early 06/2014
Commencement of Construction	9 months 03/2015	9 months 03/2015
Achievement of Substantial Completion	77 months 11/2020	77 months 11/2020 (anticipated)
Achievement of Final Completion	81 Months 03/2021	81 Months 03/2021 (anticipated)

(8) **Relevance to the Project**

Substantive Evaluation Criteria, Other Relevant Criteria

Roadway/interchange expansion or reconstruction | Includes the reconstruction of 21 miles of I-4 through downtown Orlando, modifications or reconstruction of 15 interchanges and 145 bridges. Twelve interchanges are essentially fully reconstructed. There are two system-to-system interchanges being modified, both of which connect the new express lanes to existing toll facilities in the area. A major arterial interchange at Maitland Boulevard is being planned as system-to-system to facilitate future connection to SR 429 toll road. These features meet the objective to provide connectivity between the toll/express lane network

Reconstruct major interchange and roadway reconfiguration in downtown Orlando

through and around metropolitan Orlando. A significant portion of the alignment is elevated and lined with noise walls to mitigate noise impacts to local neighborhoods. In this same area of the project, we are providing improvements to a substandard curve, to reduce accidents in an area that has historically been the most accident-prone and contributes to congestion during peak commuting hours.

Demolition of urban infrastructure | I-4 is a complete roadway reconstruction through downtown Orlando. The impacts to utilities and the system are substantial. Relocation of existing utilities, maintaining traffic while reconstruction is underway, and building a system that is a signature urban corridor are key elements to the project. Replacement of 145 bridges is required by the project. Approximately 140 of these require complete demolition and full reconstruction. Demolition must be accomplished in the vicinity of ongoing traffic on the existing roadways, while maintaining safety for the traveling public and construction teams.

Structural fill placement mainline roadway

Major excavation work | Throughout the project corridor, much of the system will be elevated to manage conflicts. This results in placement of nearly 20 million cu. yds. of fill supported by use of MSE walls. Significant excavation is required for construction of storm water ponds along the corridor. Additionally, pedestrian access across a major arterial (SR 436) is being provided by construction of a tunnel that requires significant excavation.

Complex urban traffic management | This congested corridor serves average traffic of about 200,000 (ADT) today with Opening Year (2020) traffic of 220,000 ADT. Ultimate design is for 326,000 vehicles per day. I-4 serves as the primary corridor between the urban employment core and the residential suburbs of the Orlando metro area. Managing traffic flow during construction was one of the key proposal evaluation criteria during selection of P3 team to complete the project. The I-4 Mobility Partners team (including Jacobs on the design JV) developed comprehensive traffic management plan that maintains the same number of lanes that existed prior to construction during all peak travel times. Lane closures are limited to mostly nighttime hours. Our team committed to providing 28 days' notice for any full road closures. This level of notification is a substantial benefit for central Florida commuters.

Our team implemented several actions that are not normally conducted - as key measures to increase confidence and effectiveness of the traffic control concepts and plans

- Ran detailed traffic computer simulation models of system performance during construction phases to support traffic control plan (TCP). The models were specifically evaluated to demonstrate that ramp configurations did not degrade mainline performance.
- Our team took special precautions to maintain all ITS devices during construction and to ensure continuous coordination with the Traffic Management Center (TMC).

Construction sequences were established to provide new fiber optic and devices before destroying existing facilities.

Construction staging in confined space | Restricted ROW where some of the ROW is only 5 ft. from the base of MSE wall. Essentially no new ROW being added. Much of the construction staging will be from the median. Sloped embankments are being temporarily shored to provide room for construction staging areas.

Structures with ventilation/fire life safety | One pedestrian tunnel to be installed under SR 436, will include fire life safety evaluation and provisions. Coordination and review of design features to accommodate firefighting, including provisions to fire hose access through noise walls. Construction of dry standpipes is required for the five level interchange at SR 408.

Coordination with RR and/or utility | I-4 consists of major utility relocation coordination with 23 separate utility owners and over 3,000 potential utility conflicts. Jacobs is performing the design of water and wastewater utility relocations as well as managing the efforts of outside consultants completing relocation designs on behalf of utility owners. We have prioritized this work to be completed at the outset of the project to minimize coordination efforts once major highway construction gets underway.

Utility Coordination and Relocation Effort

23 utility owners
3,000 potential utility conflicts
Prioritized to minimize coordination efforts during construction

Road operator interfaces | Working with the operations team partners of our I-4 Mobility Partners team, the design team selected all concrete pavement for the new Express Lanes. This provided the optimum result of combined cost for initial construction and long term operation, with key consideration for maintaining availability of Express Lanes through the 40 year duration of the O&M agreement.

Meet or exceed DBE participation goals | Small business goals are 9% DBE participation and 3% SBE participation, and project team is currently exceeding requirements. Jacobs participated in outreach programs conducted during the proposal phase to solicit and confirm DBE involvement during the design phase.

Noise monitoring and mitigation | As the project traverses a heavily populated corridor, there is significant potential for noise impacts. FDOT completed noise mitigation studies over several years prior to beginning the I-4 Ultimate project. The design team is implementing noise attenuation barriers at multiple locations throughout the corridor. Both shoulder mounted and ground mounted noise walls are being implemented. Installation of noise barriers has required extensive coordination with local utilities. Ground mounted noise walls are being completed early as a value added feature to reduce the impacts of noise during construction as well as long term highway operations.

Additional items | On behalf of the design joint venture, Jacobs was responsible for developing concepts and setting detailed design for all tolling facilities and equipment to be implemented in the Express Lanes. Another "corridor wide" component for which Jacobs is responsible is aesthetic treatments including landscaping. Landscape architects

are designing features to result in a signature corridor appearance. The total value of the landscaping features approaches $30 million. Key aesthetic elements, such as bridge and noise wall treatments are included as well.

Enhanced features resulting in improved performance | The I-4 Mobility Partners team provided FDOT with additional technical enhancements in its proposal to improve system performance in key areas.

- Our design included direct connections from I-4 express lanes (north-south facility) to SR 408 (east-west toll road). This improvement over the "base bid" improves traffic flow at the key "system-to-system" interchange located in the middle of downtown
- We determined that with little additional costs, we could add capacity improvements in the form of additional auxiliary lanes and turn lanes, making ingress/egress safer and reducing the affect of entering traffic on the general purpose lanes.
- Pedestrian bridges and enhanced aesthetics were improved over the "base bid" along the facility to help the Owner achieve its goal of a signature corridor.

Relevance to the I-70 East Project (as described in Sections 8 and 22)		
☒ TIFIA closed by developer	☐ PABs	☒ Highway/road financing
☒ Financed/located in North America	☒ Availability Payment model	☒ Rdwy/IC exp/reconstruction
☒ Construction staging, confined space	☒ Road operator interfaces	☒ Urban infrastructure demo
☒ Ventilation/fire life safety	☒ Workforce development programs	☒ Major excavation work
☒ RR/utility coordination	☒ Meet/exceed DBE	☒ Complex urban traffic mgmt.
☐ Infra w/similar env conditions	☒ Air quality monitoring/mitigation	☒ Noise monitoring/mitigation

II. DESCRIPTION OF TEAM MEMBER INVOLVEMENT

(9)	**Proposer Team Member(s) Involved**	Jacobs
(10)	**Role of Proposer Team Member(s)**	Jacobs – **Lead Engineer**; performing >35% of relevant work for the project.
(11)	**Key Personnel Involved, Roles & Responsibilities**	No Key Personnel are involved. **Value-Added Personnel** | From Section 2.1.3b who are involved on the I-4 project include Randy Pierce.

III. REFERENCE

(12)	**Name**	[redacted]
(13)	**Title & Employer (current)**	[redacted]
(14)	**Title & Employer (at time of project/ transaction)**	[redacted]

(15)	**Phone & Email**	[redacted]
(16)	**Location & Time Zone**	[redacted]
(17)	**Other**	

IV. TECHNICAL INFORMATION

(18)	**Construction Value**	$2.32 billion (in "year of expenditure" dollars)
(19)	**Completion within/above Budget**	Currently under construction
(20)	**O&M Value**	N/A
(21)	**Length of Road under Operation (centerline miles)**	21 centerline miles

(22) **Key Technical Challenges and Solutions Implemented**

As part of the design joint venture (DJV), Jacobs is delivering final design of complete segments of the project, including roadway/traffic control, drainage, structures, intelligent traffic systems, signing and signalization, lighting, landscaping, and aesthetics. To provide for consistency of elements across the entire project, the design JV partners have assigned responsibility for certain design elements across the corridor. Jacobs is responsible for lighting and aesthetics/landscaping across the entire project.

Challenge: **Satisfy *owner and stakeholder aesthetic agreement expectations***

Solution: FDOT wanted a signature corridor, as did the local communities. We took the local aesthetic agreements that were forged over half a decade, and enhanced them to get the most points allowed for project enhancements. Features included additional pylons at the direct connects to the express lanes to provide a visual for the motoring public. These included special programmable lighting that corresponds to special events such as Orlando Magic basketball games or Orlando city soccer games. Other features included fountains in the various lakes lining the corridor and the enhanced pedestrian overpass at Maitland interchange. Working with the local governments we gained approval for the aesthetic agreements and now FDOT has revised their agreements to match our design

Future I-4 alignment downtown Orlando

***Challenge:* Satisfy owner desire to advance not only ATCs, but also value added features**

Solution: I-4 Mobility Partners team delivered an innovative technical design offering 25 improved alternatives technical concepts and 27 technical enhancements. Some of the key innovative concepts included:

- Direct connection between the Express Lanes to SR 408 (a system-to-system interchange with a crossing toll road). This was accomplished without adding another level to the interchange, thereby achieving the traffic objective in a safer manner.
- To eliminate traffic backup on Maitland Boulevard affecting traffic flow onto and off of I-4, we eliminated the traffic signal at Maitland Summit and Maitland Boulevard and proposed a grade separated interchange at no added cost to the owner.

***Challenge:* Cost-effective capacity increase without complete reconstruction in a geotechnically challenging area**

Solution: The dual interchange at Michigan-Kaley interchange is an innovative design approach using dual right-turn lanes which provides significant rehabilitation savings, even avoiding bridge work at a relic sinkhole location, thereby also eliminating a significant risk item from the project construction.

***Challenge:* Major utility coordination and relocations involving 23 separate utility owners and over 3,000 potential utility conflicts**

Solution: the design team formed a dedicated utility coordination team during the proposal stage that created an extensive conflict matrix that could be sorted in multiple ways by utility owner, type of utility, construction area, type of conflict, etc. Utility coordinators were assigned specific types of utilities and specific utility owners, such as water/sewer, telecoms, power, and gas, to identify whether there was an actual conflict with the different roadway construction features such as walls, drainage pipes, or bridge foundations. The conflicts were verified or eliminated by performing over 1,300 vacuum truck test holes. The utility coordinators then worked with the utility companies and their designated designers in the preparation of concept plans for the required relocations to mitigate or avoid the conflict. Coordination continued through the preparation of final relocation plans that where submitted for permitting by FDOT, and in the case of water and sewer relocations—by a second permit from the Florida DEP.

Effectively Communicating MOT Plans

The I-4 Team conducts bi-weekly coordination meetings with community stakeholders to seek input and buy-in on MOT plans.

***Challenge*: MOT activities requiring 3rd Party approval prior to RFC Plans**

Solution: The project team conducts bi-weekly coordination meetings with local cities along the corridor to gain pre-approval of detour routes, local road closures, and ramp closures prior to 90% plans, which included preparation of preliminary detour plans for their review and discussion with local stakeholders. Our team conducts detailed review sessions with traffic operations managers from the local jurisdictions where we gain input on what measures have been successful in the past as well as gain their "buy-in" to the ultimate solutions. Computer simulation (Synchro) is conducted to support detour and lane closure planning and provide reviewers proof of concepts. Specific coordination with the traffic operations staff of the City

of Orlando is being conducted to reflect experience in managing downtown traffic during special events.

***Challenge*: 22 miles of corridor that need to be designed and built uniformly and allow early start for construction**

Solution: A corridor master plan was included as a submittal for approval, which provided the framework for all detailed plans to be provided for RFC and ensured each component fits within the overall design. Line and grade geometry was submitted and approved early to establish framework for ongoing review of detailed submittal packages, as well as, overall plans for ITS and TCP.

***Challenge*: Getting the contractor working early to meet bid schedule**

Solution: Designer-issued early work packages allowing contractor to perform key drainage, structural, and TCP activities ahead of the main design package approval and keep the projected finish date on schedule.

> *"…use of a PPP for the I-4 Ultimate project will help deliver these improvements 20 years sooner than using conventional methods. This benefits Central Florida residents, commuters, and visitors."*
>
> – Ananth Prasad
> Secretary of the FDOT

***Challenge*: Coordination of multi-discipline team spread across the country working on a very compressed design schedule**

Solution: The project utilized collaboration tools extensively such as Projectwise and WEBEX meetings that are interactive with contractors and designers. We used BLUEBEAM software to perform constructability review markups and responses on a single document concurrently with multiple reviewers and designers. We are also using BLUEBEAM to perform interdisciplinary reviews and coordination to weed out design conflicts. These BLUEBEAM sessions became a crucial part of the QC documentation and QA signoff.

***Challenge:* I-4 corridor passes through the commercial and business district of City of Maitland and City of Altamonte Springs which attract heavy commuter traffic.**

Solution: Our team came up with a traffic control plan and construction schemes that utilized a wider bridge at SR 436 to maintain all travel lanes during construction. Also at Maitland Boulevard, our team used a complex roadway rerouting schemes in combination with signal optimization to modify 3 signalized intersections to grade separated interchanges without reduction of number of travel lanes or length of turn lanes.

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

PARSONS BRINCKERHOFF

- ☐ Equity Member
- ☐ Lead Contractor
- ☐ Lead Engineer
- ☐ Lead Operator
- ☒ Joint venturer in Lead Engineer: **Parsons Brinckerhoff**
- ☐ Affiliate(s):

Submitted as Lead Engineer Project #4

FORM F: PROJECT/TRANSACTION DESCRIPTION

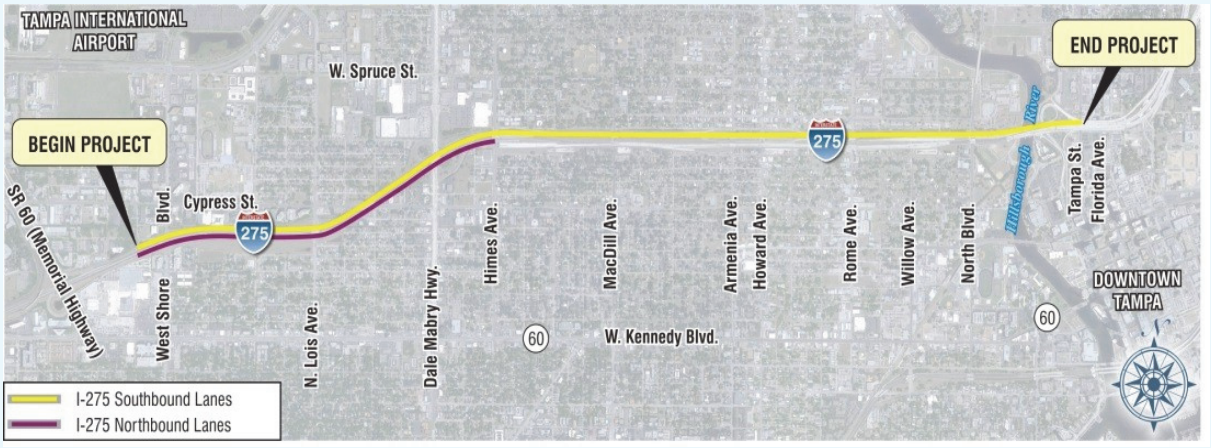
No.	Required Information	Response
I. BACKGROUND INFORMATION		
(1)	**Project Name**	**I-275 Design Build (I-275)**
(2)	**Type of Facility**	Interstate freeway reconstruction and widening.
(3)	**Owner/ Procuring Authority**	Florida Department of Transportation (FDOT)
(4)	**Brief Description of Project**	

The project involves widening and reconstruction of I-275 (SR 93) from SR 60 (Memorial Highway) to Hillsborough River in Hillsborough County, Florida. Procured under a $215 million DB contract, this high-volume corridor in FDOT's District Seven is the backbone for commerce in a three-city region linking Tampa, St. Petersburg, and Clearwater. The reconstruction widens the 4.7 mile segment of I-275 from a six-lane to an eight-lane typical section.

Why we included I-275:

- Roadway expansion and reconstruction
- Approach to MOT along a busy, urban interstate highway in one of Florida's most populous cities
- Design innovation allowed bid to be $35M lower than FDOT's budget

Work includes constructing four new collector-distributor lanes and reconstruction of five interchanges and 21 bridges. The finished project will provide a 132 ft. median corridor to accommodate future transit and managed lanes.



Kiewit meridiam PARTNERS

(5)	**Contract Term**	DB contract term 05/2012 – 07/2016
(6)	**Current Status**	In construction (80% complete)

(7) **Key Dates and Milestones**

Contract Milestone	Contracted Dates	Actual
Contract execution	June 2012	June 2012
Commencement of Design	0 months 6/2012	0 months 6/2012
Commencement of Construction	2 months 8/2012	2 months 8/2012
Achievement of Substantial Completion	42 months 12/2015	42 months 12/2015 (anticipated)
Achievement of Final Completion	48 months 6/2016	48 months 6/2016 (anticipated)

(8) **Relevance to the Project**

Substantive Evaluation Criteria, Other Relevant Criteria

As with I-70 East, the primary goal of the I-275 reconstruction project was roadway expansion and reconstructing five interchanges while maintaining all traffic movements along a busy, urban section of interstate highway in one of Florida's most populous cities. The work is part of a master plan to continue to improve connectivity in the Tampa Bay area, a region of almost three million residents.

Reconstructing I-275 enhances connectivity for almost 4 million people in west central Florida

Roadway/interchange expansion or reconstruction | Reconstruction widened I-275 from three to four lanes in each direction and created a 132 ft. median corridor for use by future transit and managed lanes and allowed a connection to other existing and planned managed lane segments on adjoining roadways. The work is similar in nature to I-70 East; rebuilding an existing interstate highway with numerous cross-streets and interchanges while maintaining a high volume of traffic.

Demolition of urban infrastructure | Initial work on the project included demolishing the existing urban infrastructure. To maintain traffic, some new bridges were constructed in phases meaning that while the new work was constructed, the portions of the existing bridge supported traffic. As expected for I-70 East, particular attention was paid to structural stability and clearances for the portions to temporarily remain in service.

- **Complex urban traffic management** | A major similarity between I-70 and I-275 is the need to maintain traffic during construction. Over 200,000 vehicles travel through the I-275 corridor each day and could not be impacted while constructing a new interstate, quite literally, on top of the existing freeway. Parsons Brinckerhoff's development of a safe and efficient traffic management plan included considerations for mainline traffic, cross street travel, and use of the corridor for construction traffic. To expedite construction, a regional traffic model was used to support a design alternate for the sequential closures of cross-streets, while ensuring that connectivity was maintained at all times.

Maintaining cross streets connected the adjacent neighborhood

- **Construction staging in confined space** | Another similarity to I-70 was the need to stage and construct the new work on I-275 in a confined area. Parsons Brinckerhoff rose to this challenge with numerous innovations to sequence and design the work to be constructed in a most efficient manner. Developed hand-in-hand with the traffic management plan, the construction staging plan focused on first building everything possible without a traffic adjustment, then shifting traffic to its final locations as quickly as possible to eliminate the need for temporary work.

- **Major excavation (drainage, utilities, bridge foundations, abutments) |**While I-275 did not have the magnitude of bulk excavation expected on I-70 East, the foundations, drainage, and structure tie-ins required a coordinated excavation effort throughout the corridor. The team devised an innovative alternative to excavating and removing poor soils in the area of an MSE. Rather than removing unsuitable soils that contained underground voids, the team opted to stabilize the soils in situ prior to construction.

- **Fire and life safety considerations |** The team coordinated maintenance of traffic plans with local fire and emergency personnel and provided these first responders with regular updates of traffic detours and lane closures.

- **Workforce development |** Parsons Brinckerhoff engages in college internship programs with local colleges and universities. Interns participated on the I-275 project.

- **Environmental mitigation in an urban environment |** Because of the relatively flat project site, the fact that stormwater management is a major part of roadway safety in central Florida, and the shallow groundwater elevations, the team's approach to stormwater management and sediment and erosion control was critical both during construction and for the ultimate roadway design.

- **Coordination with utility** | With the construction work required, there was an enormous utility coordination effort much as expected for I-70 East. Throughout the corridor our project interfaced with 17 utility owners and a myriad of utilities ranging from buried fiber to overhead electric to a buried jet fuel line which traversed the ROW. Parsons Brinckerhoff redesigned structures, adjusted the alignment of drain lines and sequenced the

work to avoid utilities and keep the cost of relocation or removal to an absolute minimum.

Early utility construction shortened the construction schedule

- **Road operator interfaces** | As with I-70 East, I-275 interchanges connect to city streets maintained by the City of Tampa. This coordination included approval of detour plans, traffic setups, and street closure permits. Restrictions on the work for special events, including NFL and NHL games, and Tampa's college bowl games during the year-end holidays were part of the plan. Conditions from City-issued permits were incorporated into the final design including additional signing or restrictions on construction traffic on some roadways. Ensuring the City was engaged and informed was a critical component to the project's success.
- **Meet or exceed DBE participation goals** | Parsons Brinckerhoff's commitment to the disadvantaged business community was evident as we exceeded FDOT's goal of 8% for DBE participation by providing 9% of total contract value by design firms. DBE firms performed a variety of design services including geotechnical investigations and the design of roadway and drainage elements.
- **Noise monitoring and mitigation** | One of the principal objectives during construction of these systems through densely populated urban areas was mitigating noise. At one retaining wall location, the existence of subsurface voids in the soil required consolidation and stabilization prior to placing the wall backfill. Parson Brinckerhoff created a methodology using modified H-piles to create isolated vibro-compaction and stabilize the soils while preventing excessive noise and vibration to an apartment complex less than 200 ft. away.
- **Drainage of an urban interstate highway** | With an average annual rainfall of 46 inches, managing stormwater is a major part of roadway safety in central Florida. Parsons Brinckerhoff's drainage experience on I-275 directly applies to I-70 East – both areas have the need to convey large volumes of water from summer storms.


Distinctive architectural features provided a connection between Tampa's past and present

- **Context sensitive aesthetic solutions** | To mitigate the visual effects of tall bridges and walls, aesthetics were developed using details from the historic cigar factories in old West Tampa. Details were similar to those developed for FDOT by Parsons Brinckerhoff for reconstruction of a segment of I-4 in Ybor City, a neighborhood north of downtown Tampa.

Relevance to the I-70 East Project (as described in Sections 8 and 22)		
☐ TIFIA closed by developer	☐ PABs	☐ Highway/road financing
☐ Financed/located in North America	☐ Availability Payment model	☒ Rdwy/IC exp/reconstruction
☒ Construction staging, confined space	☒ Road operator interfaces	☒ Urban infrastructure demo
☒ Ventilation/fire life safety	☒ Workforce development programs	☒ Major excavation work
☒ RR/utility coordination	☒ Meet/exceed DBE	☒ Complex urban traffic mgmt.
☐ Infra w/similar env conditions	☒ Air quality monitoring/mitigation	☒ Noise monitoring/mitigation

II. DESCRIPTION OF TEAM MEMBER INVOLVEMENT

(9)	**Proposer Team Member(s) Involved**	Parsons Brinckerhoff
(10)	**Role of Proposer Team Member(s)**	Parsons Brinckerhoff—**Lead Engineer**; performed 100% of relevant work for the project.
(11)	**Key Personnel Involved, Roles, Responsibilities**	No Key Personnel are involved. **Value-Added Personnel** | From Section 2.1.3b also involved in I-275 include Len Rattigan.

III. REFERENCE

(12)	**Name**	[redacted]
(13)	**Title & Employer (current)**	[redacted]
(14)	**Title & Employer (at time of project/ transaction)**	[redacted]
(15)	**Phone & Email**	[redacted]
(16)	**Location & Time Zone**	[redacted]
(17)	**Other**	[redacted]

IV. TECHNICAL INFORMATION

(18)	**Construction Value**	$215.4 million
(19)	**Completion within/above Budget**	On track for completion within the contract price
(20)	**O&M Value**	N/A

(21)	**Length of Road under Operation (centerline miles)**	4.7 centerline miles

(22) Key Technical Challenges and Solutions Implemented

***Challenge*: Maintaining traffic while reconstructing an urban freeway**

***Solution*:** Parsons Brinckerhoff's design provided the contractor with a safe and efficient traffic management plan including considerations for mainline traffic, cross-street travel, and use of the corridor for construction traffic. Because the ultimate configuration was to create a wider median, the design focused on constructing the outermost portions of the roadway in early phases, creating additional construction staging area for later phases. Although FDOT's ROW was wide enough for the ultimate project configuration, the existing lanes of I-275 were not parallel to the ROW so construction of contiguous new lanes as the first phase of construction was not possible. To solve this issue, portions of the new pavement were constructed and tied to the existing pavement, sometimes reusing existing pavement for MOT but reversing traffic flow on that segment of pavement. Partial demolition of some bridges was performed where footprints conflicted with the new work, all the time checking the stability and geometrics of the portions to remain. If not needed for traffic on I-275, some of the existing bridges were used to support haul roads within the corridor. Reuse of the existing bridges facilitated the construction in a highly constrained ROW and eliminated the need to use local streets in adjacent residential neighborhoods for construction traffic.

Construction first on the outside existing lanes minimized impacts to traffic

Cross-street work included the widening of Dale Mabry Highway, one of the busiest arterials in Tampa with the average annual daily traffic of 60,000 vehicles. This was performed by using a bridge with a smaller footprint than the one outlined in the concept design, greatly expediting construction. Using the regional traffic model to support planned detours, Parsons Brinckerhoff was able to maintain cross-street connectivity even though selective cross-streets were closed, which greatly expedited construction and allowed construction of the project to be kept to the minimum number of days outlined by FDOT. Parsons Brinckerhoff's design for staging and constructability of the project was directly responsible for the DB team being able to deliver the project for $35 million less than FDOT's estimate.

Partial demolition facilitated and expedited construction

***Challenge:* Avoid or minimize impacts to utilities**

***Solution*:** I-275 had some common utilities including water, sewer, and overhead electric; however, because of the proximity of I-275 to Tampa International Airport, a buried jet fuel line also crossed the corridor. The need to avoid or minimize impacts on a job like I-275 or I-70 East will save time and cost.

During the proposal and design phases much upfront utility coordination with the 17 utility agency owners (UAOs) was performed. In Florida, the cost of reimbursing the utilities for relocation is carried by the contractor, so good utility locating and constant coordination continued well into construction as the first line of defense for keeping the project under budget. Wherever possible Parsons Brinckerhoff redesigned bridges and walls, revised drainage and adjusted roadway geometry to avoid utilities. The designers were able to avoid utilities owned by all but 6 of the UAOs and over 65% of the utilities on the cross-streets. Some examples of design solutions included:

- A 12-way fiber optic ductbank was in conflict with the widening of the road. The roadway and ramp were realigned to avoid the relocation.
- Numerous utilities ran parallel and perpendicular to Green Street along the north side of the corridor. The design solution was to protect the utilities in place while installing the drainage and driving piles for the new bridge.
- To install a 54-inch drain line underneath numerous utilities, Parsons Brinckerhoff first performed field location of utilities, then worked in tandem with the UAOs and the crew during the installation.

***Challenge*: Poor soils and pile driving restrictions**

***Solution*:** One of the mechanically stabilized earth (MSE) walls constructed on the project crossed an area of localized underground voids. The solution was to stabilize the in situ subsurface soil prior to construction since removal and replacement of the volume of unsuitable material was not feasible. Additionally, relocating the wall was not practical, so a method of consolidating the soil was needed to prevent settlement of the wall after construction. Normal compaction would create a noise and vibration issue for the residents of an adjacent apartment complex, so a new plan was devised. Parsons Brinckerhoff designed a modified H-pile foundation and created a methodology to consolidate the soils using vibratory pile hammers. This method provided stable support for the wall and at the same time induced settlement and stabilized the subsurface soils without excess noise or damage complaints from the nearby residents.

Using unlined ponds met the challenge of managing stormwater in Florida

***Challenge*: Manage stormwater runoff and drain a relatively flat project site**

***Solution*:** Managing stormwater is a major part of roadway safety in central Florida. The I-275 project has over 1,000 drainage structures, 10 miles of pipe, and nine stormwater ponds including the use of four pre-existing ponds. The concept design used lined

ponds but through redesign and efficient use of available space, Parsons Brinckerhoff was able to use less expensive unlined ponds to provide storage volume for both the current project and the future express lanes, even with the comparatively shallow groundwater elevations found in this part of Florida.

Maintaining utilities along Green Street (right) saved time and money

During the design work, it was anticipated that construction would involve excavation through porous limerock. Because of the variable depth of lime rock it was discovered during construction that the limerock layer was shallower in some locations. Parsons Brinckerhoff redesigned the ponds to remain unlined, but for the shallower depth and obtained a modification to the stormwater permit.

***Challenge*: Develop context sensitive structural aesthetics**

***Solution*:** Another highly visible aspect of the project is the architectural aesthetic features included at the interchanges. The concept behind including hardscape, decorative architectural features, and extensive landscaping is to blend the overpass into the neighborhoods. Aesthetic details adopted the motif of the neighborhoods, from historic West Tampa with 100-year-old brick cigar factories to the commercial centers of Dale Mabry Highway and the Westshore Business District.

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

JACOBS

Submitted as Lead Engineer Project #5

- ☐ Equity Member
- ☐ Lead Contractor
- ☐ Lead Engineer
- ☐ Lead Operator
- ☒ Joint venturer in Lead Engineer: **Jacobs**
- ☐ Affiliate(s):

FORM F: PROJECT/TRANSACTION DESCRIPTION

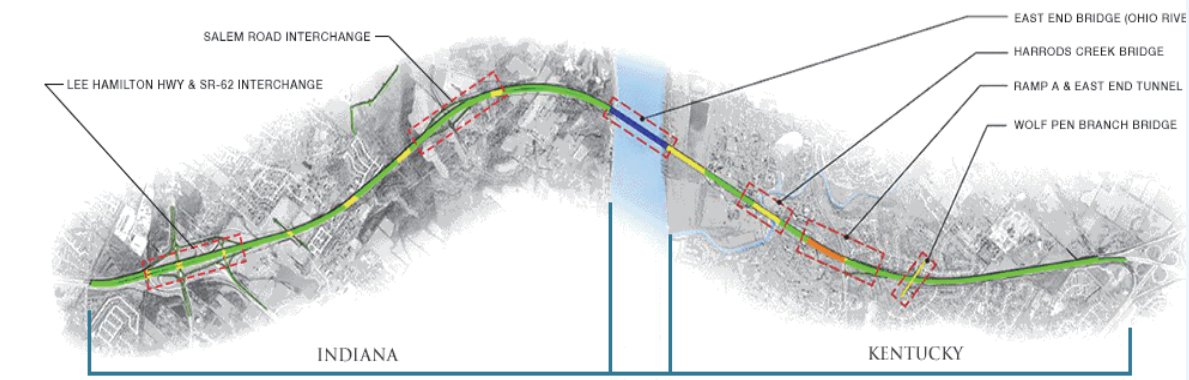
No.	Required Information	Response
I. BACKGROUND INFORMATION		
(1)	**Project Name**	**Ohio River Bridges East End Crossing (P3)**
(2)	**Type of Facility**	A 2,500-ft. cable-stayed bridge crossing the Ohio River.
(3)	**Owner/ Procuring Authority**	Indiana Finance Authority
(4)	**Brief Description of Project**	

The Ohio River Bridges East End Crossing (ORBEEC) is a $763 million DBFOM project. Approximately 75% of the 8-mile corridor is tolled and under operations and maintenance (O&M) responsibility of the WVB East End Partners for 35 years.

Why we included ORBEEC:

- P3 along interstate highway
- General purpose/tolled lanes roadway profile
- Reconstruction of major interchange
- 3.8 million cu. yds. of excavation
- Depressed roadway with 340,000 sq. ft. noise/retaining walls

The mission of the Indiana Finance Authority (IFA) in delivering the ORBEEC is to increase cross-river mobility by improving safety, alleviating traffic congestion on connecting highways, and completing the I-265 outer-loop around the Louisville-Southern Indiana area. This project connects the northeast end of Louisville, Kentucky with southern Indiana, near Utica, Indiana.



ORBEEC provides much needed connectivity between Louisville and southern Indiana

Kiewit meridiam PARTNERS

The approximately eight-mile (four-lane interim, six-lane ultimate) corridor's major design elements include:

- 2,500 ft. of main span cable-stayed signature bridge across the Ohio River
- 1,700 ft. of twin mined roadway tunnels under historic property
- 3,300 sq. ft. tunnel operations building
- 40-plus ft. high benched rock cut-wall designs utilizing top-down construction
- Dual three-lane roundabouts within tri-directional interchange
- 19 conventional long-span steel and concrete bridge structures

Similar to I-70 East, the ORBEEC is a complex highway project situated along a strategic corridor intended to provide greater mobility adjacent to the Louisville, Kentucky metropolitan area, and connectivity between southern Indiana and Kentucky. Other similarities include:

- Approximately 3.8 million cu. yds. of excavation (a good portion in rock) to construct the new roadway profile and tunnel
- 1,700-foot-long twin tunnels designed and constructed with state-of-the-art fire and life safety protection systems
- Installation of 340,000 sq. ft. of noise and retaining walls

There are two separate projects associated with the Ohio River Bridges—the East End Crossing P3 project highlighted in this write-up, and the Downtown Crossing $863 million DB project being completed by Walsh Construction Company. Jacobs is also the lead engineer on the Downtown Crossing project which is a second bridge that connects downtown Louisville with southern Indiana (the two projects are approximately 8 miles apart). Work scope includes the design of a new six-lane cable-stayed bridge, reconfiguration of a major interchange at I-64, I-65, and I-71 commonly referred to as “spaghetti junction” on the Kentucky side, complete reconfiguration of Indiana roadway and bridge approaches, and non-bridge related roadway/interchange work completed in a confined urban area within downtown Louisville, Kentucky.

Jacobs was also the Lead Engineer on the related $863M downtown crossing project.

Awards:

- National Deal of the Year 2013 by *The Bond Buyer* publication
- April 2015, Mid-America OSHA Training Institute - Award of Recognition for going above and beyond in safety

(5)	**Contract Term**	DBFOM contract term (full term) – 12/27/2012 – 10/2051 DB contract term – 12/27/2012 – 10/31/2016 O&M contract term – 10/31/2016 – 10/2051
(6)	**Current Status**	Design is complete, with most significant portions completed in less than 20 months In construction, approximately 60% complete as of April 2015

(7) **Key Dates and Milestones**

Contract Milestone	Contracted Dates	Actual
Contract Execution	12/2012	12/2012
Commencement of Design	12/2012	1/2013
Commencement of Construction	6 months 6/2013	5 months 6/2013
Achievement of Substantial Completion	40 months 10/2016	N/A
Service/Operations Commencement	28 months 10/2015 (partial opening of Indiana portion)	28 months 10/2015 (partial opening of Indiana portion) (anticipated)
Achievement of Final Completion	47 months 5/2017	47 months 5/2017 (anticipated)

(8) **Relevance to the Project**

Substantive Evaluation Criteria, Other Relevant Criteria

As lead designer, Jacobs performed design and design management for all aspects of the project similar to its proposed role on the I-70 East project.

Roadway/interchange expansion or reconstruction | At the south of the tunnel, we are reconstructing approximately 1-mile of roadway, expanding from 2 lanes to 4-lane interim/6-lane ultimate. To achieve the profile required for the tunnel, major staged excavation work is required, including flipping the main lane alignment from over to under the alignment of Wolf Penn Branch Road and US42. At the north end of the project, we are designing and constructing a geometrically complex interchange to provide access to the Indiana Port facilities and SR62. This interchange is complicated by the existing Port Road heavy rail line utilized by CSX and BNSF, along with others. This interchange experiences heavy truck traffic to/from the port and operational mobility is important. Our ATC solution meets all criteria and provides superior operability by employing dual 3-lane roundabouts and slip ramps.

Major excavation work | Similar to the I-70 Corridor, the roadway profile on the southern or Kentucky side lowered the existing grade by up to 60-ft. to traverse under historic property via the 1,700 ft. long twin tunnels and approach roadway section. The project overall will excavate approximately 3.8 million cu. yds. of in-situ material where geology along the ORBEEC corridor consists mostly of limestone and shale.

Rock wall stabilization for future retaining wall system

The tunnel and its approaches required significant amounts of excavation removal, resulting in over 40 ft. high rock and soil anchor retaining walls. Design and construction calls for top-down construction, utilizing galvanized threaded anchors ranging from 16 ft. to 25 ft. in length and further protected by 2-part epoxy

resin. Open face rock cuts were also designed, requiring a minimum 1:4 sloped-back face with benching at heights of 15 ft. and 30 ft. Exposed shale requires a protective layer of shotcrete within eight hours of exposure and prior to anchor installation to minimize the possibly of degradation.

Groundwater was encountered during tunnel excavation that was properly collected and discharged through a filtration system. In addition, due to environmental constraints and recognizing likely tunnel contaminants, the tunnel drainage system provides for collection and containment of up to 25,000 gallons of liquids utilizing automated control valves to isolate the drainage system and prevent water from entering Harrod's Creek and the very important Wellhead Protection Area of the project.

Deep excavation cut for future depressed roadway section

Demolition of existing infrastructure | The design team worked closely with the construction JV to develop designs that facilitated the demolition of critical existing elements to facilitate and expedite construction while minimizing impacts to the traveling public. Major demolition items included the US 42 ramp, the Port Road/US62 interchange, and the Wolf Pen Branch Road Bridge.

Complex traffic management | Three critical locations were addressed by the traffic control plans:

- Reconstruction of the existing SR 265/SR 62 interchange on the Indiana side.
- Removal of Wolf Pen Branch Road bridge (Kentucky side), which in its new design configuration flipped from traversing under to over the I-265 main lane roadway. The design facilitated a tight phasing configuration, while providing for rapid construction to be completed in less than 6 months per the contract.
- At the south tunnel portal, traffic control exists to accommodate hauling tunnel excavation tailings from the project site on designated and approved routes. The design provided for safe and compliant traffic control, including implementation of temporary traffic signals, multiple phases adjusted to construction progression, and haul routes accommodating large truck movements, and temporary pavement designs.

Staging in confined spaces | The excavation, blasting, and drilling to construct the depressed roadway section at the south tunnel portal and the twin tunnels was conducted within a highly congested and confined work space. This presented logistical and staging issues as well as health and safety exposure concerns to craft, equipment, and material located within a limited work area.

Structures with ventilation/fire life safety | Covering the I-70 depressed roadway will create tunnel conditions per NFPA 502, and will result in requirements for fire detection/protection, ventilation, communication, emergency response operation, and attention to detail to address Fire and Life Safety requirements. The ORBEEC project is

employing state-of-the-art design for the twin 1,700 ft. mined tunnels, including jet fans, automated fire detection and suppression, and comprehensive emergency response planning.

- **Coordination with railroad companies |** At the north end of project, we designed a geometrically complex interchange that needed to be coordinated with the existing Port Road heavy rail line utilized by CSX, BNSF and others.

- **Pavement under similar environmental conditions |** With a major portion of the ORBEEC under 35 years of O&M, and with prescriptive handback requirements, our design optimized the resulting pavement section by balancing capital costs with long-term O&M requirements and residual service life at handback. The Louisville-Southern Indiana region of ORBEEC is similar to that of I-70, with a full four seasons of weather. Freeze/thaw cycles, deicing requirements, and run-off control are all factors incorporated into the pavement section design.

- **Road operator interfaces |** From a design perspective, we designed new systems for ORBEEC to be compatible with existing systems, providing ITS, communication (wireless and fiber), SCADA, Weight-in-Motion, AM/FM rebroadcast (tunnel), changeable and dynamic signage, lane control signalization, and tunnel control operations. All of these systems tie-in to existing local and regional operators. We performed design on ORBEEC in an integrated environment, providing the ability to incorporate O&M interests into all aspects of design, including but not limited to pavement, grading, foliage, drainage, walls, bridges, and lighting.

- **Workforce development programs |** The ORBEEC project is implementing a Workforce Development Program, and has tapped into the local labor and professional work force to provide multiple opportunities for employment and employee development. This program will be maintained throughout the life of the project, and will provide residual benefit after the project is built.

- **Meet or exceed DBE participation goals |** ORBEEC is on target to meet the 9% DBE participation goals, utilizing significant local resources.

- **Air quality monitoring and mitigation |** From a design perspective, our primary implementation of air quality monitoring is in the tunnel design. As designed, monitoring for CO_2 and NOX gases is provided, as well as automatic initiation of tunnel ventilation systems if prescribed safety levels are met or exceeded.

- **Noise monitoring and mitigation |** Focus on noise mitigation is on providing appropriate noise mitigating sound-walls. On ORBEEC, extensive noise wall analysis was performed, which resulted in the implementation of 340,000 sq. ft. of noise and retaining walls.

- **Additional items** | Other unique design/construction aspects of the project included:
  - Protective eagles nesting area where drawings were accelerated to complete construction work within an allowable calendar time period or suspend construction activities for six to nine months
  - Extensive rock blasting and vibratory monitoring adjacent to neighborhood communities during roadway and tunnel excavation

- Extensive cross-coordination with water company and their existing sludge/sediment ponds on placement of foundation system for the 2,000 ft. long approach bridge

Relevance to the I-70 East Project (as described in Sections 8 and 22)		
☐ TIFIA closed by developer	☒ PABs	☒ Highway/road financing
☒ Financed/located in North America	☒ Availability Payment model	☒ Rdwy/IC exp/reconstruction
☒ Construction staging, confined space	☒ Road operator interfaces	☒ Urban infrastructure demo
☒ Ventilation/fire life safety	☒ Workforce development programs	☒ Major excavation work
☒ RR/utility coordination	☒ Meet/exceed DBE	☒ Complex urban traffic mgmt.
☒ Infra w/similar env conditions	☒ Air quality monitoring/mitigation	☒ Noise monitoring/mitigation

II. DESCRIPTION OF TEAM MEMBER INVOLVEMENT		
(9)	**Proposer Team Member(s) Involved**	Jacobs
(10)	**Role of Proposer Team Member(s)**	Jacobs – **Lead Engineer**; performing 100% of relevant work for the project.
(11)	**Key Personnel Involved, Roles, Responsibilities**	No Key Personnel are involved. **Value-Added Personnel** | From Section 2.1.3b also involved in ORBEEC include Randy Pierce.

III. REFERENCE		
(12)	**Name**	[redacted]
(13)	**Title & Employer (current)**	[redacted]
(14)	**Title & Employer (at time of project/ transaction)**	[redacted]
(15)	**Phone & Email**	[redacted]
(16)	**Location & Time Zone**	[redacted]
(17)	**Other**	[redacted]

IV. TECHNICAL INFORMATION		
(18)	**Construction Value**	$763 million This is a fixed price DB project (design construct portion)
(19)	**Completion within/above Budget**	The project is ongoing and approximately 60% complete with construction. Jacobs is not privy to overall project budget, but the engineering is projected to be delivered within 4% of budget with approved change notices.

(20)	**O&M Value**	N/A
(21)	**Length of Road under Operation (centerline miles)**	Approximately 75% of the 8-mile corridor (6-miles) is under O&M.
(22)	**Key Technical Challenges and Solutions Implemented**	

Challenge: **Geotechnical approach to the tunnel liner design**

Solution: Design of the tunnel liner was a challenge and evolution from a geotechnical perspective considering that the 1,700 ft. twin tunnels passed through karstic limestone (irregular limestone in which erosion has produced fissures, sinkholes, underground streams and caverns). The traditional geotechnical approach to drill exploratory bore holes/collect soil samples was found to be too incomplete to map the in-situ geological conditions satisfactorily. The design team then deployed rock mapping and extensive rock classification. In the end, the design team utilized "numerical rock modeling" to identify the true nature of rock loadings to optimize the tunnel liner design based on actual field conditions.

Challenge: **Optimizing bridge foundation types for the benefit of construction**

Solution: The design team performed extensive evaluations of alternative foundation types to provide optimum usage of consistent foundations while addressing localized areas of concern, whether soils conditions or construction in the water. By working collaboratively, we developed multiple foundation types; including spread footing, steel H-pile, and drilled shafts for the benefit of constructability.

Challenge: **Tunnel fire and life safety—project technical requirements called for ability of the fire suppression system to address a max. 300 MW fire, while minimizing impacts to the tunnel components such as explosive spalling**

Solution: Tunnel mechanical and drainage design has provided for a comprehensive solution by utilizing multi-zoned fire suppression with water/foam mix and coordinated with a similarly zoned drainage collection system to minimize pooling of flammable liquids. Coupled with heat detection and automated suppression initiation, our design effectively demonstrates that we can arrest a flammable liquids fire event at a much lower intensity than the 300 MW design fire. Coupled with our emergency response plan and procedures, we have created a safe environment for the commuting public through our comprehensive solution.

Challenge: **Railroad coordination and design of at-grade crossing adjacent to re-design of clover-leaf interchange**

Solution: ATC design for the interchange at the north end of the project provides for superior operability and traffic movement through the interchange by providing continuous flow multi-lane roundabouts. Sitting adjacent to the existing Indiana Port heavy rail crossing at SR62, our design required a new rail crossing and associated elements for signalization and crossing gates. Further, our interchange utilizes preemptive signaling to provide safe movements through the interchange and rail crossing.

Challenge: **Large excavations with tall rock and soil anchor retaining walls, utilizing top-down construction.**

Top-down construction to expedite early approval for design packages was key to starting construction and major excavation for the tunnel.

Solution: Developed early design packages for the north and south portal areas adjacent to the tunnel. Because of critical path considerations, getting these design packages approved early was key to starting construction and major excavation for the tunnel. Our design implemented a rock anchorage system that is fully compliant with the project technical requirements, but provides superior performance through the use of galvanized tension anchors set in a 2-part epoxy resin protection system.

Challenge: **Bridge vibrations of cable-stayed structure and related constructability issues**

Solution: The signature cable-stayed bridge went through scaled model wind testing to model expected responses to high winds and avoidance of excessive vibrations and "flutter effect." The design team worked closely with the contractor early to identify means to minimize vibration and flutter without having to employ significant structural modifications and attachments to arrest expected responses. Through these efforts, the design was modified to provide external parapets and railing to allow the ability to modify.

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

JACOBS

Submitted as Lead Engineer Project #6

- ☐ Equity Member
- ☐ Lead Contractor
- ☐ Lead Engineer
- ☐ Lead Operator
- ☒ Joint venturer in Lead Engineer: **Jacobs**
- ☐ Affiliate(s):

FORM F: PROJECT/TRANSACTION DESCRIPTION

No.	Required Information	Response
I. BACKGROUND INFORMATION		
(1)	**Project Name**	**I-15 South Corridor Design Build (I-15 South)**
(2)	**Type of Facility**	Interstate freeway widening.
(3)	**Owner/ Procuring Authority**	Nevada Department of Transportation (NDOT)
(4)	**Brief Description of Project**	

The I-15 South project included widening and adding collector-distributor (CD) roads to a 6-mile segment of I-15, the major north-south route in Las Vegas, NV. The urban corridor just south of Las Vegas's famous "Strip" serves local commuter traffic, visitors to Las Vegas, and through-traffic.

Why we included I-15:

- Congested urban corridor
- 150,000 ADT
- Extensive demolition and reconstruction
- Confined project area
- Extensive utility and RR coordination

The $262 million DB project included reconstruction of five interchanges including an interstate system-to-system interchange at I-215, the Las Vegas Beltway; construction of 25 bridges; and extending an existing Union Pacific Railroad (UPRR) bridge to accommodate the new CD roads.

Similar to the I-70 East Project, the I-15 highway project is a located within an urban area along a congested corridor with high daily traffic (150,000 ADT), with extensive reconstruction and demolition of existing roadway and interchanges in a confined area, and extensive utility and railroad coordination.

The finished roadway including the extended express lanes and extended UPRR Bridge

The project won the 2010 Hermes Creative Gold Award for the best interactive project website, part of the extensive public outreach program conducted during the work. The project was also was awarded the 2012 American Public Works Association Nevada Project of the Year for transportation projects over $20 million in constructed value.

(5)	**Contract Term**	DB contract term – Original: 09/2009 – 03/2012 Final: 09/2009 – 07/2012 (end date extended because NDOT added additional services)
(6)	**Current Status**	Completed

(7) **Key Dates and Milestones**

Contract Milestone	Contracted Dates	Actual
Contract Execution	9/24/2009	9/24/2009
Commencement of Design	0 months 9/2009	1 month early 8/2009
Commencement of Construction	5 months 2/2010	3 months 12/2009
Achievement of Substantial Completion	30 months 3/2012	34 months (end date extended – NDOT added additional services) 7/2012
Achievement of Final Completion	32 months 5/2012	36 months (end date extended – NDOT added additional services) 9/2012

(8) **Relevance to the Project**

Substantive Evaluation Criteria, Other Relevant Criteria

I-15 South, like I-70 East, was a project to add capacity and improve safety. The construction of roadway expansion and reconstruction of interchanges contributed to a reduction in accidents and a dramatic improvement of the level of service.

Northern Segment I-15

Roadway/interchange expansion or reconstruction | For most of the 6-mile length of the project, one new travel lane and a two-lane CD road system was constructed on both the northbound and southbound lanes. The 6-mile I-15 project corridor had both major and arterial interchanges, much like I-70 East. This section of I-15 had a significant rear end crash rate, mostly from the weaving caused by an interchange every mile. The introduction of a CD road system improved safety by separating the weaving traffic from the heavy mainline flows. North of Tropicana Avenue, NDOT had already constructed express lanes and these lanes were extended through the project. The express lanes are part of NDOT's plan to connect all major roadways in the Las Vegas valley with high occupancy vehicle and express lanes.

Demolition of urban infrastructure | Part of the existing urban infrastructure required demolition prior to the new construction. As we expect for I-70, an existing UPRR bridge was removed prior to the new span being installed using a limited track outage window.

Bridges crossing I-15 were also removed. Just south of the I-215 interchange, the existing multi-span post tensioned concrete box beam bridge carrying Warm Springs Road was removed. During a short temporary closure of I-15, the bridge was completely removed saving time and avoiding the need for multiple traffic setups to impact drivers.

Major excavation was needed to lower the I-215W to I-15 N Ramp

Major excavation work | Major excavation was required to implement an NDOT change to the contract. To maintain the visibility of an adjacent retail center from I-15, the ramp from I-215 west to I-15 north was redesigned and lowered approximately 25 ft. below ground. Confined by a shopping center on the east and I-15 on the west, the trench constructed for the new ramp required the removal of over 70,000 cu. yds. of material. Special drainage was constructed for this lowered section to eliminate the potential for flooding from summer monsoonal thunderstorms, which can produce substantial rains.

Complex urban traffic management | I-15 is a highly congested freeway system with more than 150,000 vehicles per day. The plan for traffic management included detours and temporary closures of the roadway to accommodate demolition, shifting traffic to accommodate bridge construction, and detouring over height vehicles when temporary false work was used to support bridge construction; all aspects directly applicable to I-70 East.

> *"I really have enjoyed working with all of you—you have a great group!! Everyone has bent over backwards to provide me with any information I needed, always in an expedited manor. This has been the best group I have ever worked with, and I have worked with many consultants."*
>
> *– Kathy Mechum, NDOT regarding team's work on MOT plans*

Construction staging in confined space | I-15 South was a linear project with access available at either ends requiring planning to stage construction in confined space. As part of the design, construction access points were identified. Requirements to maintain cross road connectivity were incorporated at every step, as will be our approach to I-70 East.

Coordination with RR and/or utility | Multiple utilities crossed the corridor and extensive coordination and numerous meetings were required to resolve issues. In addition to phone and cable TV, power, NDOT's intelligent transportation system, water, sewer, natural gas, Kinder Morgan gasoline, and jet fuel transmission lines feeding McCarren Airport crossed near the north end of the project. While some for the utilities could easily be relocated, the Kinder Morgan line needed to be maintained and protected in place. Detailed mapping of all utilities was developed for the entire corridor and updated monthly as the work progressed to provide an early resolution to utility conflicts.

The extension of an existing railroad bridge over I-15 required coordination with UPRR. A detailed schedule was developed and followed during the weekend outages allotted to construct end spans on the existing bridge. A similar detailed schedule is expected for work around all three railroads on I-70 East.

Fire and life safety | The design team continually met with the Nevada Highway Patrol to coordinate staging and lane closures during construction.

Paving in similar environmental conditions | The design for I-15 included service life requirements for pavement. Concrete paving placement had to take into consideration the extreme high and low temperatures encountered in the desert.

Interface with adjacent operators | The design team coordinated with Clark County on tie-ins with county-owned cross streets, traffic detour plans, and obtaining necessary permits.

Work force development | The project employed apprentices through certified programs.

Meet or exceed DBE participation goals | Although NDOT did not set a DBE goal on the I-15 South, our design team provided more than 11% DBE participation. DBE firms figured prominently in the design of a number of structures including retaining walls and bridges.

Approximately 1.5 miles of sound wall were constructed for I-15 South

Air quality monitoring and mitigation | In the desert southwest where rain is scarce, air pollution in the form of dust is a major issue. Air quality mitigation is therefore an important step in every project. The design plans were developed so that securing a Clark County Dust Control Permit was simplified including provisions for site access, demolition procedures, and landscape practices.

Noise monitoring and mitigation | With the addition of new freeway lanes comes the requirement for noise analysis and mitigation. A detailed analysis of roadway noise led to the requirement to design and construct approximately 1.5 miles of sound walls along freeway ROW.

Public involvement | A major public information program was developed to keep the traveling public informed during the project. This program included meetings with the public, development and maintenance of the project website, media outreach, establishment of a Highway Advisory Radio station, and early use of social media such as Facebook and Twitter.

Corridor aesthetics | Aesthetic details were developed to be low maintenance, simple, and attractive. No irrigation was used as stipulated by NDOT. All landscape designs were in

Relevance to the I-70 East Project (as described in Sections 8 and 22)		
☐ TIFIA closed by developer	☐ PABs	☐ Highway/road financing
☐ Financed/located in North America	☐ Availability Payment model	☒ Rdwy/IC exp/reconstruction
☒ Construction staging, confined space	☒ Road operator interfaces	☒ Urban infrastructure demo
☒ Ventilation/fire life safety	☒ Workforce development programs	☒ Major excavation work
☒ RR/utility coordination	☒ Meet/exceed DBE	☒ Complex urban traffic mgmt.
☒ Infra w/similar env conditions	☒ Air quality monitoring/mitigation	☒ Noise monitoring/mitigation

II. DESCRIPTION OF TEAM MEMBER INVOLVEMENT

(9)	**Proposer Team Member(s) Involved**	Jacobs
(10)	**Role of Proposer Team Member(s)**	Jacobs – **Lead Engineer**; performed 100% of relevant work for the project.
(11)	**Key Personnel Involved, Roles, Responsibilities**	**Doug Andrew, PE, Design Manager,** prior to joining Parsons Brinckerhoff, served as a design manager for Jacobs on I-15 South responsible for oversight of schedule, budget, and staffing including interaction with NDOT and monitoring compliance with the DBE program. **Value-Added Personnel** | From Section 2.1.3b who were also involved in I-15 include Randy Pierce.

III. REFERENCE

(12)	**Name**	[redacted]
(13)	**Title & Employer (current)**	[redacted]
(14)	**Title & Employer (at time of project/ transaction)**	[redacted]
(15)	**Phone & Email**	[redacted]
(16)	**Location & Time Zone**	[redacted]
(17)	**Other**	[redacted]

IV. TECHNICAL INFORMATION

(18)	**Construction Value**	$246 million (original)

(19)	**Completion within/above Budget**	$262 million (final) Explanation of Variance: Owner-directed change orders
(20)	**O&M Value**	N/A
(21)	**Length of Road under Operation (centerline miles)**	6 centerline miles

(22) Key Technical Challenges and Solutions Implemented

***Challenge*: Widen an existing interstate freeway with minimal impact to traffic**

***Solution*:** The traffic management plan started with constructing as much work as possible without impacting traffic. The new CD road system was constructed first, and then could be used as a detour road when constructing the improvements to the mainline, such as erecting bridges. At each interchange, standard detours were developed in coordination with NDOT and Clark County and the design included optimizing traffic signal timing adjacent to the corridor so detoured traffic would keep flowing. Using standard detours simplified traffic control for the public who used the roadway daily. Bridge construction and design submittals were grouped to allow maximum work to occur during a single closure, avoiding additional closures. Cross road closures were limited so that connectivity across I-15 was provided at all times, much like what is needed to maintain traffic across 46th Avenue for I-70 East.

Widening performed in the median required detailed planning and construction in a confined work zone

For widening in the median, the long narrow work zone had restricted access points. Early in the bid preparation, construction access points were identified and the work planned around these access points. Nighttime material deliveries and construction was common and allowed both greater flexibility in access as well as a reduced impact to operations from the construction.

The first use of self-propelled modular transporters in Nevada

***Challenge*: Modify an existing UPRR bridge to accommodate a widened roadway using only limited track outage windows**

***Solution*:** Just north of the I-215 interchange, a UPRR branch line crossed the project. To construct the new CD roads, two new end

spans needed to be constructed on this existing bridge. Due to UPRR restrictions, the bridge could only be taken out of service between Friday evening and Monday morning. A detailed plan was developed using simple construction techniques and prefabricated elements so that the track could be safely returned to service every Monday following an outage. Foundations for the new abutment were constructed first then the existing span was removed. After the existing abutment was converted into a pier, the new span was installed. Using accelerated bridge construction (ABC) methods, the new span was fully erected on site then moved to the final location using self-propelled modular transporters. The experience installing a new railroad bridge for UPRR is directly applicable to I-70 East.

***Challenge*: Accommodate future planned projects in the same corridor**

***Solution*:** Because of the explosive growth experienced in Las Vegas in the two decades leading up to the project, NDOT had a goal to maximize the forward compatibility of the design. This goal meant that design was developed so that future projects could be implemented easily and costly future rework avoided. An example of how we met the goal is the new east abutment of the extended UPRR bridge, which was designed to function as an abutment and pier. This duality facilitated the plans to extend Frank Sinatra Drive to the south and add another span to the UPRR bridge. Other solutions included providing the ultimate inside and outside widening for all bridges at the I-215 interchange to avoid additional construction; allowing for future overpasses and an HOV direct connection from I-215 to I-15; accommodating the Clark County bike plan; and placing the noise walls along the northbound lanes of I-15 in the ultimate configuration along the ROW line.

I-15 Southern Segment – design on the corridor allows for future projects

***Challenge*: Provide low maintenance, attractive landscaping in a desert environment**

***Solution*:** Extensive landscaping and aesthetic treatments were developed using a theme of desert plants and animals. A custom concrete form liner was developed and used on retaining walls, bridge parapets, and sound walls. The form liner consisted of four repeatable panels designed to match the size of the standard mechanically stabilized earth wall panel. Following construction, concrete surfaces were coated with a single color stain, making maintenance and covering of graffiti easier.

Metal sculptures including "plants" provided a maintenance free aesthetic appearance

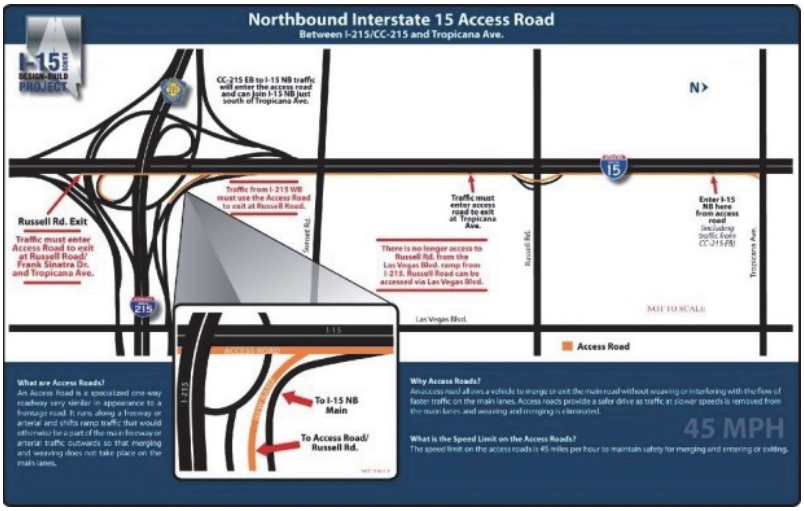
At ramps, infields were added enhancing the desert animal theme at the I-215 interchange. Sculptures of wild burrows, horses, and desert bighorn sheep were installed at

various locations. At Russell Road, which serves as a gateway, end console "mountains" were constructed and included a desert bighorn sheep on the mountain. These larger-than-life sculptures were constructed of weathering steel. The advantage of weathering steel is that any graffiti can be easily wire brushed from the surface of this metal and in the dryness of the desert, these will last almost indefinitely.

Decorative ground covers were also part of the design. To keep airborne dust to a minimum, the common practice in southern Nevada is to use rock "mulch," decorative rock placed on the ground. Rock mulch was used extensively throughout the corridor. Plans were developed to show the placement of various colors of mulch to create visually appealing patterns, while providing a functional approach to dust control. To complete the landscape, drought tolerant native plants, such as Mohave Yuccas and Creosote Bushes were used.

***Challenge*: Keep the public informed as the work progresses**

***Solution*:** A major public information program was developed to keep the traveling public informed during the project. This program included public meetings, development, and maintenance of the project website, media outreach, establishment of a Highway Advisory Radio station, and use of social media such as Facebook and Twitter.



The award-winning project website was one of many tools used to keep the public informed of progress

The project website was continuously updated to maintain current information about the project status and traffic conditions. In addition to frequently asked questions and basic project data, the website contained current construction schedule information, links to ITS traffic cameras, archives of project information including records from public meetings, project photos, and links to NDOT's website and other related projects. Contact information for the team was also provided.

The website, I15southproject.com, which has since been closed, was recognized by the Association of Marketing and Communications Professionals with a 2010 Hermes Creative Award. The Hermes Award is an international competition for creative professionals involved in the concept, writing, and design of traditional and emerging media.

Lead
Operator

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

- ☐ Equity Member
- ☐ Lead Contractor
- ☐ Lead Engineer
- ☐ Lead Operator
- ☒ Joint venturer Lead Operator: **Jorgensen**
- ☐ Affiliate(s):

Submitted as Lead Operator Project #1

FORM F: PROJECT/TRANSACTION DESCRIPTION

No.	Required Information	Response
I. BACKGROUND INFOMATION		
(1)	**Project Name**	**I-595 Corridor Roadway Improvements (I-595 Express)**
(2)	**Type of Facility**	High speed, high volume, urban interstate, with three tolled managed (reversible) lanes, eight general purpose lanes, parallel frontage roads, nine major interchanges, and 60 bridges.
(3)	**Owner/ Procuring Authority**	Florida Department of Transportation (FDOT)/O&M Contract with Developer
(4)	**Brief Description of Project**	

This $1.8 billion highway reconstruction project includes the design, build, finance, operation and maintenance of an existing east-west corridor in the Miami-Dade metropolitan area. This P3 project was procured under a Concession Agreement with a Maximum Availability Payment (MAP) for a 35-year term. The I-595 corridor is a critical component of the South Florida highway system and serves as a major daily commuter corridor as well as a critical evacuation route for hurricane events.

Why we included I-595:

- 1st DBFOM in operation in FL
- Multi-functional network w/managed lanes, GP lanes, and frontage roads
- O&M required during construction
- Jorgensen integrated w/team through all project phases

I-595 Express (final configuration)

Jorgensen performed operations and maintenance during the construction period from July 2009 through Substantial Completion in February 2014; and continued with O&M responsibilities into the operating period under a ten-year contract to May 2024. O&M services were backed with Securities provided by Jorgensen to FDOT and the Developer.

(5)	**Contract Term**	DBFOM contract term (full term) – 03/2009 – 2044 Jorgensen O&M contract length – 03/2009 – 05/2024 (Option for renewal in contract)
(6)	**Current Status**	In operation

(7) **Key Dates and Milestones**

Contract Milestone	Contracted Dates	Actual
Contract Execution:	-	03/2009
Maintenance During Construction:	4 Months 07/2009	4 Months 07/2009
Achievement of Substantial Completion:	61 Months 03/2014	61 Months 03/2014
Service/Operations Commencement:	61 Months 03/2014	61 Months 03/2014
Achievement of Final Completion:	67 Months 09/2014	67 Months 09/2014
End of Service/Operations:	185 Months 05/2024	185 Months (anticipated) 05/2024 (anticipated)

(8) **Relevance to the Project**

Substantive Evaluation Criteria, Other Relevant Criteria

The effective performance of O&M responsibilities within the I-595 corridor requires a disciplined management structure with trained and certified technicians to ensure maximum, safe lane availability while concurrently implementing an asset maintenance program. The complexity of the I-595 corridor and the challenges it presented to the Jorgensen team are nearly identical to those that will be present in the I-70 corridor.

Jorgensen met the challenges in the I-595 corridor with a record of zero performance penalties during construction and into the operating period. Further demonstration of the teams results include incident response times of less than four minutes, road clearance times less than FDOT averages, Road Ranger cycle times of less than 30 minutes all while implementing a comprehensive risk based asset management program with components identical to CDOT's Transportation Asset Management approach adopted to meet MAP-21 requirements.

Proactive Asset Management

Jorgensen's approach is consistent with the FHWA MAP-21 requirements to implement risk-based asset management plans for the nation's highways—including I-595 and the new I-70 East Project.

Substantive evaluation criteria for pavements and associated infrastructure, adjacent road operator interfaces, workforce development programs, and achievement of participation goals are discussed below along with several other relevant criteria.

Roadway pavement and associated infrastructure under environmental conditions that are similar to those affecting the I-70 project | The I-595 corridor is a high speed, high volume roadway with infrastructure assets identical to those on the I-70 project

including tolled managed lanes (three reversible lanes), eight general purpose lanes, nine complex interchanges including ones with I-75, I-95 and Florida Turnpike, 213 lanes miles of asphalt and concrete pavements and 60 structures.

The corridor intersects a highly urbanized commercial and residential area and was built under complex environmental conditions with protections for an adjacent water canal, sound walls for residential housing areas and water control devices for storage of storm water on several adjacent golf courses.

MAP-21 Compliance Protects DOT
Jorgensen implemented an asset management plan to ensure compliance so FDOT would continue to retain their federal funding.

The entire corridor is at or near sea level requiring constant attention to ensure that all drainage systems are constantly monitored and frequently maintained to prevent flooding in the severe thundershowers common to this area.

Jorgensen's approach to the operation and maintenance of I-595 corridor assets incorporates all the components of a risk-based asset management approach meeting the new requirements of the USDOT's performance requirements under MAP-21. The purpose of the asset management approach is to improve or preserve the condition of the infrastructure assets and the performance of the system. At the heart of an effective asset management approach as specified by the FHWA are six components:

- Identification and condition of the pavements and bridges (and related assets)
- Asset management objectives and measures
- Performance gap identification
- Lifecycle cost and risk management analysis
- Financial plan
- Investment strategies

Jorgensen has incorporated all components of the FHWA requirements in our approach to managing the assets on the I-595 corridor and will do the same for the new I-70 corridor, thereby ensuring that in addition to preserving the assets and performance of the system the States federal funding allocation is not jeopardized.

Interfaces with adjacent road operators | The I-595 corridor intersects two interstate systems I-75 and I-95, the Florida Turnpike system, two state primary system roads, and four local city streets. In addition the corridor is within the limits of Broward County adjacent to Miami Dade County and resides within the boundaries of the cities of Plantation, Sunrise, Fort Lauderdale, and Town of Davie all suburbs of Miami. The Jorgensen team also interfaces daily with three different fire stations, the Florida State Highway Patrol, the Florida Turnpike Troop K and the Town of Davie police department.

I-595: Crossroads of Operator Communication
Jorgensen daily interfaces with four adjacent road operators and multiple municipal entities.

Within this group of agencies, there are four adjacent road operators – FDOT, Florida's Turnpike, City of Davie, and Broward County. The complexity of these intertwined networks necessitates, interfacing on a 24/7 basis from our control center

collocated within the Traffic Management Center owned by FDOT and Broward County. Jorgensen's operations superintendent directs all roadway response activities from here with information received from our Road Rangers or from our operators monitoring the 69 cameras on the network.

On a monthly basis, Jorgensen meets with all the adjacent and surrounding agencies involved with any of the road systems including road agencies, fire and rescue, highway patrol, emergency management and hazardous response personnel to coordinate issues between the agencies and road systems. This has proven effective in improving communications, facilitating rapid response times to traffic incidents and mobilizing and preparing for major weather events and special attractions.

Successful Hurricane Planning

In 2010 when a Category 2 hurricane was predicted to cross directly over the corridor from west to east, Jorgensen and adjacent operators implemented the pre-plans to reroute traffic to avoid the storm's path.

The location of the I-595 Corridor as the primary east-west connector in South Florida is critical to moving traffic effectively throughout the day to prevent a major grid-lock for the entire Miami-Dade metropolitan area. Jorgensen has demonstrated its ability to meet all lane availability criteria throughout the construction period and into the operating period and has not incurred any lane availability penalties.

Lane availability is especially critical during the hurricane season from late June through late October. Florida, in a typical year averages four to six major tropical storm events including one to two hurricanes. A comprehensive hurricane evacuation plan is updated annually with input from all agencies. Jorgensen participates and interfaces with all involved agencies with input to the plan and in conducting annual mock exercises ahead of each hurricane season.

A segment of the Florida Turnpike and I-75 and their associated structures were included within project limits during the construction period, but asset management responsibility was returned to adjacent road operator at project substantial completion. Jorgensen interfaced with the adjacent road operator's maintenance organizations to ensure that all assets met the hand-back maintenance criteria and a smooth transition of responsibilities occurred.

Jorgensen was also recently awarded an asset management contract on adjacent roadway sections to the I-595 Corridor on I-95 and I-75, which included a Road Ranger component. Jorgensen interfaced with FDOT to develop an approach to integrate service routes of all networks that would optimize the program on I-595 Express and further facilitate incident response on the adjacent roadways.

Asset management | Jorgensen's asset management approach addresses the six components of the required FHWA Risk Based Asset Management requirements in MAP-21.

Jorgensen Asset Management Approach for I-595

- Asset Inventory and Condition Assessment
- OPEX Work Programs that Meet Performance Measures
- Identification of Work Needs –Gap Between Condition and Performance Measure
- Lifecycle/Risk Analysis
- Multi-Year Budgets
- CAPEX Investment Strategy

Asset inventory and condition assessment | Prior to the start (NTP1) of any activities on the corridor, a field inventory and asset GPS location was performed and a baseline condition assessment was established for assets that would remain for some period during construction period or would not be impacted by the construction.

A work program was then prepared for the assets that would require maintenance during construction. At substantial completion the project was re-inventoried to confirm the final as-built inventory and to develop a punch-list for those assets not meeting FDOT's maintenance requirements at construction completion.

Inspection of guardrail to determine structural deficiencies and baseline condition

Assets were quantified and categorized under the seven main asset groups that encompass the asset management approach and the performance measures in the contract documents:

- *Roadway* – flexible and rigid pavement
- *Roadside* – slopes, unpaved shoulder, fencing
- *Traffic Services* – guardrail, lighting, signs, pavement markings, barrier systems
- *Drainage* – inlets, culverts, ditches, curb and gutter, retention ponds
- *Vegetation and Aesthetics* – mowing, graffiti control, landscaping
- *Structures* – joints cleaning and repair, sweeping, deck maintenance
- *ITS* – ITS structure maintenance

OPEX work programs and performance metrics| Multi-year work programs were prepared after careful analysis of the as-built condition of the assets including consideration of the final materials used and warranty periods.

Conformance to required operating period performance measures dictated the level of maintenance service, which were then translated into the annual and multi-year work quantities. The I-595 performance metrics included 15 different lane availability metrics and over 125 O&M violation metrics.

The planning goal is to create a technical solution that continuously meets or exceeds all performance metrics during all project phases and meet project handback criteria.

Typical I-595 OPEX Performance Metrics

- Guardrail Repair – 3 days
- Pavement Markings – 8 days
- Rework Shoulders – continual
- Sweeping – 12 cycles
- Litter – 26 cycles
- Concrete sidewalk – 5 days
- Road Ranger Response – 15 min.
- Road Ranger Cycle Time – 30 min
- Customer Survey – 95%

Optimization of the O&M program was accomplished with the involvement of Jorgensen in all project phases from procurement to the operating period. Jorgensen attended task meetings, design reviews, construction scheduling and owner coordination meetings. This facilitated coordination and integrated O&M recommendations into the final design and construction programs.

Life cycle cost and risk analysis and risk management | The handback criteria to be met at the end of the 35 year operating term included 15 metrics for the remaining life of the key assets such as pavements, structure decks and MSE walls. This handback criteria was the key determinant in estimating the life cycle work quantities to be performed near the end of the term to be included in the CAPEX program along with a risk analysis, which was the key determinant to projecting contingency costs. Jorgensen also used a deterioration modeling approach to estimate costs to remedy deterioration defects to be included in the CAPEX program that was submitted as part of the initial bid. The CAPEX program is adjusted annually based on the current and projected rate of deterioration to develop the ongoing renewal program implemented concurrently with the OPEX program.

The risk management approach for the operations and maintenance activities performed by Jorgensen as the O&M Contractor as agreed to by the Owner, Developer and Jorgensen included several key components:

- The metrics as applicable to the OPEX programs and the associated risk to meet the applicable metrics was passed to Jorgensen including the posting of the performance and payment bonds for all O&M services
- The metrics as applicable to the CAPEX program and associated risk to meet the applicable metrics was passed to Jorgensen for all assets except for major pavement defects or repairs and major structure defects or repairs
- The costs associated with correcting defects resulting from certain Force Majeure events such as hurricanes was passed to Jorgensen, but capped at an annual amount

As part of overall asset management approach, Jorgensen implemented a proactive inspection program and a comprehensive quality control and quality assurance program to manage the risks that were passed to our contract.

The inspection program includes monthly condition assessments as required by FDOT's Maintenance Rating Program (MRP) to measure the program effectiveness. These assessments establish a quantitative condition rating that must meet quarterly and annual metrics. This program, which has been in-place on all Jorgensen asset management contracts in Florida for over 15 years, provides for the real time condition of our assets and allows for a proactive response with corrective actions before penalties are incurred and importantly ensures that our program is preventive in nature thereby prolonging asset life.

Our approach to quality is to ensure we are meeting or exceeding the contract performance metrics. The goal of our quality program is 100% compliance with all performance metrics. Realistically a 100% is difficult to achieve 100% of the time given the unpredictable nature of the weather and the millions of drivers on the corridor annually, but striving towards that goal is what we preach and non-compliance is not penalized if defects are corrected within allowable remedy periods as dictated by the contract.

Workforce development programs | In support of education and development of local high school seniors, we participated in an annual Construction Career day. Workshops and educational information is provided by Jorgensen senior management positions including regional managers, project managers, and the operations supervisor to provide resources and information about Jorgensen and potential careers in O&M.

Jorgensen is committed to creating a diverse workforce in an inclusive environment that will improve individual and organizational performance and result in better value to clients. Demonstrated evidence of this commitment is our current workforce, which is inclusive of 53% minorities, females, disabled, and Veterans

Meet or exceed DBE participation goals | Jorgensen has continually exceeded the 9.1% DBE goal as high as 15%.

Jorgensen played a critical role in providing the O&M routine and capital maintenance expenditures for the I-595 project, as well as, technical O&M solution and security package that supported the developers' ability to successfully reach close. As the I-595 Express project was a DBFOM, it included the following items of financial relevance to I-70 East:

- Project financing with a TIFIA loan | The project includes a $678 million TIFIA loan that was closed by the developer and not the owner.
- Project financing with other financing products | The project includes $780 million in bank debt.
- Financed project was a highway or road project | The project is part of the interstate highway system and is a critical piece of transportation infrastructure in southeast Florida.
- Financed project was located in North America | I-595 is located in Miami, Florida.

Relevance to the I-70 East Project (as described in Sections 8 and 22)					
☒	TIFIA closed by developer	☐	PABs	☒	Highway/road financing
☒	Finance/located in North America	☒	Availability Payment model	☒	Rdwy/IC exp/reconstruction
☒	Construction staging, confined space	☒	Road operator interfaces	☒	Urban infrastructure demo
☒	Ventilation/fire life safety	☒	Workforce development programs	☒	Major excavation work
☒	RR/utility coordination	☒	Meet/exceed DBE	☒	Complex urban traffic mgmt.
☒	Infra w/similar env conditions	☒	Air quality monitoring/mitigation	☒	Noise monitoring/mitigation

(9)	**Proposer Team Member(s)**	Roy Jorgensen Associates, Inc. (Jorgensen)
(10)	**Role of Proposer Team Member(s)**	Jorgensen was the O&M technical advisor to the developer during the pre-procurement phase of this P3 project, which required projecting the costs for a 35-year operating period in addition to the costs during the five-year construction period. During the procurement period, Jorgensen provided technical expertise for key activities that included: • Development of the O&M program • RFP technical deliverables • Briefings to developer, LTA, and other project advisors • Contract review and evaluation • Attendance of project meetings (i.e., one-on-ones) • Development of the OPEX and CAPEX price models During the mobilization phase and prior to transition of services from

	Jorgensen has assumed 100% of the performance and availability requirements of I-595 Express.	FDOT to Jorgensen, Jorgensen developed the plans and manuals (over 2,300 pages) outlining the methodologies, practices, and procedures that would be put in place to successfully perform the O&M requirements of a P3 project consistent with FDOT policies and procedures. During the construction phase, Jorgensen provided operation and maintenance services consistent with FDOT contract requirements and was responsible for monitoring and reporting compliance with construction performance metrics. During the operating period, Jorgensen is responsible for: • All routine maintenance • Emergency maintenance (i.e., repair to damaged assets) • Capital maintenance for roadway appurtenances and structures • Operational activities Additionally, Jorgensen provides the FDOT-required security package in the form of an annually renewable performance and payment bond for 100% of the annual contract value.

(11) **Key Personnel Involved, Roles & Responsibilities**

Abraham (Abe) Henningsgaard, PE | Provides technical expertise in support of the I-595 project. During the procurement phase where Jorgensen acted as a technical advisor to the Developer, he was involved in developing the long term O&M program used to project routine maintenance and capital expenditures for the project term. Upon award, Abe supported contract negotiations to provide O&M services during construction and operating periods. He also participated in the preparation of O&M plans and manuals and aided in mobilization efforts to procure staffing and resources.

Value-Added Personnel | From Section 2.1.3b also on the I-595 Express include:

Charles E. Henningsgaard, PE | Project principal for Jorgensen on the I-595 Express. He provides executive oversight of the project. For further experience see section 2.1.5

Sara Henningsgaard, PE | Provides technical support of the I-595 project including: asset inventories, field condition assessments, technical write ups, plans and manual, and quality reviews. For further experience see section 2.1.5

III. REFERENCE		
(12)	**Name**	[redacted]
(13)	**Title & Employer (current)**	[redacted]
(14)	**Title & Employer (at time of project/ transaction)**	[redacted]

(15)	**Phone & Email**	[redacted]
(16)	**Location & Time Zone**	[redacted]
(17)	**Other**	[redacted]
IV. TECHNICAL INFORMATION		
(18)	**Construction Value**	N/A
(19)	**Completion within/above Budget**	N/A
(20)	**O&M Value**	[redacted]
(21)	**Length of Road under Operation (centerline miles)**	10.9 centerline miles and 109 lane miles before construction and 10.9 centerline miles and 213 lane miles post construction.

(22) **Key Technical Challenges and Solutions Implemented**

The I-595 network presents a series of O&M challenges due to the following:

- High traffic speeds and high traffic volumes
- Physical constraints of the narrow corridor requiring dangerous traffic weaves
- Elevated performance requirements typical of P3

Jorgensen has been able to navigate through these challenges with the implementation of a proactive O&M project approach and integration of the Jorgensen team members through all projects phases including procurement, design, construction, and operating period.

The following are notable project technical challenges and project features similar to those anticipated for the I-70 East project, and the methodologies and practices successfully implemented.

Challenge: **Providing operational services under high-speed, high-volume, urban, and confined corridor during construction and into operating period.**

Solution: I-595 project's operational responsibilities include the following:

- Management of TMC – providing trained operators to monitoring the network 24/7 and provide detailed reporting of activities performed during the management and response to an incident
- Roadway Ranger Patrol program – service provided to aid stranded motorists, respond to incidents within 15 minutes, and cyclical patrolling of the network to meet a 30-minute network cycle time
- Incident and emergency response plan – the management and response to incidents and emergencies that occur on the network and mitigate hazards to motorist
- Coordination with ITS subcontractor – notification and reporting of non-functioning ITS equipment

Each activity has associated performance criteria, both related to timelines and quality of work. To meet these, Jorgensen created operational manuals outlining procedures for executing each work task and verification practices to ensure quality. For example, Jorgensen operates the TMC for I-595 which monitors the roadway for incident and traffic interruptions 24/7/365.

This function provides immediate identification and quick dispatch of Road Rangers, enabling the management of over 1,000 incidents monthly during the construction period, with an average response time of under 4 minutes, compared to the contract required 15 minute response time.

Responding to a major accident on I-595 Express

The manual defines the procedures each operator follows for incident detection, monitoring, and reporting each event. All operators attend a rigorous training program and are also partnered with seasoned operators until the operations supervisor has approved their capability.

The function of the Road Ranger program is maximizing lane availability by aiding stranded motorists and responding and mitigating incidents. Over 80% of traffic incidents are related to disabled vehicles due to mechanical failures and the Road Ranger function is the primary resource used to clear the vehicle from the traveled lanes.

At least three Road Rangers are on the network at any given time. The managed lanes are confined by barrier walls on either side and have limited access points controlled by moveable barriers. During peak traffic times and the highest incident potentials, in addition to the roving Road Rangers patrols, a Road Ranger is staged at an ingress location within the confines of the managed lanes. This provides instantaneous access to the lanes and shoulder. This has allowed for quick response to the scene and mitigation of incidents.

To provide for clear communication between the TMC and the Road Ranger for accident location, the corridor has been divided into segments based on available access points. The light poles within these segments are color coded with reflective sheeting that is clearly visible from travel lanes allowing quick reference points for the TMC to direct the Road Ranger and other emergency responders.

Performing hands-on field training exercises for manual control of reversible lane barriers

The operational program is managed in support of Florida's Open Roads policy similar to CDOT's "Move it Law", a goal for quick clearance practices. Additional resources have been made available, including the Severe Incident Response Vehicle (SIRV) and the Rapid Incident Scene Clearance (RISC) subcontractors.

The SIRV is a specialized vehicle stocked with additional equipment and traffic control supplies to manage the more severe incidents (i.e., fatalities, heavy vehicle incidents). The RISC contractors are suppliers, vetted during the mobilization phase, for the ability to mobilize quickly with the resources to help move large vehicle and debris from accident sites.

Challenge: **Performing maintenance activities during construction**

Solution: Jorgensen was responsible for performing maintenance activities on existing infrastructure during the construction period. The two challenges faced for this project phase was the seamless transition of responsibilities from FDOT to Jorgensen, and managing maintenance activities during phased construction events to maximize lane availability and minimize traffic interruption.

At midnight on July 1, 2009 Jorgensen transitioned to the role of O&M provider. To enable for a seamless transition Jorgensen implemented two plans:

- Transition plan – the key project events needed in preparation for the service transition included manual development, asset inventory, inspection and condition verification, work needs backlog, and coordination
- Mobilization plan – details mobilization events, due dates, and staff responsible including procurement of materials/equipment/resources, training and certification classes, and MMS development

I-595 Manuals Developed by Jorgensen

- Overall O&M Manual
- Operations
- Maintenance
- ITS
- Asset Renewal
- Structures
- Maintenance Rating Program
- Permits
- Transition
- Emergency Response
- Quality Management
- Safety
- Reporting

The second challenge was performance of the O&M works during construction. Jorgensen and the design/construction team had continuous meetings to ensure coordination of work and a clear understanding of when assets were under construction. We also attended the weekly construction traffic control meetings with the CJV, for which we recommended MOT measures that would provide the best methods to respond to incidents.

Partnering Case Study

Jorgensen conducted a field condition review prior to project handover from FDOT, which identified a significant amount of frontage road guardrail with an obsolete design and/or a structural deficiency.

The dilemma was what to replace and what to leave as all would be removed in the final reconfiguration.

Jorgensen worked in partnership with FDOT to arrive at a solution that was economical while still providing a safe driving environment.

The work schedule was developed with a detailed asset inventory and condition assessment performed during project mobilization. The inventory quantified the location and amount of each asset type and the condition survey identified deficiencies and priority levels.

This information was incorporated into the Jorgensen Asset Maintenance System (JAMMS) and the work schedule based on the work priority, providing a work program

ready to implement on day one of the start of O&M during construction.

To be prepared for operational activities including Road Rangers, TMC operations, and incident and emergency response, Jorgensen began the hiring and training program several months prior to project transition. Jorgensen utilized a combination of new and existing employees, all of which were provided with classroom, mock scenarios, and live event training exercises to facilitate preparation of the staff for day one activities.

Challenge: **Consistently meeting availability and maintenance performance requirements**

Solution: The contract requirements include over 150 availability and performance measures, both during construction and the operating period. It is a challenge to continually meet these requirements and confirm with FDOT that they have been met.

Our approach was to implement a transparent documentation and reporting system that would allow real-time access to all information by Jorgensen supervisors, CJV, the Developer and FDOT.

On a Daily Basis…

Jorgensen consistently meets over 150 availability and performance measures.

The instantaneous access to all work scope needs allowed our supervisors to proactively program and schedule work activities, which are put into a monthly rolling schedule which details each work activity and scheduled date of occurrence, allowing sufficient time to procure resources, schedule work crews, track and report work, and confirm conformance.

JAMMS is the resource utilized for all the scheduling, reporting, and confirmation of the requirements for the project. The program has the capability to schedule work, program automatic alerts for due day reminders, and report all work accomplishments.

The reporting function instantaneously compiles reports under user designated parameters to verify compliance. The Developer and FDOT have access to JAMMS to see the real-time performance progress of the project.

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

- ☐ Equity Member
- ☐ Lead Contractor
- ☐ Lead Engineer
- ☐ Lead Operator
- ☒ Joint venturer Lead Operator: **Jorgensen**
- ☐ Affiliate(s):

Submitted as Lead Operator Project #2

FORM F: PROJECT/TRANSACTION DESCRIPTION

No.	Required Information	Response
I. BACKGROUND INFORMATION		
(1)	**Project Name**	**I-495 Express Lanes with Dynamic Tolling (I-495 Express)**
(2)	**Type of Facility**	High-speed, high-volume, urban interstate with two managed lanes in either direction adjacent to the general purpose lanes on a 14-centerline mile segment of I-495 (Capital Beltway).
(3)	**Owner/ Procuring Authority**	Virginia Department of Transportation (VDOT)/O&M contract with developer
(4)	**Brief Description of Project**	

This $1.4 billion infrastructure highway reconstruction/reconfiguration project includes the design, finance, construction, operations and maintenance project of route I-495 (Capital Beltway) in Fairfax County, VA. This high-speed corridor is located in an urban region of the nation's capital serving 260,000 daily commuters in Maryland, Virginia and the District of Columbia.

Why we included I-495 Express:

- Success hiring military veterans
- High DBE participation
- Continuous coordination w/VDOT for snow and ice control
- Rigid training program
- Rigorous safety practices

This is the largest expansion of the northern Virginia's I-495 beltway since the opening in the 1960s. The project includes a 75-year concession term with a five-year construction period. The project was designed to improve mobility and driving conditions in the highly traveled segment of the Capital Beltway in Alexandria.

I-495 Express Lanes

(5)	**Contract Term**	O&M contract term – (11/2012–11/2017) *Contract includes options for renewal
(6)	**Current Status**	In operation

(7) **Key Dates and Milestones**

Contract Milestone	Contracted Dates	Actual
Service/Operations Commencement	11/2012	6/2012
End of Service/Operations	60 months 11/2017	60 months (anticipated) 11/2017 (anticipated)

(8) **Relevance to the Project**

Substantive Evaluation Criteria, Other Relevant Criteria

The effective performance of O&M responsibilities within the I-495 corridor requires a disciplined management structure with trained and certified technicians to ensure maximum, safe lane availability while concurrently implementing an asset maintenance program. The complexity of the I-495 corridor and the challenges it presented to the Jorgensen team are nearly identical to those that will be present in the I-70 corridor especially as it pertains to performing maintenance operations safely on a congested corridor.

Substantive evaluation criteria for pavements and associated infrastructure, adjacent road operator interfaces, workforce development programs, and achievement of participation goals are discussed below along with several other relevant criteria.

Roadway pavement and associated infrastructure under environmental conditions that are similar to those affecting the project | The I-495 project is a reconfiguration, reconstruction, and capacity addition of the 14-centerline miles, 70 lane miles with four dynamically tolled express lanes separated by a median barrier wall. The project begins just north of the Dulles toll road continuing to the current southern limit at the I-95/I-495 Springfield interchange.

VDOT procured I-495 as a DBFOM project and will continue to maintain ownership of the corridor allowing the concessionaire to operate and collect the toll revenue through the 75-year concession term. This project is within the Nations Capital serving daily commuters both in and out of Maryland, Virginia and D.C.

Northbound express lanes

The corridor intersects a highly urbanized commercial area within a narrow right-of-way with sound walls and several flyovers and complex interchanges.

The express lanes are a reconstruction over the existing concrete pavement with a total HMA overlay. The photo above illustrates the two north bound express lanes separated from the general purpose lanes by flexible bollards with a barrier wall separating the south bound express lanes.

Interfaces with adjacent road operators | The four managed lanes are confined in either direction by general purpose lanes, the responsibility of which remains with VDOT. However, Jorgensen must access the general purpose lanes to perform several maintenance and operational tasks such as response to incidents or repairs to the bollard line. This requires continuous interface with VDOT to coordinate Jorgensen efforts with VDOT activities on the general purpose lanes.

Communication and coordination activities are facilitated by utilization of a common radio network communication with dedicated VDOT highway patrols, and with a dedicated Traffic Management Center.

During the winter season, there is continuous coordination effort required for snow and ice events as this responsibility remains with VDOT per the concession agreement. Prior to the first winter season, Jorgensen and VDOT agreed on the plowing procedure, in addition to specific procedures to minimize damage to the bollard line and to ensure that excess snow was placed in areas that would not interfere with free traffic flow in the express lanes.

Jorgensen continuously monitors for potential weather events during the winter season and coordinates with VDOT during the event and during post-event activities. Jorgensen manages and performs the post-event cleanup of excess sand and debris and correcting asset damage from the plowing equipment especially to the bollard line. During the event, our Express Assist patrols continue to provide incident and other emergency response services

Asset management | The O&M project scope includes three components: 1) maintenance of network assets, 2) operational responsibilities (i.e., service patrols), and 3) contract administration.

The O&M mobilization efforts began five months prior to lane opening with the development and finalization of O&M plans and manuals, mobilization of resources and equipment, and employee training.

The contract also includes the facility operation and maintenance of the Traffic Management Center, which houses the traffic management and ITS center as well as project staff. Maintenance responsibility includes a range of assets within the project ROW limits including:

- *Roadway* – flexible pavement
- *Roadside* – slopes and fencing
- *Traffic services* – guardrail, lighting, signs, pavement markings, bollard lines
- *Drainage* – inlets, gutter, roadway sweeping
- *Structures* – joints cleaning and repair, sweeping, deck maintenance

Understanding, Applying MAP-21

Jorgensen's approach to asset management is consistent with the FHWA MAP-21 requirements to implement risk-based asset management plans for the national highway—including I-495 and the new I-70 East.

- *ITS* – ITS structure maintenance
- *Inspection and monitoring* – assets inspection (sign, guardrail, lighting, drainage)
- *Facility maintenance* – all building maintenance (HVAC, sprinkler system, landscaping, janitorial, repair, interior/exterior lighting, emergency power)
- *Operational responsibilities* – courtesy patrols (Express Assist), management of emergency response for incidents and weather events

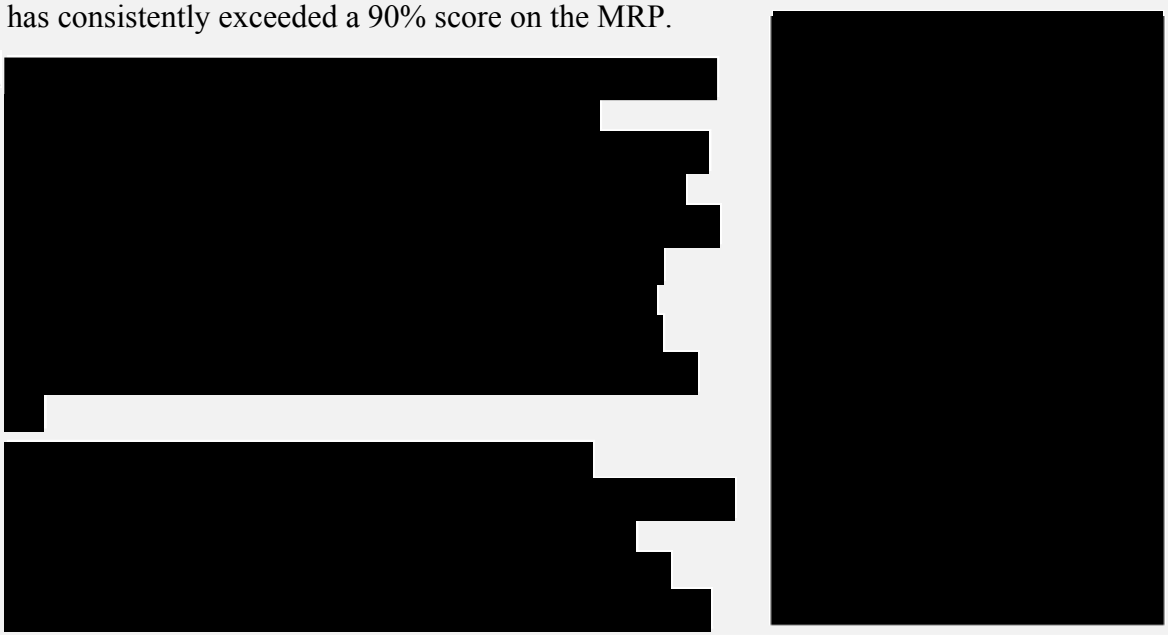
Prior to the start of O&M work, a field inventory was performed along with a condition inventory. The individual asset inventory volume and condition is used to determine the resources (i.e., equipment, materials, and technician staff) required to maintain the assets condition over the project term. All network assets were GPS located and quantified to develop a total project asset inventory.

Performance and performance gaps | The O&M contract is performance-based with key performance indicators (KPI's) to focus on maximum lane availability. For example, the incident response time KPI of 15 minutes is critical to ensuring lane availability and project to-date, Jorgensen has continually achieved this KPI.

Jorgensen is responsible for the self-reporting compliance of KPIs and asset condition, which is accomplished through a series of condition assessments. The most comprehensive is the maintenance rating program (MRP). The framework of this program utilized the VDOT condition assessment program; however, I-495 Express includes elevated performance expectation and criteria typical of a P3 project.

To confirm conformance with this criteria, Jorgensen developed the MRP specific for the I-495 corridor, which was approved by VDOT and the concessionaire. The MRP is an unbiased assessment of randomly selected 0.10 mile segments throughout the network.

The inspection produces an assessment score for each asset within the segment that is evaluated to produce an individual asset score and overall network score. Certified Jorgensen MRP inspectors and owner evaluators perform the MRP quarterly. Jorgensen has consistently exceeded a 90% score on the MRP.



[redacted]

Workforce development programs | Jorgensen's consulting arm has historically been involved with the development of workforces in support of highway agencies including the development of comprehensive training programs for leadership, supervision, administration, information technology (IT), operations and maintenance (O&M), construction inspection and environmental health and safety.

Our contract operations arm has capitalized on this in-house capability to implement comprehensive training programs for our managers and technicians. There are three types of training programs available for development of our in-house work force:

- **Open Training.** Open Enrollment for any employee: These courses can be both optional and prescriptive, but are typically administered via website /online portal.
- **Sponsored Training.** Sponsored training courses are available to any Jorgensen employee who is sponsored by his/her hiring manager. These courses will be coordinated by project management and authorized on an individual basis for these sponsored employees. This training for sponsored employees will expand their learning base and help them to be eligible for positions of increased responsibility.
- **Required Training.** Required training courses are mandatory for employees based on internal requirements, Jorgensen training requirements, policies and guidelines, contract requirements and/or client requests.

Benefits of Hiring Veterans

Jorgensen has found great success in hiring military veterans, as they demonstrate exemplary service, proficient backgrounds, and dedication to their craft.

Currently on I-495 Express, key management positions including the PM and project engineer and several technicians are military veterans.

To support this development of our service personnel, Jorgensen attends job fairs and posts open positions on selected military sites including civilianjobs.com, MOAA transition site, and Military Stars and Stripes.

Meet or exceed DBE participation goals | Jorgensen actively pursues and promotes DBEs on I-495 and continuously achieves up to 25% DBE participation.

Relevance to the I-70 East Project (as described in Sections 8 and 22)					
☒	TIFIA closed by developer	☒	PABs	☒	Highway/road financing
☒	Financed/located in North America	☐	Availability Payment model	☒	Rdwy/IC exp/reconstruction
☒	Construction staging, confined space	☒	Road operator interfaces	☒	Urban infrastructure demo
☒	Ventilation/fire life safety	☒	Workforce development programs	☐	Major excavation work
☒	RR/utility coordination	☒	Meet/exceed DBE	☒	Complex urban traffic mgmt.
☒	Infra w/similar env conditions	☐	Air quality monitoring/mitigation	☒	Noise monitoring/mitigation

II. DESCRIPTION OF TEAM MEMBER INVOLVEMENT

(9)	**Proposer Team Member(s) Involved**	Roy Jorgensen Associates, Inc.
(10)	**Role of Proposer Team Member(s)**	Jorgensen responded to an RFP for O&M services and was awarded the contract as **Lead Operator**. The proposal was evaluated utilizing a best value mechanism considering both the technical approach and price proposals. This multi-year contract, with options for renewal, was executed with Transurban (USA) Inc., mobilization commenced in June 2012 and O&M operations commenced on the express lanes on November 1, 2012. Under this contract, Jorgensen is responsible for all routine maintenance, emergency maintenance (i.e., repair to damaged assets), capital maintenance works, and operational activities. The O&M of the managed lanes include pavement, bridges, drainage, structures, roadside vegetation and aesthetics, traffic services, roadway patrol, and emergency response within the ROW of I-495 Express. Additionally Jorgensen has performed renewal/activities on the pavement to ensure compliance with the contract operational performance requirements. During the mobilization phase, prior to O&M commencement, Jorgensen developed the concession-required O&M plans and manuals that detail the best practices, and procedures that were put in place to successfully perform the O&M requirements. These resources served as the guidebook to effectively mobilize personnel and resources. Additionally, Jorgensen provides a project insurance and security package—an annually renewable payment and performance bond for 100% of the annual contract value.

(11) **Key Personnel Involved, Roles, Responsibilities**

Abraham (Abe) Henningsgaard, PE | Led the firm's initiative to develop a comprehensive approach to the O&M. Abe participated in and led the development of over 10 O&M manuals. He was involved in procurement and approval of staffing, resources, and budget allocation during mobilization. Currently, he is involved in project progress meetings, critical initiatives, and programs affecting resource and investment allocation to ensure project success.

Value-Added Personnel | From Section 2.1.3b also on the I-495 Express project include:

Charles E. Henningsgaard, PE | Served as the project principal for Jorgensen on I-495 Express. He provided and continues to provide executive oversight. For further experience see section 2.1.5.

Bruce Bartoe | Served as the I-495 Express project manager executing the O&M program to meet all performance requirements of the contract. For further experience see section 2.1.5.

Sara Henningsgaard, PE | Has provided technical support for the I-495 Express project. She developed and implemented a quarterly condition assessment program that confirms compliance and project performance. For further experience see section 2.1.5.

III. REFERENCE		
(12)	**Name**	[redacted]
(13)	**Title & Employer (current)**	[redacted]
(14)	**Title & Employer (at time of project/ transaction)**	[redacted]
(15)	**Phone & Email**	[redacted]
(16)	**Location & Time Zone**	[redacted]
(17)	**Other**	[redacted]
IV. TECHNICAL INFORMATION		
(18)	**Construction Value**	N/A
(19)	**Completion within/above Budget**	N/A
(20)	**O&M Value**	[redacted]
(21)	**Length of Road under Operation (centerline miles)**	14 centerline miles (56 lane miles) of dynamically tolled managed lanes

(22) **Key Technical Challenges and Solutions Implemented**

I-495 Express presents a series of O&M challenges based on the network configuration, environmental conditions, physical constraints, and regional location of the network, and the concession requirements driven by ensuring performance of assets and availability of the managed lanes.

The fundamental approach for all projects is a proactive O&M program. The objective of this

approach is creating a program that schedules cyclical work activities to manage each asset under the performance condition prescribed.

The goal is to limit reactive work activities to only those events outside of our control (i.e., vehicle accident, severe weather). The following are notable technical challenges and project features similar to those anticipated for the I-70 East project, and the methodologies and practices Jorgensen has successfully implemented.

Example of bollard replacement, a daily maintenance activity in a high risk area

Challenge: **Ensuring employee and motorist safety**

Solution: The I-495 corridor is a high-speed corridor (65 mph) servicing thousands of motorists daily on both the managed and general purpose lanes, which potentially subjects the motorists and field teams to a high risk environment. Jorgensen has implemented programs focused on providing safety of both employees working on the I-495 managed lanes and motorists.

Jorgensen has implemented work methodologies and enhanced safety devices to support every safety effort. The standard practice is to perform the all non-emergency maintenance work at night when the traffic is at a minimum and accident potential is reduced.

Staff protected by the Jorgensen's mobile barrier

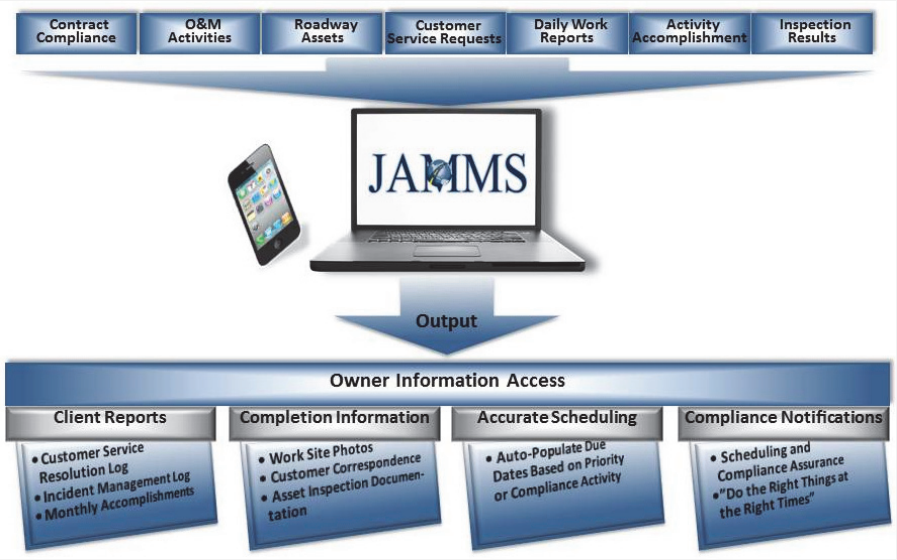
Jorgensen has developed a shift schedule to support continuous nighttime operations. We have also focused on methods to increase visibility of individual workers and equipment including the wearing of fully reflective clothing.

Considering the constant threat of GP lane cross-over incidents and the available working space, placing staff as close as a couple feet of the high-speed traffic, Jorgensen was the first maintenance contractor to purchase a mobile barrier MBT-1 unit.

This steel mobile barricade provides a work space and protection from high-speed traffic. The mobility of the unit makes for efficient operations. Its irreplaceable protection was demonstrated in 2013 when the unit faced a direct side impact from an errant vehicle crossing over the GP lanes. The unit sustained minor damages and prevented fatal injuries of the six employees working.

Challenge: **Compliance verification including tracking, recording, and reporting**

Solution: Several reporting responsibilities verify compliance and contract conformance to VDOT and Transurban including work schedules, work accomplishment, performance evaluations, performance verifications, customer service request and mitigation actions, material and inventory usage, O&M manual plans and procedures, and incident history. To manage the submittal schedules and documentation control, Jorgensen uses a web-based proprietary maintenance management system (JAMMS) that has the ability to track, monitor, schedule, and record all work activities performed.



Jorgensen Asset Maintenance Management System (JAMMS)

The system also has a reporting function that can produce tailored client reports. Additionally, Jorgensen has adapted mobile capabilities on smart devices allowing field technicians to provide real-time reporting. This has made the reporting requirements (monthly, weekly, upon request) nearly seamless and ensured timely reporting compliance.

Access to the system has been provided to clients and owners to issue and review work requests as well as run reports at their discretion. This has streamlined the reporting process and promoted a transparent environment building confidence within the daily management of the O&M.

Challenge: **Developing innovative practices that minimize the impact on the environment**

Solution: Based on the function of the Road Assist Program and the hundreds of thousands of miles Road Assist trucks will log annually, Jorgensen focused on procuring vehicles with a minimum carbon imprint. All Road Assist vehicles were procured at the factory with natural gas conversion kits and a natural gas fuel station installed at Jorgensen's yard.

Challenge: **Ensuring continuous quality improvement**

Solution: A key project goal is to ensure continuous quality improvement of all Jorgensen's O&M practices and programs. The quality management plan (QMP) has both top-down and bottom-up aspects. Top senior management is involved in setting the overall policy and reviews of the quality assurance (QA) results.

In operations, the resident staff direct the quality control portion of the program consistent with prescriptive contract parameters. To accomplish this Jorgensen uses a quality management system (QMS)—a systematic process with defined stages of verification,

monitoring, and project systems reviews to confirm compliance with the contract, identify areas of program success, and identify areas where program improvements can be made.

The QMS includes four levels—self-monitoring, external quality control, third party QA, and management review.

Jorgensen Quality Management System

- *Level 1 Self-Monitoring* – Project staff are trained to understand project scope of services and technical and administrative requirements within their areas of responsibility. They identify instances of noncompliance and immediately begin corrective action. Internal self-monitoring is the ultimate responsibility of the project manager. Maintenance technicians and crew supervisors are required to verify work quality and completeness before work actions are registered as completed.
- *Level 2 External Quality Control (QC)* – QC activities are carried out by quality managers/inspectors trained in the proper maintenance work procedures and performance criteria. These individuals report directly to the QA manager and identify actions needed to remediate any poor performance.
- *Level 3 Third Party QA* – The QA effort serves as a two-part function 1) determine the effectiveness of the QC program and 2) provide potential operational changes to initiate project improvements.
- *Level 4 Management Review* – Management reviews performed by senior management personnel will provide a method to monitor the overall quality function to help ensure new policies are adopted and implemented to further the goal of continuous improvement.

As a result of Jorgensen's O&M practices and specifically this quality program, the firm has not been issued any performance penalties to date.

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

- ☐ Equity Member
- ☐ Lead Contractor
- ☐ Lead Engineer
- ☐ Lead Operator
- ☒ Joint venturer Lead Operator: **Jorgensen**
- ☐ Affiliate(s):

Submitted as Lead Operator Project #3

FORM F: PROJECT/TRANSACTION DESCRIPTION

No.	Required Information	Response
I. BACKGROUND INFORMATION		
(1)	**Project Name**	**Roadway Maintenance Services for Harris County Toll Road Authority (HCTRA)**
(2)	**Type of Facility**	A multi-lane toll road system encompassing six corridors – Sam Houston, Hardy, Westpark, Tomball, Katy, and Fort Bend – providing a major networks of high volume, high speed roads for the Houston metropolitan area.
(3)	**Owner/ Procuring Authority**	Harris County Toll Road Authority
(4)	**Brief Description of Project**	

The Harris County Toll Road Authority manages a major highway infrastructure system serving the Houston metro area. The HCTRA system encompasses six independent high-speed, high-volume networks serving over an average of thousands of vehicle per day at a maximum speed of 70 MPH.

Combined, the six toll roads total 142 centerline miles of tolled mainlines.

Jorgensen has been providing operation and maintenance services for the entire system for over 12 years starting in 2003 and continuing to the present.

Jorgensen has won two successive best value contracts and several extensions in this 12-year period and recently submitted its' BAFO for another five year extension.

Why we included HCTRA:

- 12 years of O&M services
- Robust O&M program for 142 centerline miles of network
- Employee development for a 24/7 O&M program

Roadways encompassing the HCTRA network

(5)	**Contract Term**	First O&M contract term – 12/2003 – 3/2010 Second O&M contract term – 3/2010 – 8/2015
(6)	**Current Status**	In operation

(7) **Key Dates and Milestones**

Contract Milestone	Contracted Dates	Actual
Contract Execution	1st contract – 12/2003 2nd contract – 03/2010	1st contract – 12/2003 2nd contract – 03/2010
Service/Operations Commencement	1st contract – 12/2003 2nd contract – 03/2010	1st contract – 12/2003 2nd contract – 3/2010
End of Service/Operations	76 Months 1st contract – 03/2010 66 Months 2nd contract – 08/2015	76 Months 1st contract – 3/2010 Anticipated 66 months Anticipated 2nd contract –08/2015

(8) **Relevance to the Project**

Substantive Evaluation Criteria, Other Relevant Criteria

Within the massive inventory of HCTRA infrastructure assets there are every type, age and condition of assets that will be encountered on the I-70 project. There are over 250 bridges, overpasses and structures from the very simple to complex including the Sam Houston ship channel bridge. Traffic volumes are extremely high during peak periods all traveling at "Texas" speed levels.

Jorgensen, during its' 12-year term has experienced every type of maintenance activity and repair in addition to major accidents to severe weather events including the historical 2015 floods. The Jorgensen team brings this experience to the I-70 project and the problem handling skills learned in dealing with massive infrastructure inventory.

Substantive evaluation criteria for pavements and associated infrastructure, adjacent road operator interfaces, workforce development programs, and achievement of participation goals are discussed below along with several other relevant criteria.

Roadway pavement and associated infrastructure under environmental conditions that are similar to those affecting the I-70 project | The Harris County toll roads are primarily urban networks traversing industrial, commercial, and residential areas of Fort Bend and Harris Counties all within the boundaries of the City of Houston.

Various sections of the network cross or are adjacent to Houston's extensive canal system making drainage and associated environmental considerations an important component.

Sam Houston Toll Road

The project encompasses six networks with 142 centerline miles (700+ lane miles) of mainline, adjacent frontage roads, over 250 structures, 180 highway interchanges, and all associated roadway and structural assets. The following is the breakout of each of the six networks:

- Hardy Toll Road and Airport Connector (23 miles)
- Sam Houston Tollway (70 miles)
- Westpark Tollway (19 miles)
- Fort Bend Parkway (12 miles)
- IH 10 Managed Lanes (12 miles)
- Tomball Managed Lanes (6 miles)

The configuration of each tollway varies but, in general, they have four to six lanes in either direction with adjacent frontage roads in both directions. Overall the system is primarily rigid pavement with minor sections of HMA overlay. The networks have both electronic and manual tolling operations.

Jorgensen's approach to the operation and maintenance of HCTRA corridor assets incorporates the components of an asset management approach meeting the new requirements of the USDOT's performance requirements under MAP-21. The purpose of the asset management approach is to improve or preserve the condition of the infrastructure assets and the performance of the system.

Interfaces with adjacent road operators | These networks are adjacent to numerous municipalities and as well as other state managed roadways. Coordination and communication is an on ongoing activity specifically in managing incidents where detours to adjacent roadways are needed.

Jorgensen installing pumps to remove flooding water during the 2015 event

This is also required during emergency events such as the historic flooding in Houston in the spring of 2015. This event affected almost all roadway networks including HCTRA and required coordination efforts with adjacent agencies to diligently make sure the travelling public was kept safe by directing them away from roads that were under water.

Jorgensen interfaces on a daily basis with the Fort Bend Toll Authority, the owner of the Fort Bend Toll Road to both determine their work needs on the road and to coordinate and schedule activities that would impact the toll road.

The managed lanes on I-10 are owned by TxDOT, but operated and maintained by Jorgensen under a subcontract arrangement with HCTRA, as the tolls are collected by HCTRA.

Workforce development programs | The HCTRA project requires a significant number of employees to run a 24/7 O&M program. To support the continued growth and development of the project staff, we implemented an "Employee Referral Program" that is designed to encourage employee involvement in recruiting qualified candidates as long-term team members.

The referring employee is awarded a gift card if the person they refer passes all background checks, is hired, and remains on the team for six consecutive months. The program elicited a number of available and qualified applicants who have remained on the Jorgensen team.

Jorgensen's consulting arm has historically been involved with the development of workforces in support of highway agencies including the development of comprehensive training programs for leadership, supervision, administration, information technology (IT), operations and maintenance (O&M), construction inspection and environmental health and safety.

Jorgensen team member with training certification

Jorgensen's contract operations arm has capitalized on this in-house capability to implement comprehensive training programs for managers and technicians.

There are three types of training programs available for development of our in-house work force: 1) open training for any employee, 2) sponsored training for employees sponsored by their supervisory, and 3) required training.

A summary of the Jorgensen's in-house training development courses available to our staff is outlined below.

- **Operations and Maintenance Category** – Includes three training series – MOT, maintenance activities, and tools and equipment – covering such topics as basic MOT, Intermediate traffic control, advanced/supervisory traffic control, flagger, drivers safety/defensive driving, TMA operations, crash barrier systems, third party claims and herbicide/pesticide licensing.
- **Onboarding** – Includes series on employee orientation including covering new employee safety orientation.
- **Environmental Health & Safety** – Includes five training series – Other OSHA Training, OSHA 10-Hr, First Aid/CPR, OSHA 30-Hr, Environmental Safety.
- **Information Technology** – Includes detailed series on JAMMS with modules on DWR process, JAMMS Desktop, and JAMMS Mobile.
- **Management & Supervisor** – Includes series on leadership, HR basics, employment law for supervisors and corrective counseling.

Relevance to the I-70 East Project (as described in Sections 8 and 22)					
☐	TIFIA closed by developer	☐	PABs	☐	Highway/road financing
☐	Financed/located in North America	☐	Availability Payment model	☒	Rdwy/IC exp/reconstruction
☒	Construction staging, confined space	☒	Road operator interfaces	☐	Urban infrastructure demo
☒	Ventilation/fire life safety	☒	Workforce development programs	☒	Major excavation work
☒	RR/utility coordination	☐	Meet/exceed DBE	☒	Complex urban traffic mgmt.
☒	Infra w/similar env conditions	☐	Air quality monitoring/mitigation	☐	Noise monitoring/mitigation

II. DESCRIPTION OF TEAM MEMBER INVOLVEMENT		
(9)	**Proposer Team Member(s) Involved**	Roy Jorgensen Associates, Inc.
(10)	**Role of Proposer Team Member(s)**	Jorgensen is the sole entity providing operations and maintenance services as **Lead Operator** under this multi-year contract procured under a best value approach. The current contract scope includes the full range of operation and maintenance activities and requires a work force of over 160 maintenance technicians, supervisors, engineers, and managers to operate and maintain the network consistently at over 90% condition level. Jorgensen provides the required insurance and security package in the form of an annually renewable payment and performance bond at 100% of the annual contract value.

(11) **Key Personnel Involved, Roles, Responsibilities**

No Key Personnel are involved.

Value-Added Personnel | From Section 2.1.3b also on the HCTRA project include:

Charles E. Henningsgaard, PE, is the project principal for Jorgensen on the HCTRA project and provides executive oversight and leadership. For further experience see section 2.1.5.

Sara Henningsgaard, PE, has provided technical support for the HCTRA project. She developed and implemented a condition assessment program that confirms compliance and project performance. For further experience see section 2.1.5.

III. REFERENCE		
(12)	**Name**	[redacted]
(13)	**Title & Employer (current)**	[redacted]
(14)	**Title & Employer (at time of project/ transaction)**	[redacted]
(15)	**Phone & Email**	[redacted]
(16)	**Location & Time Zone**	[redacted]
(17)	**Other**	[redacted]

IV. TECHNICAL INFORMATION		
(18)	**Construction Value**	N/A
(19)	**Completion within/above Budget**	N/A
(20)	**O&M Value**	Jorgensen 1st contract: $7.5 million annually (total contract $37,650,800) – 2/2003-3/2010 Jorgensen 2nd and current contract: $12.2 million annually (total contract $61,200,000) – 03/2010-8/2015
(21)	**Length of Road under Operation (centerline miles)**	142 centerline miles and over 700 lane miles

(22) **Key Technical Challenges and Solutions Implemented**

Under this contract, Jorgensen's scope of work includes operations, routine roadway maintenance, minor repairs, and minor maintenance projects. Management of operations and maintenance work focuses on all network assets including those associated with roadway (pavement), roadside, traffic service, drainage, vegetation/aesthetics, structural assets, and operation activities.

Key activities include road patrols, incident management, guardrail and attenuators maintenance, lighting, toll plazas, toll lane cleaning and pressure washing, mowing and landscaping, barrier wall painting, herbicide, drainage, bridge joints, signs, all traffic control, snow/ice winter operations, and roadway sweeping.

The following are key challenges activities similar to those that may be anticipated for the I-70 East project.

***Challenge:* Safety and security of project staff**

Solution: Under the HCTRA contract, we are running the operations and maintenance program on a 24/7 basis with over 160 management and technical staff. The large staff working on a daily basis throughout the system necessitates a commitment to implementing an effective safety program.

Jorgensen crew performing a joint sealant repair

Jorgensen's safety program is driven by our workforce development process, which emphasizes continuous training programs. All staff members are provided with a different series of training programs based on their responsibilities within the project. These programs include general safety practices, equipment operations, activity based emergency management, extreme weather events, and risk mitigation. As these networks have several railroad crossings, two key training programs focus on railroad safety operations.

Increased visibility of employees while working on the roadway is another method of ensuring safety. All staff are provided with advanced PPE and well-marked and distinguishable vehicles and equipment.

A primary task is ensuring motorist safety during incident and maintenance activities. The key method in achieving this is through a clearly navigable route for motorists through the network. Mobile variable message signs are placed in advance of the traffic maintenance or incident to warn motorists of impending delays, closures, or detours. Post incident debriefs are used to determine if the most effective MOT was utilized and, if needed, changes in future MOT set ups should be implemented.

Challenge: **Snow and ice control under unpredictable weather conditions**

Solution: Although most considered Texas a mild client it is in fact a region prone to sever winter weather events, history has shown in the last several years the regular occurrence of up to seven events in one season. The challenge with the winter events in Texas is the condition of the wintry mix. The majority of the events produce a mix of ice and snow resulting in the need for pre-and post-treatment.

2014 snow and ice event on the HCTRA network

Jorgensen has developed a snow and ice plan that for the preparation, mobilization, and application of winter event operations. The ability to accurately anticipate inclement weather is central to mobilizing the correct resources to respond to the type of weather event. A number of resources are used to monitor weather events including a weather forecasting service, site-specific short-term forecasting, National Weather Service forecasts, and satellite and radar images.

The HCTRA project supports snow and ice control equipment including plows, spreaders, spray tanks, dump trucks and graders. These resources are supplemented by Jorgensen's fleet of snow and ice equipment located on toll roads and interstates throughout Texas including over 30 units north of Houston in support of I-45, 100 units in the Dallas area in support of the North Texas Toll Road and the Chisholm Trail and 30 units in support of the Austin area toll roads.

Jorgensen Keeps Houstonians Moving
Jorgenson's equipment fleet includes over 200 pieces of snow and ice equipment including plows, spreaders, spray tanks, dump truck, and graders.

Prior to each winter season Jorgensen staff, at all our projects attend, a snow and ice rodeo roundup event in preparation for the coming winter season. During these practice events preparation needs are discussed including chemical mix concentrations, application rates, equipment and material usage and availability and route plans. This rodeo event also supports new or innovative snow and ice control measures specifically for pre-treatment works that require very deliberate application rate times, amount, concentrations and temperature controls to be an affective pre-treatment.

Challenge: **Tracking, recording, and reporting responsibilities to owner**

Solution: Jorgensen has first-hand knowledge of the efficiencies technology can bring to an operation. For the HCTRA contract, we utilize our proprietary maintenance management

system (JAMMS) to manage the documentation responsibilities required of this contract that include monthly reporting of work activity accomplishments and personnel, material and equipment usages. One enhancement made to the software is the capability for use on smart devices. Crew leads and technicians are equipped with smart devices to record work activities and accomplishments instantaneously, making the system information available real-time.

Challenge: **Continuous 24/7 O&M program that minimizes overtime**

Solution: A challenging component of the HCTRA project is the requirement for the 24/7/365 maintenance program that minimizes overtime. Crews work continuously in three to four shifts throughout the day. In order to meet the demands of a continuous program, Jorgensen developed a shift program that allows for rotation of key staff when the time requirements are the most demanding. This program assures HCTRA that our most qualified and skilled crews and supervisors will be on the job at all times with minimal overtime.

Challenge: **Specialty events**

Solution: Jorgensen is prepared to provide support to specialty events. For example, on April 12, 2015, a new segment of the tollway was officially opened to the public.

The Grand Opening event, "Stroll the Toll," closed a segment of the roadway to traffic but opened it to pedestrians to walk a portion of the new toll road. The event was intended to showcase a new segment of the tollway and gain community support.

Jorgensen utilized 22 employees to organize the event, providing power to the mobile EZTAG store and cleaning services after the event. Several key HCTRA officials praised Jorgensen for our performance, citing quick response and superior organization.

Providing Organization and Support for Special Events

The Jorgensen team supported the "Stroll the Toll" event and several key HCTRA officials praised Jorgensen for performance during the event citing quick response and superior organization.

FORM F: PROJECT EXPERIENCE

Proposer Name: KIEWIT-MERIDIAM PARTNERS

meridiam

Submitted as Lead Operator Project #4

FORM F: PROJECT/TRANSACTION DESCRIPTION

- ☒ Equity Member: **Meridiam**
- ☐ Lead Contractor
- ☐ Lead Engineer
- ☐ Lead Operator
- ☒ Joint venturer in Lead Operator: **Meridiam**: in Lead Engineer: **Jacobs** (GEC)
- ☒ Affiliate(s) of Equity Member: **Meridiam**

No.	Required Information	Response
I. BACKGROUND INFORMATION		
(1)	**Project Name**	**IH 635 Managed Lanes (LBJ Express)**
(2)	**Type of Facility**	An interstate toll road with managed lanes.
(3)	**Owner/ Procuring Authority**	Texas Department of Transportation (TxDOT)
(4)	**Brief Description of Project**	

The LBJ Express is a 52-year DBFOM managed lane toll concession project with a construction period of 5.5 years and $2.6 billion capital cost. LBJ Express is a 16.5-mile corridor of IH 635 (LBJ) and IH 35E within the Dallas-Fort Worth area and consists of rebuilding one of the busiest and most congested highways in North Texas, currently with an average daily traffic of over 250,000. The works are being completed within the same footprint of the existing corridor while maintaining traffic on the existing highway to meet the goal "no higher, no wider" as insisted by the adjacent stakeholders and community.

Why we included LBJ Express:

- 250,000+ ADT with self-performed O&M
- Managed lanes with a cut and partially covered section
- $1.46 billion of combined PABs and TIFIA issued—the largest transactions of its kind
- Community involvement in financing through the participation of the local Dallas Police and Fire Pension System

LBJ alignment

The project company, co-owned by Meridiam, self-performs all operations and maintenance, and is responsible for tolling the managed lanes. It has been responsible since the start of the project term for managing O&M both during construction and during operations.

The project will feature one of the most comprehensive managed lane systems in the country with automatic vehicle identification (AVI) technology capable of reading the transponders of passing vehicles. The scope also includes a new electronic tolling system with dynamic pricing on managed lanes to maintain an average speed of 50-mph. Toll revenue and associated risk is fully retained by the project company.

(5)	**Contract Term**	DBFOM contract term 52 years – June 2010 – 2062
(6)	**Current Status**	Under construction (97.9% complete) Segments 1 and 3 opened to traffic in April 2014 and December 2013, respectively. The project company has been operating the corridor since January 2011 and tolling the segments since opening to traffic.

(7) **Key Dates and Milestones**

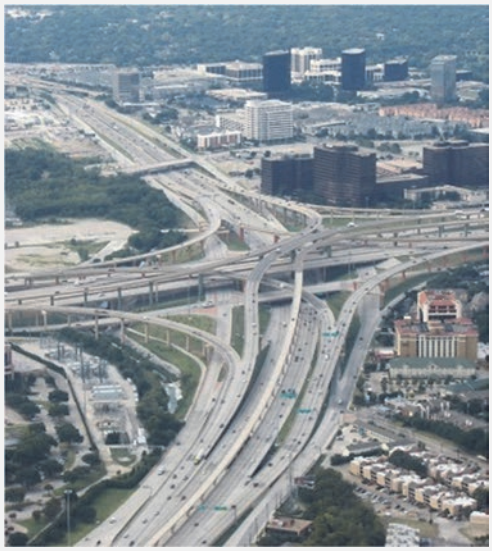
Contract Milestone	Contracted Dates	Actual
Contract Execution	09/2009	09/2009
Financial Close	9 months 06/2010	9 months 6/2010
Commencement of Design	0 months 09/2009	0 months 09/2009
Commencement of Construction	21 months 6/2011	16 months 1/2011
Achievement of Substantial Completion	75 months 12/2015	75 months (Anticipated) 12/2015
Service/Operations Commencement	21 months 6/2011	21 months 6/2011
Achievement of Final Completion	78 months 03/2016	78 months (Anticipated) 03/2016
End of Service/Operations	52 years 2062	52 years (Anticipated) 2062

(8) **Relevance to the Project**

Substantive Evaluation Criteria, Other Relevant Criteria

As co-developer for LBJ Express, Meridiam manages and guides the design build (DB) team and the project to find the optimal technical solution to properly mitigate risks through the lens of the entire project life cycle. The technical scope of this project that is relevant to the I-70 East Project includes:

- **Expansion of the existing roadway |** LBJ involves expanding current infrastructure including improvements to the existing general purpose lanes and frontage roads, and building new managed lanes with a cut and partially covered section, along with major interchange reconstructions to accommodate the reconfigured lanes, including the major interchange of IH 635/IH 35E. Additionally, much like I-70 East will do in Denver, LBJ contributed to improving the transportation network of one of North America's rapidly growing metroplexes.



LBJ's IH 635/US 75 Interchange

- **Major excavation |** Significant excavation work including over three million cubic yards was required to accommodate the below-grade managed lanes and associated connectors of the interchanges combined with the increased entry and exit points of multiple lanes.
- **Highly complex traffic management |** A complex traffic management systems was required throughout the construction to allow for the ongoing maintenance of average daily traffic of 250,000+ on the existing highways.
- **Construction staging in a confined space |** The project is occupying the footprint of the existing corridor. This has required a comprehensive construction-phasing plan to limit the impacts to the traveling public.
- **Community involvement |** A permanent community relations outreach program is fully in place throughout substantial completion. The community relations outreach program includes presentations to local chambers of commerce and professional societies. In addition, information is provided to the general public through the use of web based tools and a permanent store front.
- **Ventilated partially covered lid |** The managed lanes, which are below grade, are ventilated through an open roof design. While the lid is not fully enclosed, the design allowed for natural ventilation eliminating the need for major ventilation, mechanical, electrical and SCADA systems.

Cross section at cut and partial cover echoes the scope of I-70 East

- **Similar environment conditions |** The project experiences conditions similar to the Denver region with varying temperatures with high-degree summers followed by snow and ice in winter. The project corridor has experienced significant snow and ice events over the 2014/2015 winter and the project company was responsible for clearing frozen connectors and fly-overs of ice and snow. In addition, due to the close proximity of its team operations and maintenance center, the project team assisted TxDOT with clearing TxDOT connectors at nearby major interchanges.
- **Interface with multiple road operators |** The most important interface is the North Texas Tollway Authority (NTTA) who is responsible for toll collection on behalf of the project company. Meridiam is co-owner of the project company, which is self-performing all operations, maintenance, and tolling (excluding toll collection). LBJ also crosses the Dallas Area Rapid Transit NW-3 line. The team coordinated with

DART to perform work adjacent to the line. Any work within or above DART ROW was limited to a four-hour window.

- **Workforce development |** A continuing key component of the project is the workforce development. This is taking place not just during construction, but also for all of the operating and maintenance aspects through DBE participation and subcontractor engagements. The project company has developed a state-of-the-art operating center, and is constantly developing its workforce to ensure time critical operations for the whole project.

LBJ Express, from a **financial** perspective, is also highly relevant to the I-70 East Project—it was the largest private activity bonds (PABs) issuance of its time; it was procured through project financing and the project generates revenue through its tolled managed lanes. In particular, LBJ has the following relevant financial features:

- **$850 million in TIFIA financing |** A major component for the financing was TIFIA with over $850 million invested in the project. Meridiam was instrumental in the raising of this financing by engaging the TIFIA office and relevant stakeholders at the federal level. This is of particular relevance to the I-70 East Project since TIFIA has been identified as a likely source of financing.
- **More than $600 million in PABs issued |** LBJ Express issued the largest PABs ever for a single project at the time. This is relevant to the I-70 East Project since a large PABs issue will be a key component of the financial structuring analysis.
- **Managed lanes in an urban environment |** LBJ has a similar scope to the I-70 East Project. Meridiam was integral in structuring the transaction in a way that would be attractive to the debt markets even post-financial crisis. This will be of great value to CDOT, knowing that our team has proven experience in structuring projects that are able to attract financing for this type of construction scope.
- **North American financing |** The project was financed in Texas. Similar to Colorado, the market for Texas municipal bonds is particularly liquid and it should be possible to enhance the liquidity of Colorado paper via the issuance of the I-70 PABs (if this financing source were to be used).
- **Noise monitoring and mitigation in an urban environment |** Sound walls were built in the initial stages to mitigate existing construction noise and future traffic noise for residents located along the corridor. Most walls are now complete.

Relevance to the I-70 East Project (as described in Sections 8, 22, and 27)					
☒	TIFIA closed by developer	☒	PABs	☒	Highway/road financing
☒	Financed/located in North America	☐	Availability Payment model	☒	Rdwy/IC exp/reconstruction
☒	Construction staging, confined space	☒	Road operator interfaces	☒	Urban infrastructure demo
☒	Ventilation/fire life safety	☒	Workforce development programs	☒	Major excavation work
☒	RR/utility coordination	☒	Meet/exceed DBE	☒	Complex urban traffic mgmt.
☒	Infra w/similar env conditions	☒	Air quality monitoring/mitigation	☒	Noise monitoring/mitigation

II. DESCRIPTION OF TEAM MEMBER INVOLVEMENT		
(9)	**Proposer Team Member(s) Involved**	Meridiam was involved on LBJ through its Affiliate, Meridiam Infrastructure LBJ Holdings, LLC, a 42% equity member of the project company at time of financial close. Meridiam Infrastructure LBJ Holdings, LLC is controlled by its fund manager, Meridiam Infrastructure North America Corp., the fund manager to MNII Fund (the Financially Responsible Party for Meridiam's Equity Member, Meridiam I-70 East CO, LLC). MNII Fund's experience will be made available to and applied by Meridiam I-70 East CO, LLC in the context of the Project as the entities share the same senior management. Other team members include: Jacobs
(10)	**Role of Proposer Team Member(s)**	Meridiam – **Lead Operator** and **Equity Member** Jacobs – Owner's Engineer
(11)	**Key Personnel Involved, Roles, Responsibilities**	No Key Personnel were involved. **Value-Added Personnel |** From Section 2.1.3b also on the LBJ Express project include Jean-Michel Martinez, Life Cycle and Asset Management Director, and John Dionisio, Finance and Commercial Lead
III. REFERENCE		
(12)	**Name**	[redacted]
(13)	**Title & Employer (current)**	[redacted]
(14)	**Title & Employer (at time of project/ transaction)**	[redacted]
(15)	**Phone & Email**	[redacted]
(16)	**Location & Time Zone**	[redacted]
(17)	**Other**	[redacted]

IV. TECHNICAL INFORMATION		
(18)	**Construction Value**	$2.1 billion
(19)	**Completion within/above Budget**	All of the LBJ Express has been subcontracted based on a fixed-price contract. LBJ Express is within budget expectations.
(20)	**O&M Value**	$22 million annually
(21)	**Length of Road under Operation (centerline miles)**	16.5 miles

(22) **Key Technical Challenges and Solutions Implemented**

Similar to I-70 East, LBJ Express presents a range of relevant technical challenges, most of these being linked to the constricted corridor into which the project is being built. These challenges include:

Aerial view of LBJ's IH 635/IH 35E Interchange

Challenge: **Managing the sheer size of O&M being self-performed**

Solution: Meridiam and its partners are self-performing maintenance activities on the LBJ Express. The key challenge is the sheer size of the project in terms of assets as well as the grade separations between the managed, general purpose, and frontage lanes. The project company uses 24 professionals dedicated to managing LBJ's O&M program.

Building a robust O&M program was critical to manage the maintenance of 104-lane miles of existing highway during the construction period and of 215-lane miles after service commencement. This also covers maintenance of 9 flyovers, 39 overpasses, 9 cantilevers, 4 widened sections, and 16 underpasses. O&M self-performance is accomplished through:

- Routine and preventative maintenance including pavement, structural, deck, and joints, guardrail repair, scour controls, lighting, and other standard highway and bridges maintenance activities.
- Life cycle planning and capital improvements, including structural and surface work, done via an asset management model developed throughout the project development, design, and construction phases.
- A comprehensive safety program with a Zero Tolerance Policy implemented through work plan safety analysis, weekly safety meetings, inspections, and safety training.
- ITS implementation – maintains the existing ITS elements including traffic counters and closed-circuit television camera systems through its traffic management center. The entire corridor has 100% camera coverage over its multiple levels.

Challenge: **Incident management and motor assistance**

Solution: This is the consortium's primary operational focus. It provides motorist assistance (i.e., tire changes, fuel, safety lighting, stalled vehicles) to an average of eight vehicles per day (approximately 3,000 per year). The consortium co-led by Meridiam has an average response time to incidents of less than eight minutes improving the safety for the users while driving in the corridor. The project company deploys specially trained, mobile road crews who monitor the road network 24 hours a day, seven days a week in order to provide quick clearance solutions and traffic control for road hazards such as breakdowns, crashes, and spillages. Meridiam will use a similar approach on the I-70 East Project to provide equally quick response times to incidents caused by vehicles in the corridor. The traffic management center (TMC) provides the incident management and motor assistance team with effective communication in the event of an incident.

Traffic Management Center (TMC)

Challenge: **Expansion of existing facility with construction-period O&M responsibility**

Solution: LBJ is highly relevant to the I-70 East Project in that the Meridiam co-led consortium was required to perform the construction and upgrades while maintaining traffic. To achieve this, the project company worked closely with the owner and the DB team to develop the construction sequencing that best addresses TxDOT's priorities of 1) ensuring traffic is not interrupted and 2) providing a safe environment for drivers and workers.

This planning process started in the RFP stage and involved close coordination between the design, construction, and the developer O&M team to leverage their combined technical and P3 delivery expertise to produce a robust O&M program.

Challenge: **Providing pro-active first response support**

Solution: Incident notification, dispatch, management, and reporting are carried out through the TMC. The TMC is the focal point of our O&M program; receiving, analyzing, and synthesizing roadside-generated data for owner reporting and operational optimization purposes. The TMC utilizes CCTV access and is integrated with the 911 emergency call centers, with LBJ working closely with the Dallas Fire Rescue and receiving the same dispatch notifications via text messages. The project company coordinated with the Fire Security Life Safety Committee, which consisted of representatives from fire, police, emergency services, and motorist assistance agencies along the project corridor. This was key in developing a clear and concise emergency action plan to simplify the emergency procedures.

Clear and Concise Emergency Response

The TMC is the focal point of our O&M program: receiving, analyzing, and synthesizing roadside-generated data.

Challenge: **Ensuring project safety**

Solution: The project has had a very successful safety record with the concessionaire's safety policy, as defined in the Project Management Plan (PMP) approved by TxDOT and the

Independent Engineer, as a condition for commencement of work. The O&M personnel have received safety (OSHA) and environmental training, as well as freeway incident management training with annual refreshers. Incident response management has been implemented.

Challenge: **Coordination with adjacent operators**

Solution: While the project company tolls the managed lanes and operates all of the free-flow tolling technology, there is a critical interface with NTTA, who is responsible for toll collection. The system has been operating smoothly as demonstrated by less than 15 credits provided to customers in more than two million transactions.

Challenge: **Roadway expansion and major excavation in confined spaces**

Solution: On the IH 635/LBJ corridor, the existing roadway was expanded to establish new managed lanes in the previously existing median, as well as new general-purpose lanes and frontage lanes—all within the same footprint of the existing IH 635/ LBJ corridor and while maintaining traffic on the existing highway. The confined space available required the managed lanes to be built in a lowered, partially covered section with the general purpose lanes constructed over the top through the use of an innovative cantilever structure with the frontage roads constructed to the outside of the general purpose lanes.

By effectively stacking traffic, the corridor added the needed capacity while minimizing the ROW impact. To minimize impacts to traffic, the team worked with the traffic management task force of all affected agencies including TxDOT, area cities, Dallas Area Rapid Transit, NTTA, Dallas County, Texas Transportation Institute, and the North Central Texas Council of Governments to determine the best and quickest haul routes for the large quantities of excavation.

Challenge: **Roadway expansion and elevated sections in confined spaces**

Solution: The IH 35E section of the project includes elevated managed lanes on the outside of the existing general purpose lanes. These are joined into the IH 635 managed lanes in the median at a major interchange, thereby requiring complex construction staging and methods including the use of pre-cast straddle bents over live traffic in the corridor.

V. FINANCIAL INFORMATION

(23) Payment Mechanism

TxDOT procured a P3/DBFOM contract which relied on revenue realized via tolled managed lanes where the private sector takes full control over toll setting and takes full revenue risk. Similar to I-70 East, the LBJ managed lanes are tolled while the general-purpose lanes require no fee to use. The toll fee is set higher as the congestion levels increase on the general-purpose lanes.

The tolls are set on a dynamic basis within five-minute timeframes, with collection data being passed to NTTA to collect.

The technology includes both electronic free-flow tolling and video tolling which allows for a smooth ridership experience for users.

TxDOT also made capital subsidy payments during construction of $490 million representing 19% of the total funding requirement (or 23% of construction value).

(24) **Source(s) of Revenues or Payments**

The project's sources of ongoing revenues are toll revenues from the managed lanes. These are dynamic toll rates where the concessionaire is required to maintain a minimum speed level in the managed lanes. TxDOT has chosen to pass toll revenue risk to the concessionaire.

The lanes compete directly with the adjacent general purpose lanes. Tolling is fully automatic free-flow with the use of electronic toll tags as well as video tolling. Tolls are set dynamically to achieve the appropriate congestion levels.

It should be noted that there is also a revenue sharing mechanism incorporated which allows TxDOT to benefit from outperformance on the project.

(25) **Proposer Team Member(s) Equity Investment**

Meridiam committed $281 million representing 42% of total equity.

Meridiam was instrumental in attracting the Dallas Police and Fire Pension System (DPFPS) as an additional and important equity co-investor. DPFPS provides an important link to the community and serves on the Board of Directors along with Meridiam.

(26) **Financing Method(s) and Value(s)**

Financing methods for LBJ Express	$ million	% of external financing
Long-term TIFIA	850	40%
Long-term PABs	606	29%
Long-term Equity	664	31%
Total external financing	2,120	100%

All sources of finance are invested for the long term in the project, with no individual type of financing being structured for automatic early repayment.

(27) **Key Financial and Funding Challenges and Solutions Implemented**

Meridiam was able to meet all of the financial challenges on LBJ and ultimately reach financial close. Some of the key financial challenges relevant to CDOT and the I-70 East included:

***Challenge:* A novel financial structure for a traffic risk concession**

Solution: One of the main challenges faced was the relative novelty of a financial structure for a traffic risk concession combining private equity with unwrapped PABs. Prior to this project, PABs were typically "wrapped" through monoline insurance coverage that insured the project company's ability to repay their debt service. As the monoline insurers withdrew from the market, additional due diligence was required for unwrapped PABs. LBJ followed closely on the heels of Meridiam's North Tarrant Express project, which was the first unwrapped PABs structure for a P3 project. The project was bid in January 2009—in the middle of the financial crisis—and was able to reach financial close through an agile financing strategy, which moved from one structure that was bid to another

Agile Financing Strategy

The financial crisis undermined the bank lending market and led to the consortium switching from a Bank+TIFIA structure to an unwrapped PABs+TIFIA financing solution.

during the preferred bidder phase (see below). Meridiam will be able to apply structuring lessons learned and bring debt investor relationships to I-70 East.

***Challenge:* A jumbo TIFIA loan**

Solution: An $850 million TIFIA loan was secured to finance the project. The sheer size of TIFIA's commitment to a single project required substantial due diligence activities and multiple negotiations with the TIFIA office. This activity increased as the finance team was forced to move to a different senior debt source alongside TIFIA—from a bank solution to an unwrapped PABs solution.

***Challenge:* The largest PABs transaction of its time**

Solution: While the bid phase strategy assumed a bank and TIFIA loan structure, the financial crisis undermined the bank lending market and led to the consortium switching to a structure using unwrapped PABs and TIFIA. This required reengagement with TIFIA to explain the change and a further in-depth rating agency process to explain the new structure. This also moved the type of funding commitment that was available to the project away from addressing a club of banks to the wider PABs market. NTE and LBJ were close together and therefore the finance team could address many accounts who had already been involved in NTE. However, the sheer size of the LBJ issuance meant the team had to approach more investors than previously. Meridiam's continued drive to approach investors, and the fact that it was a true long-term investor helped bring more PABs investors into the deal. Despite the challenging market conditions, Meridiam was able to successfully achieve financial close with the largest PABs issuance of the time for a single project.

Achieving Financial Close in a Challenging Market

Despite the challenging market conditions, Meridiam was able to successfully achieve financial close with the largest PABs issuance of the time for a single project.

***Challenge:* Community involvement for a large scale transport financing**

Solution: The large size of the highway being reconstructed under live traffic required community coordination throughout the project. To increase community involvement through the financing of the highway, Meridiam was able to attract the Dallas Police and Fire Pension System (DPFPS) as an additional important equity investor. DPFPS has provided an important link to the community, a strong partner on both LBJ and NTE, and serves on the Board of Directors alongside Meridiam.

The above financial challenges and their resolution demonstrate Meridiam's expertise in structuring and closing PABs and securing investment grade ratings under pressure. A strong track record with rating agencies, TIFIA, and debt investors are key to achieving successful financial close. Meridiam continuously seeks the most efficient form of financing most appropriate to any project it is seeking to finance in order to provide best value to the project overall.

Safety Record
Form G

FORM G: SAFETY QUESTIONNAIRE

Proposer Name: Kiewit-Meridiam Partners
Name of Team Member: Meridiam I-70 E CO, LLC
Role on Proposer:
☐ Lead Contractor
☐ Lead Engineer
☐ Lead Operator
☒ Joint venturer in Lead Operator: Meridiam I-70 E CO, LLC

Form G: Safety Questionnaire

A. Required Statistics

(1) Please provide the following information:

Kiewit-Meridiam Partners intend for the Developer to self-perform the lifecycle interventions through capital planning and procurement of contractors for performance of the work. Therefore, in compliance with the definition of Lead Operator in the RFQ, Meridiam I-70 E CO, LLC, a member of the Developer will be submitting this form as it has been deemed to be a Joint Venturer in the Lead Operator.

Meridiam I-70 E CO, LLC is a newly formed entity that does not have safety statistics, and therefore none have been provided.

Data Series	2011	2012	2013	2014
Fatalities				
Total Number of Fatalities (Workers):	-	-	-	-
Fatal Injury Rate:	-	-	-	-
Total Number of Fatalities (Members of the Public):	-	-	-	-
Other Incidents				
Total Number of Non-fatal Recordable Cases:	-	-	-	-
- Cases with Days Away from Work:	-	-	-	-
- Cases with Job Transfer or Restriction:	-	-	-	-
- Other Non-fatal Recordable Cases:	-	-	-	-
OSHA Incident Rate:	-	-	-	-
DART Rate:	-	-	-	-
Total Number of Non-fatal Injuries to Members of the Public:	-	-	-	-
Lost Work Days				
Total Lost Work Days:	-	-	-	-
Lost Workday Index:	-	-	-	-

Data Series	2011	2012	2013	2014
Cost of Accidents				
Cost of Accident per Employee:	-	-	-	-
Cost of Accidents involving Members of the Public:	-	-	-	-
Safety Metrics				
EMR:	-	-	-	-

Where:

(a) Fatal Injury Rate = (Number of fatal work injuries x 200,000,000) / total employee hours worked during the calendar year.

(b) Non-fatal Recordable Cases refers to non-fatal occupation injuries and illnesses for Heavy and Civil Engineering Construction, as defined by the North American Industry Classification System (NAICS 237).

(c) OSHA Incident Rate = (Number of cases of injury and illness x 200,000) / total employee hours worked during the calendar year.

(d) DART Rate = (Number of recordable incidents of injury or illness that resulted in days away (lost), restricted or transferred during the calendar year) / 100 full time employees.

(e) Lost Workday Index = (Number of lost workdays x 200,000) / total employee hours worked during the calendar year.

(f) Cost of Accident per Employee = Total cost of accidents / average number of employees.

(g) EMR refers to the National Council on Compensation Insurance (NCCI) Experience Modification

(h) Rating.

B. Questions Regarding Safety Record and Approach

(1) How is your entity's management included in the accident reduction process?

Response: We do not have an accident reduction process as we do not have a labor workforce. We will rely on our Lead Contractor, Lead Engineer, and Lead Operator to establish an accident reduction process in relation to the Project.

(2) How often do you hold site meetings for supervisors for a typical Reference Project? If you do not hold meetings, why not?

Response: We do not hold site meetings for supervisors as we do not have a labor workforce. We will adhere to the site meetings schedule established by our Lead Contractor, Lead Engineer, and Lead Operator in relation to the Project.

(3) How often do you conduct project safety inspections? Who conducts these inspections? If you do not, why not?

Response: We do not perform safety inspections as we do not have a safety inspection program. We will rely on our Lead Contractor, Lead Engineer, and Lead Operator to conduct project safety inspections in relation to the Project.

(4) Please describe your written safety program. If you do not have one, explain why.

Response: We do not have a written safety program as we are a newly formed entity. We will rely on our Lead Contractor, Lead Engineer, and Lead Operator to provide the written safety program in relation to the Project.

(5) Please describe your preferred methods for securing worksites in urban environments, including as such methods may promote the safety of members of the local community.

Response: We do not secure worksites. We will rely on our Lead Contractor, Lead Engineer, and Lead Operator to secure the Project worksite.

(6) Please describe your orientation or training program for new hires and for newly promoted individuals (including foremen), including any safety related elements. If you do not have such a program, explain why.

Response: We do not have an orientation or training program as we are a newly formed entity. We will rely on our Lead Contractor, Lead Engineer and Lead Operator to establish an orientation and training program.

(7) With respect to no. (6) above, for any program that relates to foremen, indicate whether it includes instruction on the following: *We do not have foremen.*

Topic	Yes	No
Safety Work Practices	☐	☒
Safety Supervision	☐	☒
On-site Meetings	☐	☒
Emergency Procedures	☐	☒
Accident Investigation	☐	☒
Fire Protection and Prevention	☐	☒
New Worker Orientation	☐	☒

(8) How often does your entity hold safety meetings which extend to the laborer level, and how does this vary by type of project? If you do not hold such meetings, explain why not.

Response: We do not have laborer level staff therefore we do not hold safety meetings that extend to the laborer level. We will adhere to the policies of our Lead Contractor, Lead Engineer, and Lead Operator in relation to the Project.

(9) Please explain any program or written practices that expressly address the safety of the traveling public and the safety of personnel within the construction area. If the entity has no such program or practices, explain why not.

Response: We do not have a program to address the safety of the travelling public and the safety of personnel within the construction area as we will not work on an active construction site. Meridiam will adhere to any relevant programs established by our Lead Contactor, Lead Engineer, and Lead Operator in relation to the Project.

(10) Please describe any differences between the entity's standard or typical safety program or practices as described in your responses to (1) through (9) above and (a) the entity's safety program or practices on projects similar to this Project in size and scope and/or (b) the anticipated safety program or practices for this Project as may be preliminarily anticipated in the statement of technical approach included in the SOQ in accordance with Section 5 of the Volume 1 Requirements.

Response: There are no differences between our standard safety program as outlined in our responses to (1) through (9) and our safety program on projects similar to this Project in size and scope or the anticipated safety program or practices for this Project. We will rely on the programs put in place by our Lead Contactor, Lead Engineer, and Lead Operator in relation to the Project.

FORM G: SAFETY QUESTIONNAIRE

Proposer Name: Kiewit-Meridiam Partners
Name of Team Member: Kiewit Development Company
Role on Proposer:
☐ Lead Contractor
☐ Lead Engineer
☐ Lead Operator
☒ Joint venturer in Lead Operator: Kiewit Development Company

Form G: Safety Questionnaire

Kiewit-Meridiam Partners intend for the Developer to self-perform the life cycle interventions through capital planning and procurement of contractors for performance of the work. In compliance with the definition of Lead Operator in the RFQ, Kiewit Development Company (KDC), an Equity Member of the Developer, is submitting this form as it has been deemed to be a joint venturer in the Lead Operator. KDC is a professional services firm not engaged in actual construction, and as such does not record its own safety statistics. However, the health and safety performance of KDC's personnel is recorded as part of Kiewit Infrastructure Group Inc.'s (KIG) health and safety statistics. KIG's statistics and program data are therefore provided.

A. Required Statistics

(1) Please provide the following information:

Data Series	2011	2012	2013	2014
Fatalities				
Total Number of Fatalities (Workers):	0	1	0	0
Fatal Injury Rate:	0.00	0.01	0.00	0.00
Total Number of Fatalities (Members of the Public):	0	0	0	0
Other Incidents				
Total Number of Non-fatal Recordable Cases:	141	163	159	107
- Cases with Days Away from Work:	27	33	22	21
- Cases with Job Transfer or Restriction:	31	36	29	10
- Other Non-fatal Recordable Cases:	83	94	108	76
OSHA Incident Rate:	1.12	1.07	0.80	0.67
DART Rate:	0.46	0.45	0.26	0.19
Total Number of Non-fatal Injuries to Members of the Public:	Not Recorded	Not Recorded	Not Recorded	Not Recorded
Lost Work Days				
Total Lost Work Days:	1,869	1,654	1,627	1,579
Lost Workday Index:	14.91	10.86	8.17	9.85

Data Series	2011	2012	2013	2014
Cost of Accidents				
Cost of Accident per Employee:	Not Recorded	Not Recorded	Not Recorded	Not Recorded
Cost of Accidents involving Members of the Public:	Not Recorded	Not Recorded	Not Recorded	Not Recorded
Safety Metrics:				
**EMR:*	0.55	0.55	0.54	0.54

**EMR is provided as Kiewit as a Whole Company.*

Where:

(a) Fatal Injury Rate = (Number of fatal work injuries x 200,000,000) / total employee hours worked during the calendar year.

(b) Non-fatal Recordable Cases refers to non-fatal occupation injuries and illnesses for Heavy and Civil Engineering Construction, as defined by the North American Industry Classification System (NAICS 237).

(c) OSHA Incident Rate = (Number of cases of injury and illness x 200,000) / total employee hours worked during the calendar year.

(d) DART Rate = (Number of recordable incidents of injury or illness that resulted in days away (lost), restricted or transferred during the calendar year) / 100 full time employees.

(e) Lost Workday Index = (Number of lost workdays x 200,000) / total employee hours worked during the calendar year.

(f) Cost of Accident per Employee = Total cost of accidents / average number of employees.

(g) EMR refers to the National Council on Compensation Insurance (NCCI) Experience Modification

(h) Rating.

B. Questions Regarding Safety Record and Approach

(1) How is your entity's management included in the accident reduction process?

Response: Management's role in the accident reduction begins with our "Nobody Gets Hurt" Vision:

"Nobody Gets Hurt" means just that — no incidents and no injuries, no matter how seemingly minor. We all have family and friends who care about us and want us to stay safe at work. We also care about our coworkers and take seriously our responsibility to keep each other safe on the job. No matter what job you do, "Nobody Gets Hurt" applies to you. Embrace it; promote it; live by it. Nothing is more important o execute Kiewit's Vision Statement we use the following

three principles:

1. *Employee Engagement at All Levels*
2. *Active Commitment by Management*
3. *The Tools We Use*

For this question we will expand on Active Commitment by Management

Kiewit Management has a special responsibility when it comes to safety. They must be actively, openly committed to safety. Management's level of commitment shows not only in their words but in their actions, and through using the tools that will create a safe workplace. Kiewit expects that Managers create an environment where people can't help but do the right thing every time. This is how Management's Commitment is demonstrated and how they are included in the accident reduction process.

(2) How often do you hold site meetings for supervisors for a typical Reference Project? If you do not hold meetings, why not?

Response: Our typical site meetings for supervisors include the following.

1. ***Daily Crew Communicator Meetings:*** *This meeting allows our Foremen and Superintendents to communicate the plan for the day to our Craft Employees. During this meeting Safety, Quality, and the day's activities are discussed.*
2. ***Daily Coordination Meeting:*** *This meeting allows our Supervisors to plan for the next day's work and communicate solutions to any potential conflicts. During this meeting every aspect of work is discussed, to include but not limited to: Safety, Quality, Environmental, Public Involvement, Work Sequence, Schedule, Equipment Maintenance, Work Location, and other appropriate topics.*
3. ***Weekly 3 Week Schedule****: All Supervision comes together to schedule the next 3 weeks of work and discuss solutions to any potential conflicts. This occurs weekly to ensure we identify conflicts in enough time to properly address them.*
4. ***Weekly Safety, Quality, and Environmental Meeting:*** *This meeting is for our Salaried Supervision and is intended to train on Kiewit's expectations and best practices considering Safety, Quality, and Environmental. We share the results of our weekly inspections, learn from our failures and celebrate our successes*
5. ***Weekly Foremen Safety Meetings:*** *This meeting is for our Foremen and is intended to train on Kiewit's expectations and best practices considering Safety, Quality, and Environmental from the Foremen's perspective. We share the results of our weekly inspections, learn from our failures, and celebrate our successes. This is also an opportunity for Kiewit's Management to listen to our Foremen for advice on what adjustments need made to our Safety, Quality, and Environmental programs.*

(3) How often do you conduct project safety inspections? Who conducts these inspections? If you do not, why not?

Response:

1. *Our Foremen and Supervisors perform safety inspections of their work area on a daily basis.*
2. *Our Management performs site safety inspections on a daily basis.*
3. *Our Safety Managers perform site safety inspections on a daily basis.*
4. *Our offsite District Safety Manager performs site safety inspection on a regular basis.*
5. *Our offsite Management performs site safety inspections throughout the life of the Project.*
6. *We also have a formal safety walk performed by a selected Supervisor on a weekly basis. The results of this safety walk are shared and discussed during our project meetings described earlier.*

(4) Please describe your written safety program. If you do not have one, explain why.

Response: Kiewit's written safety program illustrates our compliance with all state, federal, and local laws in addition to the programs and policies that aid in our ability to ensure NOBODY GETS HURT. This written safety program includes our Safety Vision and also the following sections:

1.0 Safety Policy Statement
2.0 Project Safety Plans
3.0 Emergency Procedures
4.0 Crisis Management
5.0 Substance Abuse Program
6.0 Personal Protective Equipment
7.0 Respiratory Protection Program
8.0 Inspections
9.0 Incident Investigation and Reporting
10.0 Subcontractor Safety
11.0 Record Keeping Injury
12.0 Accountability and Disciplinary Action
13.0 Hazard Recognition And Mitigation
14.0 Housekeeping
15.0 Safety Indoctrination
16.0 Confined Space
17.0 Equipment Safety
18.0 Crane Safety Policy
19.0 Electrical Safety
20.0 Lockout / Tagout
21.0 Ergonomics
22.0 Excavations and Trenches
23.0 Location of Underground Utilities
24.0 Fall Prevention and Protection
25.0 Fire Protection and First Aid Supplies
26.0 Cutting and Welding
27.0 Hazard Communication
28.0 Thermal Stress
29.0 Night Work
30.0 Scaffolding
31.0 Ladders, Stairways, and Access
32.0 Sanitation
33.0 Hearing Protection
34.0 Material Handling and Storage
35.0 Concrete Construction
36.0 Hand and Power Tools
37.0 Hazardous Materials
38.0 Abrasive Blasting
39.0 Radiation
40.0 Lead Management
41.0 Bloodborne Pathogens
42.0 Benzene
43.0 Asbestos
44.0 Overhead Power Lines & Equipment (NOT Including Cranes)
45.0 Marine Safety

(5) Please describe your preferred methods for securing worksites in urban environments, including as such methods may promote the safety of members of the local community.

Response: Kiewit has many preferred methods for securing worksites in urban environments and all of them require careful consideration depending on the location and associated safety risks to both parties. Kiewit's preferred methods include but are not limited to the following:

1. *Temporary fencing and privacy screens*
2. *Security services*
3. *Flaggers*
4. *Crew escorts*
5. *Control of materials and other deliveries to the Project Site*
6. *Lighting schemes*
7. *Traffic signalization systems*
8. *Job-site access procedures including identification stickers for construction personnel and visitors*

(6) Please describe your orientation or training program for new hires and for newly promoted individuals (including foremen), including any safety related elements. If you do not have such a program, explain why.

Response:

Employee Safety Indoctrination

Safety of our employees is our primary concern. This commitment must be impressed upon each new hire from the first day of their employment. As part of our Nobody Gets Hurt indoctrination, prospective employees are required to first undergo a pre-employment drug test and complete company required paperwork. Once successfully completed, the employee will continue in the four-step indoctrination. Our indoctrination is designed to welcome employees to the job and to help develop a "Speak Up and Make a Difference" attitude.

Active Employees

Employees transferred from other projects will be indoctrinated on the project-specific safety plan.

New Hire Employee:

1. *Designated person identified in project-specific safety plan will:*

    a. *Ensure that the drug test, with a non-positive result, has been completed by prospective employee.*
    b. *After successful completion of the above, have employee fill out the required paperwork using the new employee indoctrination checklist which can be found on the District's Portal Site.*
    c. *Explain the four-step orientation.*
    d. *Give the employee a copy of the "Keys to Safety Excellence" and communicate what they are.*
    e. *Project-specific safety plan.*
    f. *Distribute the basic personal protective equipment (PPE).*
    g. *Go over the Prescription Safety Glasses Policy with the new employee.*
    h. *Gather the new employee indoctrination checklist and place them in the employee's file once the Foreman and Superintendent have completed their sections.*

2. *Job Superintendent*

    The Job Superintendent is the key to the execution of the orientation program. They must impress on the new employee what "Nobody Gets Hurt" is.

    The Superintendent must ensure each employee leaves their portion of the orientation knowing safety is our primary concern.

    The Superintendent shall use the new employee indoctrination checklist to complete the following.

    The Superintendent shall:

    a. *Explain details of the job and the important role the new employee will play in the construction of the project.*
    b. *Review safety expectations, site-specific or unique safety concerns, and safety procedures on our project.*
    c. *Obtain a commitment from the employee that they will actively help to prevent injuries by being a member of the "Nobody Gets Hurt" team.*
    d. *Provide a work assignment. They will take into consideration any reasonable accommodation the employee may require.*
    e. *Go over our basic safety rules and explain our commitment to working each day injury-free.*
    f. *Explain Kiewit's injury and accident reporting procedures.*

g. *Take the new employee to their Foreman.*
h. *Give the checklist to the employee's Foreman.*

3. *Foreman*

Central District Foremen are a new employee's role model, mentor, and most immediate supervisor. Therefore, new employee's Foremen play the greatest role in molding the employee into someone that believes in and fully understands what we mean by "Nobody Gets Hurt".

The Foreman shall:

a. *Describe the work to the employee and go over the work plan/hazard analysis and Crew Communicator.*
b. *Introduce them to the members of the crew.*
c. *Describe the emergency procedures and accident/injury reporting.*
d. *Show the new employee the first aid kit, fire extinguishers, bathroom facilities, drinking water, telephone/radio, and employee parking areas.*
e. *Constantly monitor the new employee for the first few weeks to insure they are working safety.*
f. *Explain their personnel expectations of his/her employees.*
g. *Once complete, turn the paper work in to their Superintendent.*

4. *30-Day Follow Up*

a. *After 30 days of employment the new employee's Job Superintendent will go over the 30-day follow-up questionnaire.*
b. *Take the time to answer any questions the employee has and thoroughly explain any wrong answers they give.*
c. *Turn in the follow-up questionnaire into the designated person.*

(7) With respect to no. (6) above, for any program that relates to foremen, indicate whether it includes instruction on the following:

Topic	Yes	No
Safety Work Practices	☒	☐
Safety Supervision	☒	☐
On-site Meetings	☒	☐
Emergency Procedures	☒	☐
Accident Investigation	☒	☐
Fire Protection and Prevention	☒	☐
New Worker Orientation	☒	☐

(8) How often does your entity hold safety meetings which extend to the laborer level, and how does this vary by type of project? If you do not hold such meetings, explain why not.

Response: Kiewit holds safety meetings that extend to the laborer level on a daily basis. Our safety meetings that include our laborer level are as follows:

1. ***Daily Crew Communicator Meetings****: This meeting allows our Foremen and Superintendents to communicate the plan for the day to our Craft Employees. During this meeting Safety, Quality, and the day's activities are discussed.*
2. ***Safety Stand Downs****: These occur on a regular basis to communicate new safety focus initiatives and sometimes lessons learned from around the Kiewit Company*
3. ***Monthly Mass Safety Meetings:*** *These meetings include all project personnel including our Subcontractors. This meeting is used to conduct safety training, share best practices and celebrate safety successes.*

(9) Please explain any program or written practices that expressly address the safety of the traveling public and the safety of personnel within the construction area. If the entity has no such program or practices, explain why not.

Response:

Traffic Control Plan

Kiewit will ensure all traffic control devices are installed and maintained in accordance with the Manual on Uniform Traffic Control Devices.

A. Traffic Control Plans

No operation requiring traffic control will begin without a Maintenance of Traffic (MOT) plan. The plan shall be incorporated into the operations work plan and reviewed with the crew prior to beginning the operation.

The Traffic Control Plan must include at a minimum:

- *A detailed drawing that shows the location of all traffic control devices.*
- *Method, length, and time duration of all lane closures.*
- *Location of flaggers and time duration of flagging operations.*
- *Proposed date of the MOT plan implementation and anticipated duration.*
- *A tabulation of traffic control devices shown.*

Each MOT set-up will be photographed or videotaped each time it is setup and/or changed.

B. Daily Traffic Control Report

A Daily Traffic Control Report will be maintained whenever permanent or temporary traffic control devices are in use (this includes days when the work is "shut down"). The Traffic Control Supervisor will maintain the Daily Traffic Control Report. The Daily Traffic Control Report will include the following information:

- ***TCS/Acting TCS Name:*** *The name of the person who inspected the TCS setup. The amount of time the TCS was on the job and the names of any traffic control assistants are to be recorded.*
- ***Inspection Date and Times:*** *The date and times of inspection for each MOT setup.*
- ***Weather Information:*** *Weather conditions during the shift the MOT is in use will be noted.*

- ***Operations:*** *A brief description of the operations under way and requiring traffic control during the shift will be noted.*

- ***Traffic Control Devices:*** *A MOT sketch will be made to indicate the type, number, and location of each traffic control device. For permanent traffic control setups the Daily Traffic Control Report may simply refer to the MOT as long as the MOT includes a current layout drawing and any changes in the number of traffic control devices are noted on the Daily Traffic Control Report.*

- ***Pavement Markings:*** *The Daily Traffic Control Report will document any removal of pavement markings during the shift as well the installation of temporary pavement markings.*

- ***Inspection Observations:*** *The Daily Traffic Control Report will detail any missing or damaged traffic control devices as well as document any maintenance or corrective action taken during inspections.*

- ***Diary:*** *The TCS /Acting TCS will include a comprehensive Daily Diary detailing the use of traffic control devices and methods; flagging (flagger names, locations and hours worked); incidents involving traffic control and traffic control personnel; contacts with non-contractor personnel; and other pertinent information related to traffic control.*

C. *Traffic Control Supervisor Responsibilities*

In addition to the duties described above, the Traffic Control Supervisor shall document all traffic incidents that occur on the contract. This documentation will include all incidents that occur within the contract limits regardless of whether there is apparent contract involvement in the incident or not. This documentation should include photographs of the incident scene, police reports, witness statements, and a description of the traffic control in place at the time of the incident. The TCS will create a separate file for each incident, containing collected documentation, including the Daily Traffic Control Report. The Traffic Control Engineer will maintain these files.

D. *Night Operations and Work Within Traffic Control*

Operations with night activities will have a written plan that addresses safety issues of working at night.

Retro-reflectivity

- *All equipment used in the work zone shall have DOT-approved reflective material placed to increase the visibility of the equipment.*
- *All reflective surfaces shall be cleaned as required so that the reflectivity of the material is not degraded. Any areas of reflective surface that are damaged or obscured will be replaced.*
- *Personnel working at night will wear Class III retro-reflective vests at a minimum. The reflective bands on vests will be vertical and horizontal around the entire upper body.*
- *Additional measures such as reflective tape on their hardhats, white disposable coveralls, reflective bands, and personal battery-operated strobe lights may be used when practical.*

Illumination

Whenever feasible and practical, light plants will be used to illuminate the work area. On mobile operations, additional lighting on equipment may be used to illuminate the work area.

- *All equipment shall, at a minimum, have working strobe or warning beacon lights.*
- *All equipment shall have working lights confirmed through daily visuals.*
- *All flag persons will be placed in illuminated areas only.*

- *All lighting is to be checked after setup to ensure that it is not blinding approaching traffic or other equipment in the work zone.*

Communication

Prior to the start of any night operation, a detailed Hazard Analysis will be made addressing the possible hazards of night work. The Hazard Analysis will be covered with the crews and updated as needed. At the start of each shift, the Daily Safety Reminder will be used to reaffirm the provisions of the night work requirements as found in the hazard analysis and this policy.

The hazard analysis should also provide for:

- *The selection of a competent person responsible for maintaining surveillance on the work area to alert other workers of vehicles entering the work zone.*
- *A method to signal workers when vehicles enter the work zone.*
- *A system to account for workers at all times, which may include a buddy system.*
- *Emergency communication or warning signals used by a worker, such as a radio, signal horn, or whistle, which will be used to call for help.*

Attenuator Vehicles

Jobs will consider the use of an attenuator truck or pickup truck immediately ahead of workers in a work zone. The vehicle of choice should be placed to provide the best protection for workers. The tires should be placed so that if struck it will turn away from workers, but not into live traffic either.

(10) Please describe any differences between the entity's standard or typical safety program or practices as described in your responses to (1) through (9) above and (a) the entity's safety program or practices on projects similar to this Project in size and scope and/or (b) the anticipated safety program or practices for this Project as may be preliminarily anticipated in the statement of technical approach included in the SOQ in accordance with Section 5 of the Volume 1 Requirements.

Response: Kiewit has successfully worked on several large highway design build programs throughout the nation. Working together with our partners, we believe we have the advantage of influencing and mitigating safety risks early in every stage of work, for both public and worker exposure.

FORM G: SAFETY QUESTIONNAIRE

Proposer Name: Kiewit-Meridiam Partners
Name of Team Member: Kiewit Infrastructure Co.
Role on Proposer:
☒ Lead Contractor
☐ Lead Engineer
☐ Lead Operator
☐ Joint venturer in Lead

Form G: Safety Questionnaire

A. Required Statistics

(1) Please provide the following information:

Data Series	2011	2012	2013	2014
Fatalities				
Total Number of Fatalities (Workers):	0	0	0	0
Fatal Injury Rate:	0.00	0.00	0.00	0.00
Total Number of Fatalities (Members of the Public):	0	0	0	0
Other Incidents				
Total Number of Non-fatal Recordable Cases:	11	4	5	5
- Cases with Days Away from Work:	2	3	2	1
- Cases with Job Transfer or Restriction:	1	0	2	0
- Other Non-fatal Recordable Cases:	8	1	1	4
OSHA Incident Rate:	1.01	0.47	0.32	0.53
DART Rate:	0.28	0.35	0.25	0.11
Total Number of Non-fatal Injuries to Members of the Public:	Not Recorded	Not Recorded	Not Recorded	Not Recorded
Lost Work Days				
Total Lost Work Days:	148	213	8	130
Lost Workday Index:	13.64	24.87	0.51	13.85
Cost of Accidents				
Cost of Accident per Employee:	$100.00	$100.00	$100.00	$100.00
Cost of Accidents involving Members of the Public:	Not Recorded	Not Recorded	Not Recorded	Not Recorded
Safety Metrics				
EMR:	0.5	0.55	0.54	0.54

Where:

(a) Fatal Injury Rate = (Number of fatal work injuries x 200,000,000) / total employee hours worked during the calendar year.

(b) Non-fatal Recordable Cases refers to non-fatal occupation injuries and illnesses for Heavy and Civil Engineering Construction, as defined by the North American Industry Classification System (NAICS 237).

(c) OSHA Incident Rate = (Number of cases of injury and illness x 200,000) / total employee hours worked during the calendar year.

(d) DART Rate = (Number of recordable incidents of injury or illness that resulted in days away (lost), restricted or transferred during the calendar year) / 100 full time employees.

(e) Lost Workday Index = (Number of lost workdays x 200,000) / total employee hours worked during the calendar year.

(f) Cost of Accident per Employee = Total cost of accidents / average number of employees.

(g) EMR refers to the National Council on Compensation Insurance (NCCI) Experience Modification

(h) Rating.

B. Questions Regarding Safety Record and Approach

(1) How is your entity's management included in the accident reduction process?

Response: Management's role in the accident reduction begins with our "Nobody Gets Hurt" Vision:

"Nobody Gets Hurt" means just that — no incidents and no injuries, no matter how seemingly minor. We all have family and friends who care about us and want us to stay safe at work. We also care about our coworkers and take seriously our responsibility to keep each other safe on the job. No matter what job you do, "Nobody Gets Hurt" applies to you. Embrace it; promote it; live by it. Nothing is more important o execute Kiewit's Vision Statement we use the following three principles:

4. *Employee Engagement at All Levels*
5. *Active Commitment by Management*
6. *The Tools We Use*

For this question we will expand on Active Commitment by Management

Kiewit Management has a special responsibility when it comes to safety. They must be actively, openly committed to safety. Management's level of commitment shows not only in their words but in their actions, and through using the tools that will create a safe workplace. Kiewit expects that Managers create an environment where people can't help but do the right thing every time. This is how Management's Commitment is demonstrated and how they are included in the accident reduction process.

(2) How often do you hold site meetings for supervisors for a typical Reference Project? If you do not hold meetings, why not?

Response: Our typical site meetings for supervisors include the following.

6. ***Daily Crew Communicator Meetings:*** *This meeting allows our Foremen and Superintendents to communicate the plan for the day to our Craft Employees. During this meeting Safety, Quality, and the day's activities are discussed.*
7. ***Daily Coordination Meeting:*** *This meeting allows our Supervisors to plan for the next day's work and communicate solutions to any potential conflicts. During this meeting every aspect of work is discussed, to include but not limited to: Safety, Quality, Environmental, Public Involvement, Work Sequence, Schedule, Equipment Maintenance, Work Location, and other appropriate topics.*
8. ***Weekly 3 Week Schedule****: All Supervision comes together to schedule the next 3 weeks of work and discuss solutions to any potential conflicts. This occurs weekly to ensure we identify conflicts in enough time to properly address them.*
9. ***Weekly Safety, Quality, and Environmental Meeting:*** *This meeting is for our Salaried Supervision and is intended to train on Kiewit's expectations and best practices considering Safety, Quality, and Environmental. We share the results of our weekly inspections, learn from our failures and celebrate our successes*
10. ***Weekly Foremen Safety Meetings:*** *This meeting is for our Foremen and is intended to train on Kiewit's expectations and best practices considering Safety, Quality, and Environmental from the Foremen's perspective. We share the results of our weekly inspections, learn from our failures, and celebrate our successes. This is also an opportunity for Kiewit's Management to listen to our Foremen for advice on what adjustments need made to our Safety, Quality, and Environmental programs.*

(3) How often do you conduct project safety inspections? Who conducts these inspections? If you do not, why not?

Response:

7. *Our Foremen and Supervisors perform safety inspections of their work area on a daily basis.*
8. *Our Management performs site safety inspections on a daily basis.*
9. *Our Safety Managers perform site safety inspections on a daily basis.*
10. *Our offsite District Safety Manager performs site safety inspection on a regular basis.*
11. *Our offsite Management performs site safety inspections throughout the life of the Project.*
12. *We also have a formal safety walk performed by a selected Supervisor on a weekly basis. The results of this safety walk are shared and discussed during our project meetings described earlier.*

(4) Please describe your written safety program. If you do not have one, explain why.

Response: Kiewit's written safety program illustrates our compliance with all state, federal, and local laws in addition to the programs and policies that aid in our ability to ensure NOBODY GETS HURT. This written safety program includes our Safety Vision and also the following sections:

1.0 Safety Policy Statement
2.0 Project Safety Plans
3.0 Emergency Procedures
4.0 Crisis Management
5.0 Substance Abuse Program
6.0 Personal Protective Equipment
7.0 Respiratory Protection Program
8.0 Inspections
9.0 Incident Investigation and Reporting
10.0 Subcontractor Safety
11.0 Record Keeping Injury
12.0 Accountability and Disciplinary Action
13.0 Hazard Recognition And Mitigation
14.0 Housekeeping
15.0 Safety Indoctrination
16.0 Confined Space
17.0 Equipment Safety
18.0 Crane Safety Policy
19.0 Electrical Safety
20.0 Lockout / Tagout
21.0 Ergonomics
22.0 Excavations and Trenches
23.0 Location of Underground Utilities
24.0 Fall Prevention and Protection
25.0 Fire Protection and First Aid Supplies
26.0 Cutting and Welding
27.0 Hazard Communication
28.0 Thermal Stress
29.0 Night Work
30.0 Scaffolding
31.0 Ladders, Stairways, and Access
32.0 Sanitation
33.0 Hearing Protection
34.0 Material Handling and Storage
35.0 Concrete Construction
36.0 Hand and Power Tools
37.0 Hazardous Materials
38.0 Abrasive Blasting
39.0 Radiation
40.0 Lead Management
41.0 Bloodborne Pathogens
42.0 Benzene
43.0 Asbestos
44.0 Overhead Power Lines & Equipment (NOT Including Cranes)
45.0 Marine Safety

(5) Please describe your preferred methods for securing worksites in urban environments, including as such methods may promote the safety of members of the local community.

Response: Kiewit has many preferred methods for securing worksites in urban environments and all of them require careful consideration depending on the location and associated safety risks to both parties. Kiewit's preferred methods include but are not limited to the following:

9. *Temporary fencing and privacy screens*
10. *Security services*
11. *Flaggers*
12. *Crew escorts*
13. *Control of materials and other deliveries to the Project Site*
14. *Lighting schemes*
15. *Traffic signalization systems*
16. *Job-site access procedures including identification stickers for construction personnel and visitors*

(6) Please describe your orientation or training program for new hires and for newly promoted individuals (including foremen), including any safety related elements. If you do not have such a program, explain why.

Response:

Employee Safety Indoctrination

Safety of our employees is our primary concern. This commitment must be impressed upon each new hire from the first day of their employment. As part of our Nobody Gets Hurt indoctrination, prospective employees are required to first undergo a pre-employment drug test and complete company required paperwork. Once successfully completed, the employee will continue in the four-step indoctrination. Our indoctrination is designed to welcome employees to the job and to help develop a "Speak Up and Make a Difference" attitude.

Active Employees

Employees transferred from other projects will be indoctrinated on the project-specific safety plan.

New Hire Employee:

3. *Designated person identified in project-specific safety plan will:*

    a. *Ensure that the drug test, with a non-positive result, has been completed by prospective employee.*
    b. *After successful completion of the above, have employee fill out the required paperwork using the new employee indoctrination checklist which can be found on the District's Portal Site.*
    c. *Explain the four-step orientation.*
    d. *Give the employee a copy of the "Keys to Safety Excellence" and communicate what they are.*
    e. *Project-specific safety plan.*
    f. *Distribute the basic personal protective equipment (PPE).*
    g. *Go over the Prescription Safety Glasses Policy with the new employee.*
    h. *Gather the new employee indoctrination checklist and place them in the employee's file once the Foreman and Superintendent have completed their sections.*

4. *Job Superintendent*

    The Job Superintendent is the key to the execution of the orientation program. They must impress on the new employee what "Nobody Gets Hurt" is.

    The Superintendent must ensure each employee leaves their portion of the orientation knowing safety is our primary concern.

    The Superintendent shall use the new employee indoctrination checklist to complete the following.

    The Superintendent shall:

    i. *Explain details of the job and the important role the new employee will play in the construction of the project.*
    j. *Review safety expectations, site-specific or unique safety concerns, and safety procedures on our project.*
    k. *Obtain a commitment from the employee that they will actively help to prevent injuries by being a member of the "Nobody Gets Hurt" team.*
    l. *Provide a work assignment. They will take into consideration any reasonable accommodation the employee may require.*
    m. *Go over our basic safety rules and explain our commitment to working each day injury-free.*
    n. *Explain Kiewit's injury and accident reporting procedures.*
    o. *Take the new employee to their Foreman.*
    p. *Give the checklist to the employee's Foreman.*

3. *Foreman*

    Central District Foremen are a new employee's role model, mentor, and most immediate supervisor. Therefore, new employee's Foremen play the greatest role in molding the employee into someone that believes in and fully understands what we mean by "Nobody Gets Hurt".

The Foreman shall:

h. *Describe the work to the employee and go over the work plan/hazard analysis and Crew Communicator.*
i. *Introduce them to the members of the crew.*
j. *Describe the emergency procedures and accident/injury reporting.*
k. *Show the new employee the first aid kit, fire extinguishers, bathroom facilities, drinking water, telephone/radio, and employee parking areas.*
l. *Constantly monitor the new employee for the first few weeks to insure they are working safety.*
m. *Explain their personnel expectations of his/her employees.*
n. *Once complete, turn the paper work in to their Superintendent.*

4. *30-Day Follow Up*

d. *After 30 days of employment the new employee's Job Superintendent will go over the 30-day follow-up questionnaire.*
e. *Take the time to answer any questions the employee has and thoroughly explain any wrong answers they give.*
f. *Turn in the follow-up questionnaire into the designated person.*

(7) With respect to no. (6) above, for any program that relates to foremen, indicate whether it includes instruction on the following:

Topic	Yes	No
Safety Work Practices	☒	☐
Safety Supervision	☒	☐
On-site Meetings	☒	☐
Emergency Procedures	☒	☐
Accident Investigation	☒	☐
Fire Protection and Prevention	☒	☐
New Worker Orientation	☒	☐

(8) How often does your entity hold safety meetings which extend to the laborer level, and how does this vary by type of project? If you do not hold such meetings, explain why not.

Response: Kiewit holds safety meetings that extend to the laborer level on a daily basis. Our safety meetings that include our laborer level are as follows:

4. ***Daily Crew Communicator Meetings****: This meeting allows our Foremen and Superintendents to communicate the plan for the day to our Craft Employees. During this meeting Safety, Quality, and the day's activities are discussed.*
5. ***Safety Stand Downs****: These occur on a regular basis to communicate new safety focus initiatives and sometimes lessons learned from around the Kiewit Company*

6. ***Monthly Mass Safety Meetings:*** *These meetings include all project personnel including our Subcontractors. This meeting is used to conduct safety training, share best practices and celebrate safety successes.*

(9) Please explain any program or written practices that expressly address the safety of the traveling public and the safety of personnel within the construction area. If the entity has no such program or practices, explain why not.

Response:

Traffic Control Plan

Kiewit will ensure all traffic control devices are installed and maintained in accordance with the Manual on Uniform Traffic Control Devices.

E. Traffic Control Plans

No operation requiring traffic control will begin without a Maintenance of Traffic (MOT) plan. The plan shall be incorporated into the operations work plan and reviewed with the crew prior to beginning the operation.

The Traffic Control Plan must include at a minimum:

- *A detailed drawing that shows the location of all traffic control devices.*
- *Method, length, and time duration of all lane closures.*
- *Location of flaggers and time duration of flagging operations.*
- *Proposed date of the MOT plan implementation and anticipated duration.*
- *A tabulation of traffic control devices shown.*

Each MOT set-up will be photographed or videotaped each time it is setup and/or changed.

F. Daily Traffic Control Report

A Daily Traffic Control Report will be maintained whenever permanent or temporary traffic control devices are in use (this includes days when the work is "shut down"). The Traffic Control Supervisor will maintain the Daily Traffic Control Report. The Daily Traffic Control Report will include the following information:

- ***TCS/Acting TCS Name:*** *The name of the person who inspected the TCS setup. The amount of time the TCS was on the job and the names of any traffic control assistants are to be recorded.*
- ***Inspection Date and Times:*** *The date and times of inspection for each MOT setup.*
- ***Weather Information:*** *Weather conditions during the shift the MOT is in use will be noted.*
- ***Operations:*** *A brief description of the operations under way and requiring traffic control during the shift will be noted.*
- ***Traffic Control Devices:*** *A MOT sketch will be made to indicate the type, number, and location of each traffic control device. For permanent traffic control setups the Daily Traffic Control Report may simply refer to the MOT as long as the MOT includes a current layout drawing and any changes in the number of traffic control devices are noted on the Daily Traffic Control Report.*
- ***Pavement Markings:*** *The Daily Traffic Control Report will document any removal of pavement markings during the shift as well the installation of temporary pavement markings.*

- ***Inspection Observations:*** *The Daily Traffic Control Report will detail any missing or damaged traffic control devices as well as document any maintenance or corrective action taken during inspections.*

- ***Diary:*** *The TCS /Acting TCS will include a comprehensive Daily Diary detailing the use of traffic control devices and methods; flagging (flagger names, locations and hours worked); incidents involving traffic control and traffic control personnel; contacts with non-contractor personnel; and other pertinent information related to traffic control.*

G. *Traffic Control Supervisor Responsibilities*

In addition to the duties described above, the Traffic Control Supervisor shall document all traffic incidents that occur on the contract. This documentation will include all incidents that occur within the contract limits regardless of whether there is apparent contract involvement in the incident or not. This documentation should include photographs of the incident scene, police reports, witness statements, and a description of the traffic control in place at the time of the incident. The TCS will create a separate file for each incident, containing collected documentation, including the Daily Traffic Control Report. The Traffic Control Engineer will maintain these files.

H. *Night Operations and Work Within Traffic Control*

Operations with night activities will have a written plan that addresses safety issues of working at night.

Retro-reflectivity

- *All equipment used in the work zone shall have DOT-approved reflective material placed to increase the visibility of the equipment.*
- *All reflective surfaces shall be cleaned as required so that the reflectivity of the material is not degraded. Any areas of reflective surface that are damaged or obscured will be replaced.*
- *Personnel working at night will wear Class III retro-reflective vests at a minimum. The reflective bands on vests will be vertical and horizontal around the entire upper body.*
- *Additional measures such as reflective tape on their hardhats, white disposable coveralls, reflective bands, and personal battery-operated strobe lights may be used when practical.*

Illumination

Whenever feasible and practical, light plants will be used to illuminate the work area. On mobile operations, additional lighting on equipment may be used to illuminate the work area.

- *All equipment shall, at a minimum, have working strobe or warning beacon lights.*
- *All equipment shall have working lights confirmed through daily visuals.*
- *All flag persons will be placed in illuminated areas only.*
- *All lighting is to be checked after setup to ensure that it is not blinding approaching traffic or other equipment in the work zone.*

Communication

Prior to the start of any night operation, a detailed Hazard Analysis will be made addressing the possible hazards of night work. The Hazard Analysis will be covered with the crews and updated as needed. At the start of each shift, the Daily Safety Reminder will be used to reaffirm the provisions of the night work requirements as found in the hazard analysis and this policy.

The hazard analysis should also provide for:

- *The selection of a competent person responsible for maintaining surveillance on the work area to alert other workers of vehicles entering the work zone.*

- *A method to signal workers when vehicles enter the work zone.*
- *A system to account for workers at all times, which may include a buddy system.*
- *Emergency communication or warning signals used by a worker, such as a radio, signal horn, or whistle, which will be used to call for help.*

Attenuator Vehicles

Jobs will consider the use of an attenuator truck or pickup truck immediately ahead of workers in a work zone. The vehicle of choice should be placed to provide the best protection for workers. The tires should be placed so that if struck it will turn away from workers, but not into live traffic either.

(10) Please describe any differences between the entity's standard or typical safety program or practices as described in your responses to (1) through (9) above and (a) the entity's safety program or practices on projects similar to this Project in size and scope and/or (b) the anticipated safety program or practices for this Project as may be preliminarily anticipated in the statement of technical approach included in the SOQ in accordance with Section 5 of the Volume 1 Requirements.

Response: Kiewit has successfully worked on several large highway design build programs throughout the nation. Working together with our partners, we believe we have the advantage of influencing and mitigating safety risks early in every stage of work, for both public and worker exposure.

FORM G: SAFETY QUESTIONNAIRE

Proposer Name: Kiewit-Meridiam Partners
Name of Team Member: Parsons Brinkerhoff, Inc.
Role on Proposer:

- ☐ Lead Contractor
- ☐ Lead Engineer
- ☐ Lead Operator
- ☒ Joint venturer in Lead Engineer: Parsons Brinckerhoff, Inc.

Form G: Safety Questionnaire

A. Required Statistics

(1) Please provide the following information:

Data Series	2011	2012	2013	2014
Fatalities				
Total Number of Fatalities (Workers):	0	0	0	0
Fatal Injury Rate:	0	0	0	0
Total Number of Fatalities (Members of the Public):	0	0	0	0
Other Incidents				
Total Number of Non-fatal Recordable Cases:	27	19	25	26
- Cases with Days Away from Work:	5	5	7	5
- Cases with Job Transfer or Restriction:	2	1	5	3
- Other Non-fatal Recordable Cases:	20	13	16	18
OSHA Incident Rate:	0.49	0.38	0.49	0.36
DART Rate:	0.04	0.10	0.14	0.11
Total Number of Non-fatal Injuries to Members of the Public:	0	0	0	0
Lost Work Days				
Total Lost Work Days:	105	56	206	100
Lost Workday Index:	1.9	1.1	4.1	1.4
Cost of Accidents				
Cost of Accident per Employee:	$93.93	$23.58	$19.60	$6.01*
Cost of Accidents involving Members of the Public:	N/A	N/A	N/A	N/A
Safety Metrics				
EMR:	0.66	0.65	0.72	0.66

*based on closed incidents

Where:

(a) Fatal Injury Rate = (Number of fatal work injuries x 200,000,000) / total employee hours worked during the calendar year.

(b) Non-fatal Recordable Cases refers to non-fatal occupation injuries and illnesses for Heavy and Civil Engineering Construction, as defined by the North American Industry Classification System (NAICS 237).

(c) OSHA Incident Rate = (Number of cases of injury and illness x 200,000) / total employee hours worked during the calendar year.

(d) DART Rate = (Number of recordable incidents of injury or illness that resulted in days away (lost), restricted or transferred during the calendar year) / 100 full time employees.

(e) Lost Workday Index = (Number of lost workdays x 200,000) / total employee hours worked during the calendar year.

(f) Cost of Accident per Employee = Total cost of accidents / average number of employees.

(g) EMR refers to the National Council on Compensation Insurance (NCCI) Experience Modification

(h) Rating.

B. Questions Regarding Safety Record and Approach

(1) How is your entity's management included in the accident reduction process?

Response: Monthly reporting, incident investigation based on potential severity, audits.

(2) How often do you hold site meetings for supervisors for a typical Reference Project? If you do not hold meetings, why not?

Response: Weekly or monthly—most of our employees are in our offices and not in project offices.

(3) How often do you conduct project safety inspections? Who conducts these inspections? If you do not, why not?

Response: We audit to ISO9001 and OHSAS 18001 requirements. We conduct office inspections annually and on projects as required.

(4) Please describe your written safety program. If you do not have one, explain why.

Response: Our safety program is part of our ISO9001 program with internal and external audits. Our safety program meets OHSAS 18001 requirements. We also require written project safety plans for all fieldwork.

(5) Please describe your preferred methods for securing worksites in urban environments, including as such methods may promote the safety of members of the local community.

Response: We do not have remote work sites. Our work is generally done out of our offices in regional locations. Our work is design professional services and CM.

(6) Please describe your orientation or training program for new hires and for newly promoted individuals (including foremen), including any safety related elements. If you do not have such a program, explain why.

Response: We conduct in-person H&S orientation as well as site-specific orientation. We have our own PB University online that contains over 100 safety modules for additional training. We also have specific task training as well as 10-hour OSHA instructors on staff.

(7) With respect to no. (6) above, for any program that relates to foremen, indicate whether it includes instruction on the following:

We do not have any foremen or field-type labor.

Topic	Yes	No
Safety Work Practices	☐	☒
Safety Supervision	☐	☒
On-site Meetings	☐	☒
Emergency Procedures	☐	☒
Accident Investigation	☐	☒
Fire Protection and Prevention	☐	☒
New Worker Orientation	☐	☒

(8) How often does your entity hold safety meetings which extend to the laborer level, and how does this vary by type of project? If you do not hold such meetings, explain why not.

Response: We do not have laborers on staff.

(9) Please explain any program or written practices that expressly address the safety of the traveling public and the safety of personnel within the construction area. If the entity has no such program or practices, explain why not.

Response: We do not have or maintain construction areas.

(10) Please describe any differences between the entity's standard or typical safety program or practices as described in your responses to (1) through (9) above and (a) the entity's safety program or practices on projects similar to this Project in size and scope and/or (b) the anticipated safety program or practices for this Project as may be preliminarily anticipated in the statement of technical approach included in the SOQ in accordance with Section 5 of the Volume 1 Requirements.

Response: As designers, we adhere to our safety program and the safety program of the entity controlling the worksite or client site.

FORM G: SAFETY QUESTIONNAIRE

Proposer Name: Kiewit-Meridiam Partners
Name of Team Member: Jacobs Engineering Group Inc.
Role on Proposer:

- ☐ Lead Contractor
- ☐ Lead Engineer
- ☐ Lead Operator
- ☒ Joint venturer in Lead Engineer: Jacobs Engineering Group Inc.

Form G: Safety Questionnaire

A. Required Statistics

(1) Please provide the following information:

Data Series	2011	2012	2013	2014
Fatalities				
Total Number of Fatalities (Workers):	0	0	0	0
Fatal Injury Rate:	0	0	0	0
Total Number of Fatalities (Members of the Public):	0	0	0	0
Other Incidents				
Total Number of Non-fatal Recordable Cases:	22	18	17	10
- Cases with Days Away from Work:	7	5	4	2
- Cases with Job Transfer or Restriction:	3	7	3	4
- Other Non-fatal Recordable Cases:	0	0	0	0
OSHA Incident Rate:	0.76	0.67	0.60	0.36
DART Rate:	0.10	0.26	0.11	0.14
Total Number of Non-fatal Injuries to Members of the Public:	Not Recorded	Not Recorded	Not Recorded	Not Recorded
Lost Work Days				
Total Lost Work Days:	87	21	240	29
Lost Workday Index:	0.24	0.19	0.14	0.07
Cost of Accidents				
Cost of Accident per Employee:	Not Recorded	Not Recorded	Not Recorded	Not Recorded
Cost of Accidents involving Members of the Public:	Not Recorded	Not Recorded	Not Recorded	Not Recorded
Safety Metrics				
EMR:	0.65	0.56	0.51	0.50

Where:

(a) Fatal Injury Rate = (Number of fatal work injuries x 200,000,000) / total employee hours worked during the calendar year.

(b) Non-fatal Recordable Cases refers to non-fatal occupation injuries and illnesses for Heavy and Civil Engineering Construction, as defined by the North American Industry Classification System (NAICS 237).

(c) OSHA Incident Rate = (Number of cases of injury and illness x 200,000) / total employee hours worked during the calendar year.

(d) DART Rate = (Number of recordable incidents of injury or illness that resulted in days away (lost), restricted or transferred during the calendar year) / 100 full time employees.

(e) Lost Workday Index = (Number of lost workdays x 200,000) / total employee hours worked during the calendar year.

(f) Cost of Accident per Employee = Total cost of accidents / average number of employees.

(g) EMR refers to the National Council on Compensation Insurance (NCCI) Experience Modification.

(h) Rating.

B. Questions Regarding Safety Record and Approach

(1) How is your entity's management included in the accident reduction process?

Response: Jacobs Accident Reduction process is supported from the most senior levels within the company. Every level from the CEO to all levels of management is expected to achieve a zero incident project. Jacobs is one of only nine companies that have achieved Voluntary Protection Programs (VPP) status from OSHA for our corporate safety culture and program.

(2) How often do you hold site meetings for supervisors for a typical Reference Project? If you do not hold meetings, why not?

Response: In a project such as this, as designer/engineer we will hold monthly safety meetings with our staff internally, as well as participate in our GC's weekly and daily safety briefings for staff on site. We will do daily "Safe Plans of Action" prior to all field or driving activities.

(3) How often do you conduct project safety inspections? Who conducts these inspections? If you do not, why not?

Response: In the role of designer/engineer, we will work in conjunction with our GC partner to conduct regular site inspections and provide value to our GC partner. These inspections will be coordinated by Regional Safety Manager Connie Krier, in concert with our GC partner's safety manager assigned to the project.

(4) Please describe your written safety program. If you do not have one, explain why.

Response: Jacobs' written safety program is robust and encompasses all the work lines and business units. The written programs were reviewed and audited by OSHA as part of VPP application and designation.

(5) Please describe your preferred methods for securing worksites in urban environments, including as such methods may promote the safety of members of the local community.

Response: As part of the design/engineer team, we will work together with our GC partner to help design safety into our work plans. Whenever possible, in the design phase we will work together with our GC to review look-ahead schedules and design plans, and include the safety managers to mitigate construction work and public interface issues. We will help to design pedestrian walkways, traffic control plans, and to plan for advance communications with the public.

(6) Please describe your orientation or training program for new hires and for newly promoted individuals (including foremen), including any safety related elements. If you do not have such a program, explain why.

Response: All new hires to Jacobs are required to go through New Hire Safety Orientation, Defensive Driving Training, Globally Harmonized System (GHS) Training, Office Safety Training and OSHA 10 if going to a job site. Job-specific hazards are identified in our site-specific safety programs and additional training is identified prior to the start of work if needed.

(7) With respect to no. (6) above, for any program that relates to foremen, indicate whether it includes instruction on the following:

Topic	Yes	No
Safety Work Practices	☒	☐
Safety Supervision	☒	☐
On-site Meetings	☒	☐
Emergency Procedures	☒	☐
Accident Investigation	☒	☐
Fire Protection and Prevention	☒	☐
New Worker Orientation	☒	☐

(8) How often does your entity hold safety meetings which extend to the laborer level, and how does this vary by type of project? If you do not hold such meetings, explain why not.

Response: For office staff on a design project, a minimum of monthly safety meetings will be held. For any staff located outside of the main office on a project location, a minimum of weekly safety

meeting will be held with all staff on site. When working with our GC, our staff will participate in daily safety meetings held by our GC partner.

(9) Please explain any program or written practices that expressly address the safety of the traveling public and the safety of personnel within the construction area. If the entity has no such program or practices, explain why not.

Response: It is our practice to work with the GC to mitigate interface with public traffic as much as possible through work phasing and design stages. Moving the traveling public away from work zones for the safety of both the public and the construction work force is our best practice. Jacobs provides training for all staff working "adjacent to live traffic" to understand the hazards and safe zones associated with that type of work.

(10) Please describe any differences between the entity's standard or typical safety program or practices as described in your responses to (1) through (9) above and (a) the entity's safety program or practices on projects similar to this Project in size and scope and/or (b) the anticipated safety program or practices for this Project as may be preliminarily anticipated in the statement of technical approach included in the SOQ in accordance with Section 5 of the Volume 1 Requirements.

Response: Jacobs has successfully worked on many large highway design build programs throughout the nation, working together with our GC partner, we believe we have the advantage of influencing and mitigating safety risks early in the design stages of work, for both public and worker exposure.

FORM G: SAFETY QUESTIONNAIRE

Proposer Name: Kiewit-Meridiam Partners
Name of Team Member: Roy Jorgensen Associates, Inc.
Role on Proposer:

- ☐ Lead Contractor
- ☐ Lead Engineer
- ☐ Lead Operator
- ☒ Joint venturer in Lead Operator: Roy Jorgensen Associates, Inc.

Form G: Safety Questionnaire

A. Required Statistics

(1) Please provide the following information:

Data Series	2011	2012	2013	2014
Fatalities				
Total Number of Fatalities (Workers):	0	0	0	0
Fatal Injury Rate:	0	0	0	0
Total Number of Fatalities (Members of the Public):	0	0	0	0
Other Incidents				
Total Number of Non-fatal Recordable Cases:	28	35	13	32
- Cases with Days Away from Work:	11	14	8	10
- Cases with Job Transfer or Restriction:	17	7	5	15
- Other Non-fatal Recordable Cases:	0	14	0	7
OSHA Incident Rate:	7.77	9.12	2.73	6.63
DART Rate:	8.23	5.6	2.77	5.55
Total Number of Non-fatal Injuries to Members of the Public:	0	0	0	0
Lost Work Days				
Total Lost Work Days:	490	236	55	37
Lost Workday Index:	136	61.5	11.5	7.67
Cost of Accidents				
Cost of Accident per Employee:	533	395	614	883
Cost of Accidents involving Members of the Public:	0	0	0	0
Safety Metrics				
EMR:	1.22	.93	1.08	1.29

Where:

(a) Fatal Injury Rate = (Number of fatal work injuries x 200,000,000) / total employee hours worked during the calendar year.
(b) Non-fatal Recordable Cases refers to non-fatal occupation injuries and illnesses for Heavy and Civil Engineering Construction, as defined by the North American Industry Classification System (NAICS 237).
(c) OSHA Incident Rate = (Number of cases of injury and illness x 200,000) / total employee hours worked during the calendar year.
(d) DART Rate = (Number of recordable incidents of injury or illness that resulted in days away (lost), restricted or transferred during the calendar year) / 100 full time employees.
(e) Lost Workday Index = (Number of lost workdays x 200,000) / total employee hours worked during the calendar year.
(f) Cost of Accident per Employee = Total cost of accidents / average number of employees.
(g) EMR refers to the National Council on Compensation Insurance (NCCI) Experience Modification Rating.

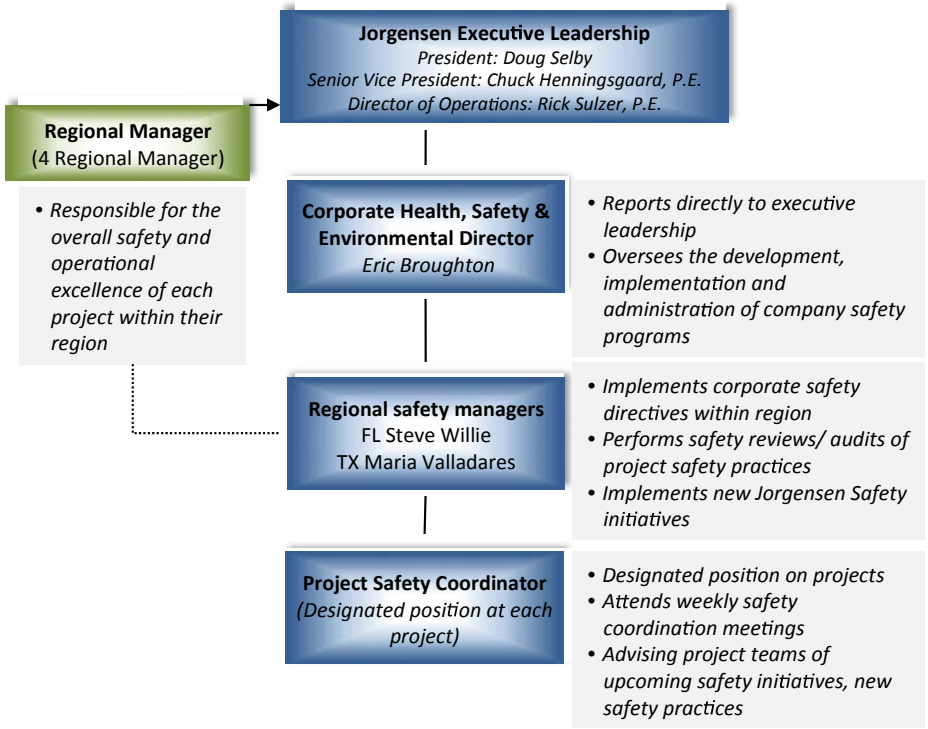
B. Questions Regarding Safety Record and Approach

(1) How is your entity's management included in the accident reduction process?

Response: Jorgensen's execution of O&M works is primarily self-performed. While this approach promotes quality, it also increases exposure of Jorgensen staff to high risk working environments of high speed and high volume traffic. For this reason safety and accident reduction policies, practices, and general safety management follows a top down approach.

Jorgensen Executive Leadership, who have the ultimate responsibility for the health and safety of each Jorgensen employee, developed and manage a safety unit. This unit comprised of certified and qualified leaders in safety is solely dedicated to creating and implementing safety programs, practices, and methodologies with the main goal of continuously reducing and preventing accidents and accident potential.

The division's daily functions are led by the Corporate Health, Safety and Environmental Director. Together with the Regional Safety Managers, the Company's core safety program is refined to maximize safety efforts and minimize accidents with final



Jorgensen's Safety Division Organizational Chart

approval by the Executive Leadership. The Regional Safety Manager position not only aids in creating these practices but is instrumental in working with individual project management teams, within their region, to implement the policies and practices.

The Project Safety Coordinator is a designated position at each project chosen by Regional Safety Manager. This position serves as the daily tie between project operations and the Safety Division, the goal being to continuously update and remind all project staff of safety policies and practices to reduce accidents. By the 10th of each month a "Monthly Safety Report" is provided to executive leadership. A subsequent meeting is held on the 3rd Thursday of the each month with executive leadership, Regional Safety Managers, and the Regional Managers to review four areas being measured: workman's compensation, auto accident, general liability and property damage claims. Each incident in the monthly safety report will be discussed and reviewed to cover what happened, detailing any specific safety violations, what disciplinary action was taken if any, and what corrective action was taken.

Another program initiative is the SIREN (Safety Incident Report Notification) Alerts. These alerts are immediately sent by email from the Regional Safety Managers to management and executive leadership to be alerted of an incident with a brief incident detail. This allows for management to collaborate immediately upon notification and decide what if any post-incident effort is needed.

Accident reduction is performed through the implementation of key safety initiatives based on categorization of accident types, Categorization of accidents allows us to isolate the root cause of the accident and create and implement an approach to mitigate this moving forward. We have categorized accidents within 3 categories:

- *Employee. Utilization of incorrect work methods or inattention to surroundings*
- *Equipment. Fault or defect resulting from equipment malfunction*
- *Third Party. Events initiated by third party involvement and/or negligence*

Employee-related incidents are typically driven from insufficient knowledge or inattention of the employee during the work task, and are most common with newer employees. Having isolated the root cause we have been successful in mitigating these events through rigorous training programs. These provide the employee with knowledge of company policies, safety policies, and work tasks and execution procedures, to safely perform their work.

Our projects encompass a variety of conditions and environments from high speed, high volume, interstate, and urban corridor to arterial roadway network and we have Jorgensen employees working on these project at all hours of the day 24/7/365. One thing remains the same: we are always at risk from traveling motorist.

The majority of our accidents are initiated by a third party, typically an errant motorist. We take every precaution to keep our employees safe by increasing their visibility through reflective safety clothing, retrofitting our trucks with warning lights and markings, utilizing safety devices for correct lane closure and traffic control, utilizing law enforcement and traffic control equipment including truck-mounted attenuators. For our highest risk corridors our Executive Leadership has mandated the implementation of enhanced safety equipment for lanes closures to protect our staff from potential vehicle impacts in our work zones.

(2) How often do you hold site meetings for supervisors for a typical Reference Project? If you do not hold meetings, why not?

Response: All Jorgensen projects including the reference projects hold daily "toolbox" meetings at the beginning of each shift. These meeting, typically 15 minutes in length, include all project staff and are used to confirm the work plan for the day, bring up any safety issues, discuss any notable conditions to consider while working (i.e.,bad weather expected), and confirm all employees working in the field are equipped with the correct PPE. Once a week these meeting are extended to include a safety

topic. The safety topic discusses a specific work activity and/or associated safety consideration while performing a work activity (i.e.,lifting heavy objects).

(3) How often do you conduct project safety inspections? Who conducts these inspections? If you do not, why not?

Response: At a minimum the Regional Safety Manager will conduct a safety inspection of each project monthly. Depending on the results of these inspections the Safety Manager may increase the frequency. The inspection focuses on safety of all aspects of the project including: correct traffic control (MOT) set-ups, correct safety protections (PPE) and practices are being implemented at the job sites, vehicles and equipment have the correct warning lighting and markings, project office is compliant with safety requirement (i.e., fire extinguisher, safety posters). Following the inspection the project manager is provided a safety inspection report that details what was reviewed and the results including what was reported as compliant and what was found as safety-violation if any. If a violation was reported the Project Manager develops a mitigation plan and provides to the regional manager and Regional Safety Manager. The plan will be implemented prior to the next safety inspection. In addition weekly safety inspections are performed by the projects' safety coordinator. These focus on verifying safety practices are compliant on job sites.

(4) Please describe your written safety program. If you do not have one, explain why.

Response: Jorgensen utilized an innovative 6-point plan as our safety program called "Road to ZERO". This program is aimed at publishing our expectations and policies, targeted and comprehensive training, increasing awareness, regularly inspection our work habits, and rewarding our staff for outstanding safety records.

Jorgensen's "Road to ZERO" 6 Point Safety Plan

- ***The safety manuals*** *are the comprehensive collection of our procedure, policies, and programs that are located in each project office and easily accessible on the web. Jorgensen has two safety manuals, our corporate safety manual and our employee safety manual. The Corporate Safety Manual includes relevant material for OSHA and various departments of transportation, applicable federal and sate law, and specific publications and forms including safety data sheets. The Employee Safety Manual focuses on the safety polices and practices that should be followed in the performance of the operational and maintenance work.*

- ***The training program*** *curriculum and schedule are prepared for all projects and individuals. It is tailored for all positions and staff levels from managers and supervisors to the crew leaders and technicians. Safety training performance is also recorded and tracked in our Jorgensen maintenance management system (JAMMS). This provides an instantaneous compilation of individual project training status.*

- ***Safety awareness*** *involves providing constant visual reminders, including posters and decals, of working safely and why we want to work safely.*

- ***Inspection and documentation*** *involves conducting regular inspections to confirm safety compliance and identify potential or apparent safety violations. The goal is to prevent incidents before they happen by identifying unsafe actions and then sharing with all staff as part of our awareness and training. This inspection data and reporting is also recorded in JAMMS.*

- ***Enforcement*** *involves timely and effective disciplinary action to be consistently implemented. These are measured for effectiveness and adjusted accordingly.*

- ***Recognition and Reward*** *are the creative programs to encourage safety culture and reward great performance (i.e.,gift cards).*

(5) Please describe your preferred methods for securing worksites in urban environments, including as such methods may promote the safety of members of the local community.

Response: Jorgensen works on all aspects of the right-of-way from travel lanes to the roadside fencing. The nature of operations and maintenance work involves multiple working sites at various locations on a daily basis. This requires an understanding and knowledge of a variety of methodologies to secure worksites, both under live traffic condition and on roadside.

Urban environments pose an additional consideration due to the confining nature of the networks of the adjacent urban development, and the speed and volume of traffic. On high-speed, urban networks, work that will require closures are performed almost exclusively at night when the volume of traffic is at its lowest decreasing the potential to impact motorists. Depending on the configuration of the corridor we have preferred to utilize more protective traffic control equipment to secure the safety of our employees. For example on I495 and HCTRA we have a mobile barrier MBT-1 unit. which is a steel barricade that encases the work site to protect the workers from errant vehicles. At a minimum for all stationary and rolling closures we use multiple truck-mounted attenuators, a shadow vehicle, and law enforcement. This provides physical protection to the workers as well as visibility of our work site to motorists. We have also found the utilization of variable message boards as a preferred method to notify motorists of upcoming work zones.

(6) Please describe your orientation or training program for new hires and for newly promoted individuals (including foremen), including any safety related elements. If you do not have such a program, explain why.

Response: Our employee orientation is program is called "On Boarding" which is a three-part web and live orientation that includes, company introduction, company policies, and safety orientation. All employees must take and pass applicable tests prior to any work exposure. In addition our regional trainers design training programs tailored for the individual employees to work through to develop their skills and implement work activities correctly.

(7) With respect to no. (6) above, for any program that relates to foremen, indicate whether it includes instruction on the following:

Topic	Yes	No
Safety Work Practices	☒	☐
Safety Supervision	☒	☐
On-site Meetings	☒	☐
Emergency Procedures	☒	☐
Accident Investigation	☒	☐
Fire Protection and Prevention	☒	☐
New Worker Orientation	☒	☐

(8) How often does your entity hold safety meetings, which extend to the laborer level, and how does this vary by type of project? If you do not hold such meetings, explain why not.

Response: All project staff including laborer level positions attend the project's daily "Tool Box" meetings and the weekly safety meeting discussed in question 2.

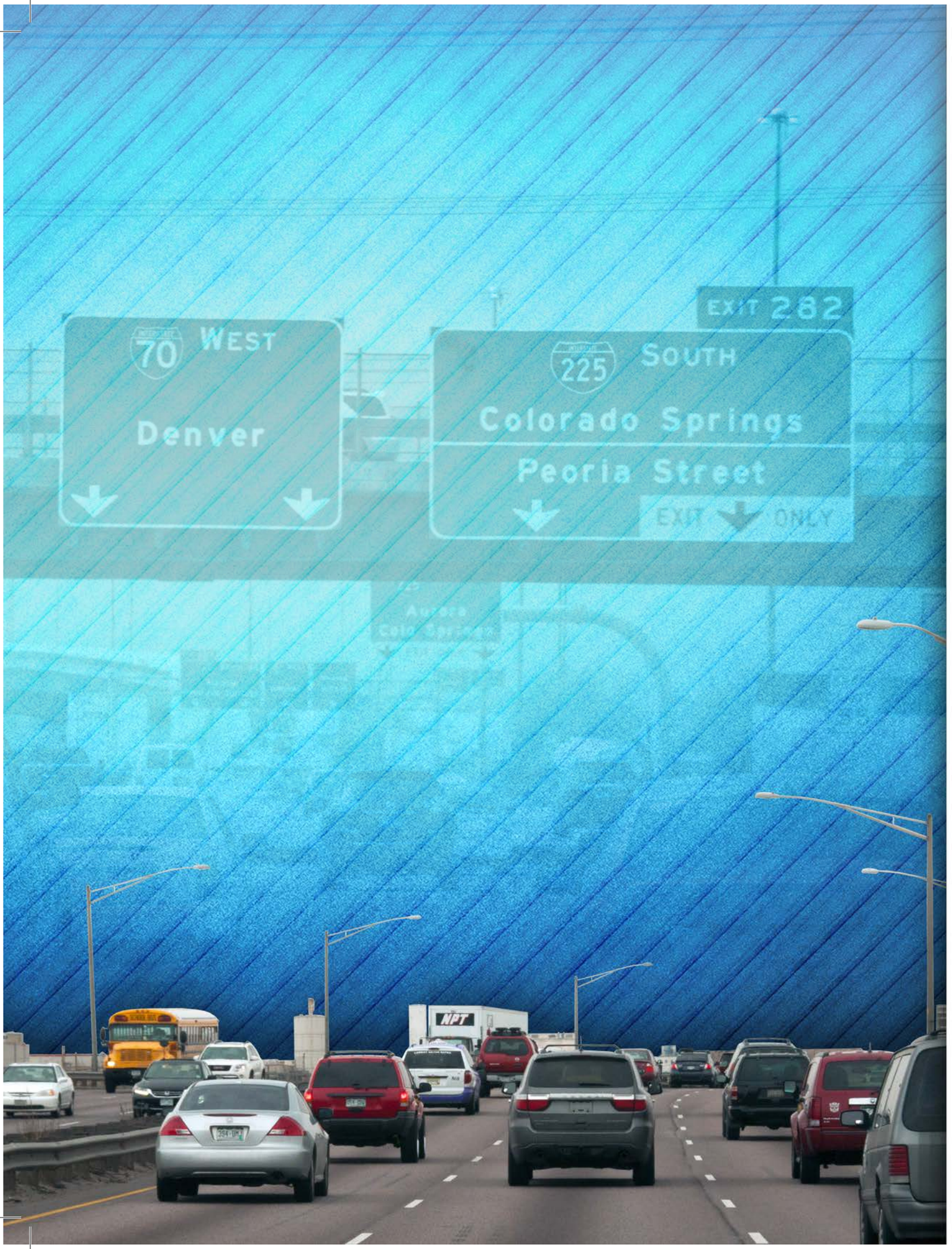
(9) Please explain any program or written practices that expressly address the safety of the traveling public and the safety of personnel within the construction area. If the entity has no such program or practices, explain why not.

Response: Within our Employee Safety Manual section 20.0 we address work zone safety policies and procedures. The procedures include; training employees to ensure all work zones comply with state and federal requirements, work zone layouts from the applicable MUTCD, work zone set-ups procedures, work zone removal procedures, work zone nighttime operations, and when necessary, special work zone protection guidelines for unique situations. Additionally, we have a safety policy for Traffic Control that provides the safety guidelines for installing and managing traffic control devices.

(10) Please describe any differences between the entity's standard or typical safety program or practices as described in your responses to (1) through (9) above and (a) the entity's safety program or practices on projects similar to this Project in size and scope and/or (b) the anticipated safety program or practices for this Project as may be preliminarily anticipated in the statement of technical approach included in the SOQ in accordance with Section **Error! Reference source not found.** of the Volume Requirements.

Response: The wide range of O&M projects within Jorgensen's portfolio has required both the implementation of Jorgensen's existing safety program and the inclusion of project-specific safety considerations. It is anticipated that I-70 is similar to two reference project I-595 Express and I-495 Express and will require an O&M manual which will include a section designated for project safety. Based on our experience on these project and the similarities to the I-70 East project, significant adjustments to a safety program will not be required rather adjustments and inclusion of state and

local safety requirements and regulations, as well as specific work activities unique the I-70 East project (i.e., cover section maintenance) will be made.


EXIT 282
70 WEST
Denver
225 SOUTH
Colorado Springs
Peoria Street
EXIT ONLY
NPT

FORM H: STAKEHOLDER AND ECONOMIC ENGAGEMENT QUESTIONNAIRE

Proposer Name: **Kiewit-Meridiam Partners**

Form H: Stakeholder and Economic Engagement Questionnaire

No.	Questions & Responses
(1)	**Describe your experience on Reference Projects located in neighborhoods designated as environmental justice communities**

Response:

In 2003, CDOT, desiring to rebuild and reconnect the communities affected by the original construction of I-70, and to address Environmental Justice (EJ) requirements, undertook a proactive, collaborative, and inclusive public involvement program as they and RTD began the planning process for improvements to the I-70 East corridor. Since that time, CDOT has placed emphasis on gaining the maximum participation from local communities (including EJ communities) in all aspects of the planning process. CDOT has built a high level of trust with these communities and, in return, these communities have expectations that the communication protocols and levels of involvement will continue in the subsequent phases of I-70 East.

Kiewit-Meridiam Partners understands that CDOT and the surrounding communities have built significant levels of trust through the planning process and we are committed to build on that trust as we move into the project's next phases. Our team members have experience developing projects located alongside or in neighborhoods designated as EJ communities. We have followed through on the commitments made during the environmental planning process. We have successfully provided construction mitigation for air quality, noise, and hazardous materials, and maintenance of traffic (MOT) plans that are sensitive to residents and businesses by providing access, maintaining connectivity, and minimizing disruptions.

In addition, Kiewit-Meridiam Partners will collaborate with CDOT to follow through on the communications commitments initiated during the planning process. Much like CDOT, we have developed similar techniques on major transportation infrastructure projects where there are diverse communities and many residents may have Low English Proficiency (LEP). We provide translations of informational materials and alerts routinely for our projects in Colorado, Florida, Texas, and California where Spanish is a prominent language.

While we communicate through multiple social media outlets, we recognize the communities may not have access to those tools. Therefore, in parallel we will reach out to residents at business/neighborhood association meetings, churches, and community centers. We hold one-on-one meetings to ensure that important messages are received by everyone in the community. Our goal is to engage all the communities and in particular "provide information and opportunities for participation to minority and low-income communities…" (Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 1994). The August 2014 "Environmental Justice Technical Report" states that the "I-70 corridor stretches along low-income and minority population residential areas (except Stapleton); therefore, any impacts to these residential areas will have an adverse effect on EJ populations that has to be mitigated through innovative measures."

Below are four examples where our team has worked in neighborhoods designated as EJ

populations. Three of the projects are included in our Volume 1, Section 4.1 Form F response. The fourth project is Expo LRT, which meets the requirements of a General Reference Project.

I-225 LRT is currently under construction and includes an extensive RTD/contractor (Kiewit) partnered public information (PI) program that builds on techniques developed during the environmental planning process. The project is located in Aurora with 50% of the population represented by minorities. EJ communities were identified during the planning process through a benefits and burdens analysis identified impacts and specific outreach strategies for minority and low-income individuals in the corridor.

Kiewit's communications team, headed by Hunter Sydnor (Community and Public Relations Manager for the I-70 East Project), is carrying out the EJ commitments. Kiewit is using a "high-touch" approach, employing a variety of communication techniques so that at least one format will reach the EJ communities. Fliers and notices are provided in Spanish and English. The team routinely attends neighborhood meetings and provides construction updates. Kiewit's communications team is providing project updates, informational flyers, and notices at neighborhood center information desks and has hosted information meetings for residents visiting these centers.

Our PI team is also partnering with the Aurora Chamber of Commerce and the Small Business Development Center on a business assistance program. The team holds quarterly meetings with affected businesses to discuss upcoming construction activities and how the impacts may affect access to their establishments. The team also provides local businesses with information on low- or no-cost ways to market themselves.

Regular community meetings keep residents informed about progress

Relevance for I-70 East:

- Hunter Sydnor, our Community and Public Relations Manager, is already active in the Denver region providing a strong understanding of the project area.
- Bi-lingual staff and translators for meetings will be critical for the I-70 East EJ communities. Print and electronic materials will be produced in a bi-language format as well.
- Use a "high touch" approach to distribute project information using multiple channels to reach every EJ community.
- Use communication channels that already exist in the community such as churches, schools, and community centers. For I-70 East, this may include Focus Points Family Resource Center, Swansea Elementary, Commerce City Recreation Center, and Swansea Recreation Center.

Midtown Tunnel's Martin Luther King Extension crosses a section of Portsmouth, VA that has a minority population of nearly 90%. US DOT EJ requirements include providing meaningful opportunities for public involvement by members of minority and low-income populations during all phases of project development. Kiewit and Parsons Brinckerhoff, both project participants, have remained engaged with the City of Portsmouth, community groups, and in particular church groups during the design development process to solicit feedback and input. Concerns about tolling on the MLK extension led to a design that accommodated a toll-

free access ramp to Portsmouth, eliminating a potential EJ impact from tolling. Other involvement included working with the EJ communities to get input for the design of aesthetic treatments and landscaping along the MLK freeway.

Kiewit's environmental program during construction is addressing air and noise impacts and mitigation along the corridor. Air quality is monitored during all excavation and demolition activities and water suppression is used to control dust during construction. Strict limitations exist on idling time for construction equipment to reduce emissions that impact air quality, while real time noise monitoring provides a check of adherence to daytime and nighttime noise limits. In the event levels exceed the established standard, construction crews are immediately notified and work is stopped until corrective actions can be implemented.

Relevance for I-70 East:

- Working groups that engage EJ communities during the design development of project elements were effective. Similarly, urban design workshops will be used on I-70 East to encourage residents and businesses (including EJ communities) to provide input and advice on the nonstructural design elements of the highway during the final design process.
- Multiple methods and venues for communication are effective in reaching all EJ communities. Churches were particularly effective for providing construction updates and our team will apply similar lessons learned.
- Noise and air quality programs implemented during construction minimized impacts to residents and businesses.

I-4 Ultimate has several neighborhoods identified as EJ communities in the NEPA document. The most significant neighborhood is Holden/Parramore, which includes Parramore Homes and Holden Heights. These communities have significant minority and low-income predominantly African-American. The City of Orlando has been working with Holden Heights as part of a community development program and a federal grant was used to develop a new vision for Parramore. Currently, these communities are isolated by I-4, SR-408, and their associated ramps. The design for I-4 Ultimate incorporates removing the ramps and creating more open space to reconnect the neighborhoods. Sound walls are being incorporated into the design adjacent to both neighborhoods. The design is also constrained by an EIS commitment that there will be no property takings in the Parramore Homes neighborhood. As lead engineer, Jacobs is incorporating these EJ commitments into the design to not only maintain, but also improve Holden/Parramore. FDOT and the I-4 team are committed to continuing a strong PI program during the project delivery and Jacobs is attending community meetings and neighborhood events to update the communities on the design as it progresses.

Relevance for I-70 East:

- It is critical that design commitments made to EJ communities during the NEPA process are incorporated into the design, construction, operations, and maintenance. Our engineers know how to work with the affected communities to ensure that there are no surprises as the design progresses. This is particularly important for I-70 East as the communities will continue to provide input into nonstructural elements and the design of the landscaped cover over the highway. As in I-4 Ultimate, re-establishing connections closed in the original construction is critical to meeting the project goals.

Exposition LRT Phase 2 is a $600 million design build project that is under construction.

Once completed, it provides a new 6.6-mile light rail line that extends from Culver City to downtown Santa Monica for the Los Angeles County Metropolitan Transportation Authority. The new LRT is adjacent to or within six EJ communities. A limited number of relocations were required within these communities. All were undertaken in accordance with federal and California relocation guidelines and policies. An extensive corridor-wide PI and communications program was initiated to keep residents (including those in EJ communities) and businesses informed about the schedule for construction activities, which took place largely within the urban street network.

Specific MOT plans were reviewed with the communities to make sure that access to businesses and residences was maintained and parking opportunities were not diminished. An innovative approach provided new angled parking on side streets in business and retail areas to replace parking lost during construction. In addition, major cross street construction was carried out sequentially so that connectivity was never lost within the communities. An extensive noise monitoring and mitigation program was also carried out during construction.

Relevance for I-70 East:

- MOT and access plans developed by working with communities and businesses can result in solutions that mitigate construction impacts such as the angled side street parking solution.

(2)	**To the extent not addressed in the response to (1) above, describe Proposer's experience on Reference Projects where environmental concerns (including noise, air quality, ground water, and/or hazardous materials management concerns), traffic management concerns, concerns regarding access to businesses, residences and other resources located within the affected community, and the generalized impacts of construction were among the primary concerns of the local community.**

On the I-70 East Project, we understand the NEPA environmental impact mitigations are promises made by CDOT to the community and Kiewit-Meridiam Partners will ensure those promises are kept. This is our community, too. We are committed to ensuring that environmental mitigation works, the health of our communities is protected, and economic vitality is maintained. Minimizing construction impacts is good for everyone and we will do this by developing maintenance of traffic (MOT) plans that maintain business and community access, by providing innovative noise and dust control measures, and by effectively managing water and hazardous materials. In addition to the projects described in response to Question 1, we offer highlights of our best practices and lessons learned on an additional six General Reference Projects (See Vol. Sec. 4.1 for project details and the table to the right). The mitigation plans described in this section are relevant to I-70 East and will form the basis of our proposed approach. Example mitigation programs include:

Construction Mitigation

Project	Noise	Air Quality	Ground/ Stormwater	HazMat/ Materials Management	MOT	Maintenance of Access
Port of Miami Tunnel	X	X	X	X	X	X
Waterloo LRT	X	X	X	X	X	X
DFW Connector	X	X	X	X	X	X
T-REX	X	X	X	X	X	X
Denver Union Station	X	X	X	X	X	X
I-595 Express			X		X	

The concessionaire, led by Meridiam, was required to follow the **Port of Miami Tunnel** contract's construction noise control procedures and design and construction criteria. The project had a thorough environmental review and a number of mitigation measures were

detailed in the environmental documents and included in the P3 contract documents. Of particular concern was the potential for increased noise levels during construction and operations to affect residential and commercial developments near the site. Prior to procurement, testing was conducted to measure existing noise levels at five key locations on both Watson and Dodge Islands. These locations were selected due to their close proximity to the proposed project's alignment and to their potential sensitivity to noise based on land-uses. FDOT calculated acceptable construction noise level standards, based on a 10% exceedance of the baseline. On-site construction equipment was tested and certified so as not to exceed established maximum noise limits set for the specific type of equipment.

Noise related procedures and responsibilities included:

- Hiring a full time acoustical engineer
- Submitting a noise control plan
- Submitting noise measurement reports
- Submitting working drawings, computations, data, and other descriptions for abatement measures during construction
- Complaint response noise monitoring

Additional environmental mitigation carried out for the Port of Miami Tunnel included:

- **Air quality:** Fugitive dust was controlled by watering roads and using concrete mixes with high fly ash content to control emissions of greenhouse gases.
- **Groundwater:** Construction methods and staging plans addressed groundwater protection because of the deep excavations and the sensitive environment surrounding the project site.
- **MOT and Access:** Construction of the tunnel took place adjacent to the cruise ship berths, which supports a global tourism industry. Cruise ship movements were maintained throughout the construction phase and the concessionaire, working with the cruise operators provided dynamic message signs to improve way finding for port users.

Waterloo LRT connects the two cities of Waterloo and Kitchener in Ontario Canada. The urban character of the project corridor is similar to that of I-70 and successful environmental mitigation and traffic and access management are critical to successful project delivery. Meridiam and Kiewit jointly led the team as Developer and Kiewit is the lead contractor. The team has developed construction air quality control and noise control plans. Each plan identifies sensitive receptors and details daily monitoring plans, best practices for control procedures, and corrective actions. Approximately 60,000 cu. yds. of contaminated soils will be hauled offsite to appropriate waste management facilities. These contaminated soils are located in five areas along the corridor although additional sites have been identified. The team developed a waste management, excavated materials, and contamination environmental management plan to deal with known and unknown contaminated sites.

Ontario's Ministry of Environment (MOE) has imposed strict dewatering guidelines. The MOE is concerned that heavy construction activities in excavated areas would require high levels of dewatering that could contaminate groundwater supply sources. The team has worked with MOE to acquire permits that detail water quality mitigation requirements prior to discharge into the stormwater system. The team includes dewatering subcontractors who specialize in treatment of contaminated water prior to discharge in compliance with permit requirements.

A major challenge of the Waterloo LRT is maintaining traffic and access to businesses during

construction of the 7.5-mile segment that runs through the existing road network at-grade. Kiewit has worked from Day One to develop an overall traffic management plan that is approved by all involved stakeholders, primarily the Region of Waterloo, the City of Waterloo, and the City of Kitchener. The overall plan is divided into north and south traffic control plans that split the major portion of the at-grade construction into two smaller segments that are easier to manage. Working with local stakeholders, the team received approval from the three jurisdictions to close a large portion of the parallel roadway for construction of the rail while maintaining local traffic only. The team also prepared a traffic quality management plan (TQMP) that sets standards for the traffic management performance. This includes daily monitoring of the traffic control measures, and requires corrective action to improve deficiencies should they arise.

Environmental and traffic management controls on DFW Connector

Dallas/Fort Worth (DFW) Connector was constructed with Kiewit as the lead contractor and Parsons Brinckerhoff as the lead engineer. The project traverses the growing urban areas of Grapevine and Southlake and is adjacent to Dallas/Fort Worth International Airport (DFWIA). Because of this proximity and due to the confined construction space, environmental and traffic management controls were critical during construction. Kiewit used a sustainable approach to materials handling, which benefited construction air quality, and traffic management, and achieved long-term effects of limiting adverse climate impacts. By locating a crushing facility and a concrete batch plant within the project work area, a significant amount of demolition materials were separated, crushed, recycled, and/or placed in new work. By the end of 2011, around 250,000 tons of concrete had been crushed, and by August 2012, more than 480,000 tons of concrete had been recycled into new work. This materials handling approach significantly reduced the amount of construction traffic entering and leaving the site and significant reduced overall construction vehicle-related emissions and traffic volumes. As concrete was crushed, all reinforcing steel was removed and sent to an accredited recycling facility.

Other air quality related mitigation included:

- Watering trucks, stockpile spraying, and spray bars on the jaw crusher were used continuously to minimize fugitive dust.
- All equipment over 100 HP was equipped with emissions control systems.
- Kiewit's telematics systems kept idling time to a minimum, increased trucking efficiencies, and improved local traffic conditions and air quality.
- Recycled and filtered wash water was used to clean equipment.

Construction phasing and traffic management were also critical. The goal was to keep through-traffic moving, allow construction to proceed in an efficient manner, maintain connectivity in the adjacent communities, and maintain access for businesses, residents, and DFWIA. Similar to I-70 East project requirements, the DFW Connector was constructed under heavy traffic. Traffic management plans included multiple phases where traffic was rerouted into temporary lanes. Lane closures, when required, were scheduled in off-peak times, usually at night and on

weekends. During holidays and special events, no lanes were closed and design packages were phased to keep DFWIA access open. A high-touch PI program was carried out using print, electronic, and social media to provide information about the changes to traffic during the construction period. The project was awarded the PRIDE award for demonstrating positive community involvement and educating the public about the construction industry.

T-REX provided Kiewit with the opportunity to pioneer numerous best practices with regard to environmental management during construction on this Colorado-based mega-project. Kiewit developed a forward-thinking noise mitigation system using "mobile sound walls" made up of truck trailers with "skirts" placed between construction activities and residents to dampen construction noise levels. Kiewit also offered hotel vouchers for "urban vacations" to residents within a specified eligibility zone adjacent to bridge demolition activities. Throughout construction, crews continuously monitored noise output and made adjustments to work plans as needed to reduce noise impacts.

"Urban vacation" eligibility zone on T-REX

With excavation and earth moving operations occurring adjacent to residences and businesses, Kiewit crews used water trucks to moisten the work areas and reduce fugitive dust. Water quality mitigation, to address sediments and contamination, was required during construction because of the extensive amount of excavation and the proximity to the Platte River in the "Narrows." To control sediments, water was pumped from the construction sites and filtered in Baker Tanks prior to release into the local stormwater system. In certain areas along the alignment, which had previously been used for industrial purposes, a higher level of treatment was required. A treatment plant was built at Colorado and I-25 to treat contaminated groundwater prior to discharge.

T-REX also required extensive traffic management to accommodate traffic flow during construction of the new travel lanes. Traffic was shifted from side-to-side to allow for construction, while in select cases, construction activities required full closures. Traffic shifts were carefully designed to occur as infrequently as possible thereby reducing the learning curve of new traffic patterns. Travel speeds and safety pullout zones were installed to keep the traveling public safe within construction zones. Kiewit provided a 24/7/365 Courtesy Patrol to quickly (within 15 minutes) assist or remove disabled vehicles. Kiewit partnered with CDOT, Colorado State Patrol, and the Insurance Institute through a communication campaign referred to as *Move It* to relocate incidents.

Communications to the traveling public, residents, and businesses were performed daily, weekly, and monthly to provide up-to-date information on construction activities and traffic phasing. Kiewit partnered with RTD and CDOT to develop and communicate the benefits of the final multi-modal system. Varieties of tools were used to interact with stakeholders at different frequencies to optimize the effectiveness of how information about the project was delivered.

I-595 Express traffic control and incident response were challenging during construction due to the confined ROW limits and changing traffic patterns. Jorgensen served as the operator during the construction period effectively implemented the Road Ranger Program, which serves as both an aid to stranded motorists and as a first responder. Given the required 15-minute incident response time, accessibility to incidents was critical. Lane reconfiguration and barricaded construction zones limited shoulder availability and accessibility to travel lanes on both the general-purpose lanes and frontage roads. Jorgensen staff were part of the weekly construction traffic control meetings to evaluate the upcoming traffic control patterns and make recommendations that would better support the operator's response activities.

Road Ranger response vehicles

(3)	**Sharing information with the local community will be critical to a successful Project. Describe Proposer's preferred methods of (a) engagement with local communities, including with residents living in close proximity to a Reference Project, and (b) coordination of such activities with the owner.**

Response:

Our team members understand the importance of continuous engagement with the local communities and the public at large while implementing major transportation infrastructure projects. All of our Form F Project Experience includes information on how we have worked collaboratively with the client to engage a wide range of stakeholders. Our overall approach is to build on the communications protocols developed by the owner during the planning process, engage stakeholders in aspects of the design and construction, and provide timely, accurate, and widely disseminated information to project stakeholders and the public. Using a high-touch approach on I-70 East will make sure all stakeholders get the information they need when they need it. CDOT is already using a variety of communication tools for this project. Kiewit-Meridiam Partners will continue to support these efforts and techniques by partnering with CDOT to develop new tools as technologies and information needs evolve. Following are examples of our **Best Practices (highlighted in bold type) and preferred methods.**

Port of Miami Tunnel provided an opportunity for the project team to deploy innovative public involvement tools that have never been used for a transportation project in Miami Dade County. Because the construction was adjacent to The Miami Children's Museum, Meridiam saw this as an opportunity to ***be part of and give back to the community***. The team sponsored a "Bob the Builder" museum exhibit where bulldozers, cranes, and backhoes were placed around the museum for the opening of the exhibit to encourage interest in mathematics and science. Meridiam also developed a tunnel club and educational presentations to the museum's charter school classes and sponsored an annual Halloween event to benefit educational programs at the museum.

Educational presentations held on Port of Miami Tunnel

The team used ***public official site tours*** highlighted by U.S. President Barack Obama, Florida

Governor Rick Scott, former Florida Governor Jeb Bush, and former FDOT Secretary Ananth Prasad. In addition, federal, state, and local elected officials, and community leaders were given tunnel tours to enhance project understanding. Further, the team offered ***media site tours*** to the Miami Herald, Miami Today, South Florida Business Journal, and other trade publications. Travel Channel and Discovery Channel also visited the site to produce documentaries to educate viewership on the project.

Public official and media site tours on Port of Miami Tunnel

Additional community engagement efforts included:

- Informational and interactive kiosks were placed in Miami-Dade County Hall, City of Miami Riverside Center, and Miami Children's Museum.
- Miami-Dade County Public Schools Engineering Academies where Meridiam developed an educational program for National Engineering Week and had project engineers visit more than 200 students to discuss the tunnel project and life as an engineer.
- Girl Scout Council of Tropical Florida, Inc. STEM Program (Science Technology, Environment, and Mathematics) where Meridiam provided an educational program staffed with female engineers from the project.
- A contest hosted by Meridiam with local troops to name the tunnel-boring machine (TBM). The winning name was Harriet, named after Harriet Tubman as a reference to the Underground Railroad.

Local Girl Scout troop naming the TBM

- Coral Gables Museum Exhibit where Meridiam developed a month-long public exhibit to highlight the project, which was rotated to other museums as well.
- Booker T. Washington Senior High School Engineering Summer Internship Program for which Meridiam developed a summer-long internship program where 10 students were each assigned a mentor, teaching them every aspect of the tunnel project and taking them on field trips.
- Educational/professional tours where Meridiam coordinated with University of Miami and Florida International University Schools of Engineering, ASCE, and other professional engineering and architecture organizations.
- Media events where Meridiam coordinated with public officials and stakeholders for groundbreaking, TBM arrival, cutter head lowering, and TBM break-in and break-out.
- Updates to community organizations and neighborhood associations where Meridiam worked with the Miami Beach Transportation Committee, Palm, Hibiscus and Star Islands Neighborhoods Association, Tuesday Morning Breakfast Club, and Yacht Clubs.

For **Waterloo LRT,** the team developed a number of ***key procedures and plans*** including a ***complaint protocol***, community and stakeholder outreach plan, individualized ***construction liaison plans*** for each area of work, and a ***crisis communications plan***. All were developed and coordinated with the Region of Waterloo and set out how the public and private sectors will collaborate on the program. The complaint protocol lays out the process by which the project

team responds and addresses public concerns and complaints. Individualized construction liaison plans identify key stakeholders in each section of the work to ensure that they are up to date on all upcoming construction activities. These plans also identify all local residents affected by the construction activities and outline the plan to notify these residents via direct mail 60 days and 14 days prior to start of construction.

The Project has also developed a ***website*** where updates on construction status and general project information are available. Since construction started, the community outreach team has attended over 180 ***stakeholder meetings***, responded to over 350 stakeholder emails and approximately 225 calls on the ***project hotline***. The project currently has over 624 ***email*** subscribers, and, with ***social media***, have 2,990 likes on Facebook and more than 3,100 followers on Twitter.

T-REX engaged stakeholders and residents by including them in the ***design development process***. On T-REX, residents who backed-up to the adjacent highway were concerned about the noise walls—size, composition, location, maintenance, and appearance. Noise studies were performed to determine the necessary wall height to provide the required noise reduction. Kiewit developed an appearance for the walls utilizing several designs and colors. The project team, with CDOT and RTD, worked with adjacent neighbors to develop a process for the residents to choose design patterns that reflected their neighborhoods. Residents were also given the opportunity to reduce the height of the wall to retain mountain views. Allowing residents to have a say in their design made them a part of the project. Because of active engagement of the community and other innovative public programs, the T-REX team was awarded the PRIDE Award for Outstanding Media Relations and Public Education Program.

I-15 South Corridor Design Build included an extensive ***PI and outreach program***. Included in the limits of the project was the I-15 interchange with I-215, the Las Vegas Beltway. A significant amount of commuter traffic to and from McCarren Airport and virtually all tourist traffic from southern California passes through this corridor. During the design period, Jacobs helped launch the PI program that included meetings with the public at one of the local high schools. Jacobs, the team, and the Nevada DOT (NDOT) met with the public and answered their questions. Additionally, the public was directed to the project website where corridor maps, schedules, and contact information were provided.

Before construction began, a ***media campaign*** was implemented involving local TV and radio to enhance public awareness of the project. The ***project website*** and a Highway Advisory Radio station further supported the media campaign. The outreach campaign leveraged the use of ***social media*** including Facebook and Twitter. Even though both applications were in their early stages of popularity, these tools proved to be very effective in reaching the public with brief, timely data on the status of the project and real-time traffic information.

As construction progressed, the project website was updated daily or as needed to maintain current information about project status and traffic conditions. Facebook posts, e-mail blasts, and tweets were used to alert the public of changing conditions in an almost instantaneous manner. Because members of the local news media were on the contact list, the information was disseminated quickly, everywhere.

I-595 Express is located in south Florida in a region with a high population of Hispanic families. The ability to communicate and interact with customers and motorists, whose first

language is Spanish, is critical to providing reliable customer service. Jorgensen is on-call and available 24/7/365, to field daily customer calls using bi-lingual staff. Their Road Ranger Program, which provides aid to stranded motorists (i.e., fuel, flat tire repair), assists as many as 20 motorists on a daily basis. Based on the demographics and customer service communication and interaction requirements of the project, the team identified a need to communicate in Spanish and English. Key management staffing including the project manager, project engineer, administrator/office manager, field superintendent, Road Ranger's supervisor, and crew leads all are fluent in both ***Spanish and English.*** This has facilitated strong customer service through clear comprehension of the customer needs.

(4)	**Close coordination with affected local governments during all phases of the Project is expected. Describe Proposer's preferred methods of coordination with a closely involved local government partner.**

Response:

Kiewit-Meridiam Partners believe close coordination with local governments and affected agencies is critical throughout a project. We have found a formal partnering approach is the most effective way to engage local governments and agencies. This will be implemented at the very start of the I-70 East project through a formal process where the entire team, including CDOT, will set common goals, align interests, and develop an issue resolution process. In addition, we will use a task force approach during the design process and invite local governments and agencies to participate, particularly with regard to utilities, permits, traffic management, and sound walls. Our PI program will specifically target local governments, local officials, and agencies and will provide briefings and updates on a regular basis. Sometimes, one-on-one meetings are the best way to address certain issues. We believe that a multi-level approach is best suited to meet the project's communication needs. Examples of communication methods with local governments include:


Project Charter
DFW Connector Team
Team Mission
Goals
Safety
Compliance
Schedule
Budget
Communication
Teamwork

Partnering charter for DFW Connector

Waterloo LRT was sponsored by three major government partners: the Region of Waterloo (owner of the LRT System), the City of Kitchener, and the City of Waterloo. The latter two will still own a significant portion of the underground infrastructure once the construction is complete. At the beginning of the project, the Kiewit and Meridiam team ***established key protocols and contacts at each of three government organizations*** to ensure that they were involved in the design review process. To date, the three partners continue to participate in design reviews and ***discipline-specific task force groups*** that look at the design to ensure that it meets the local municipal and regional standards. As construction began, the team established ***weekly construction update meetings*** with representation from all three organizations. Construction updates are presented and representatives are given the opportunity to bring to the table and discuss any issues they have in relation to construction.

T-REX involved the expansion of 17 miles of Interstates 25 and 225 and the design and construction of 19 miles of LRT within the right of way. This unique and complex project was undertaken as a joint project by CDOT and RTD. To be successful, Kiewit as the design build lead and both clients needed to work in a collaborative and communicative environment. Two

approaches were instrumental in the overall project success. The first was locating the entire team (CDOT, RTD, Kiewit, and the designers) in a ***project office***. This greatly enhanced communications and saved time as team members did not need to travel to various offices for meetings. Issues were resolved without lengthy meetings and over-the-shoulder reviews shortened review times. The second approach was undertaking a formal ***partnering process***. Many of the successes can be attributed to the partnering process. Everyone on the project team was focused on common goals and all interests were aligned. The success of the project and the significant role that partnering played in the team's success is reflected in the Marvin Black Excellence in Partnering award the team received from the Associated General Contractors.

On the **I-275 Design Build**, Parsons Brinckerhoff found that ***coordinating and partnering*** with all involved or affected public agencies and local governments were key factors in moving the project forward. Interchanges on I-275 connect to streets owned and maintained by the City of Tampa. At one location, the project crosses the Hillsborough River and at another, it crosses the proposed alignment for the Tampa River walk, a planned signature feature of downtown Tampa and one of the most significant public projects the City has undertaken in 25 years. The City of Tampa is also home to Raymond James Stadium home for Tampa Bay Buccaneers NFL games, major concert events, and NCAA college bowl games. Special events are a huge traffic generator and the stadium is located just blocks from I-275. Ensuring the City was engaged and informed about proposed design changes, upcoming traffic shifts (particularly how, when, and why) were incredibly important for the City, FDOT, and the team to all succeed.

Additional coordination was needed with Hillsborough County, the Florida Highway Patrol, the U.S. Coast Guard, South Florida Water Management District, and the Tampa Port Authority. Lastly, because of the project's proximity to Tampa International Airport, coordination with the Federal Aviation Administration was needed to secure an FAA 7460 permit for features encroaching into TIA's airspace. This encroachment covered light poles, overhead trusses, and ITS features and required 115 individual permits, one for each encroachment. ***Maintaining contact and providing deliverables*** to all of these agencies with the right content at the right time was a significant challenge, but one at which we were enormously successful.

I-595 Express used Jorgensen's simple approach to coordination with local government agencies—***open communication and transparency***. During the I-595 mobilization period, Jorgensen had a kickoff meeting with representatives from the two adjacent agencies, the City of Plantation and the Town of Davie. Several segments of roadway, specifically at interchanges, were reconfigured and maintenance responsibility remained with Jorgensen through the construction period. These locations were identified and marked in the field and at substantial completion were handed back to the representative agency. Jorgensen continues with routine discussions and meetings to support local government partners.

(5)	**Describe your achievements in obtaining small and disadvantaged business participation on Reference Projects, including whether you have met or exceeded required goals and/or electively implemented any non-required approaches to outreach, education, communication, and/or business development.**

Response:

Achieving small and disadvantaged business usage goals is a reflection on a commitment to the local community and to economic vitality. Kiewit-Meridiam Partners has demonstrated this commitment in our previous projects as outlined in Sec. 4.1 and summarized below. Our

commitment goes further than just achieving goals. We established a variety of programs within our projects to increase our outreach and provide continuous training and capacity building for small businesses in the areas where we work. In Colorado, collectively our team members currently belong to the Hispanic Chamber of Commerce, Hispanic Contractors of Colorado, Conference of Minority Transportation Officials (COMTO), Women's Transportation Seminar (WTS), and Colorado Black Chamber of Commerce/Black Construction Group. Participating with these organizations allows us to develop relationships and communicate our various work opportunities.

Specific outreach efforts and programs include:

General Reference Project	DBE/SBE Participation	
	Project Goal	**Actual Achieved**
NTE 1-2 NTE 3A3B	$128M $53M	$179M+ On track to exceed
Port of Miami Tunnel	8.1%	Exceeded
Goethals Bridge	10%	On track to meet
DFW Connector	12.12%	12.69% $125.6M
Port Mann	C$3M	C$13M
Denver Union Station	16%	23%
Midtown Tunnel	DBE 12% SWaM 23%	Exceeded $300M+
I-225 LRT	SBE 25%	On track to exceed Currently at 26%
Horseshoe	8%	11.2% $4.5M
I-4 Ultimate	SBE 9% DBE 3%	On track to exceed On track to exceed
I-275	8%	9%
ORB-EEC	9%	On track to meet
I-15	No goal	11%
I-595 Express	9.1%	11%
I-495 Express	NA	25%

- Meridiam's efforts to promote diversity on the **Port of Miami Tunnel** included designing the project as a reflection of the community. Through the *Operation 305 Initiative*, Meridiam ensured that their subcontractors partnered with vendors, subcontractors, suppliers, and direct employees with either a (305) or (786) local area code. In addition, a ***procurement plan*** was developed to increase local participation by encouraging businesses and residents to apply for subcontracts or direct hire employment. With the help of the Miami-Dade County Small Business Development office, Meridiam performed ***outreach*** to hundreds of local vendors to educate them on the project, pre-qualify select parties, and explore what upcoming opportunities were available for their industry or specialty. Meridiam's team has contracted with 831 companies at a value of $325 million in subcontracts, with 465 of those companies being Miami-Dade County businesses.
- A ***DBE performance plan*** was developed for the **Horseshoe Design Build** Project with an original goal of 8%. Based upon the exceptional work by DBE subconsultants, final usage exceeded 11.2 % of the project's design services; nearly a 40% increase.
- Jacobs participated in proactive ***outreach programs*** conducted for **I-4 Ultimate** during the proposal phase in order to solicit and confirm DBE involvement during the design phase. This head start has enabled Jacobs to be on track for exceeding its goals from day one.
- Over 50 years of consulting and contracting work throughout the US has allowed Jorgensen to compile various contact lists of DBE subcontractors and vendors to identify qualified and certified DBE firms for work on **I-595 Express**. Jorgensen routinely coordinates with organizations, which have a history of supporting local DBEs

Operation 305 initiative on Port of Miami Tunnel

including the South Florida Regional Planning Commission. The team used directories including the FDOT Highway Certified and the Unified Certification Program (UCP) DBE directories.

- Starting with **T-REX**, Kiewit has been building strong relationships within the Denver area small business community and is active in several minority organizations including the Hispanic Contractors of Colorado and the Black Construction Group. During **DUS,** Kiewit established an internal ***Diversity Council*** that is still in place and influencing the success of the **I-225 LRT** Project**,** which is currently on track to exceed its SBE goal. The Council members include leadership and staff from the local Kiewit subsidiaries, Mass Electric Construction Company, Kiewit Building Group, and Kiewit Infrastructure Co.
- Since 2010, Kiewit has participated with organizations such as the Hispanic Contractors of Colorado as a board member and has a seat on the Advisory Council for COMTO.
- ***Koffee with Kiewit:*** Kiewit in Colorado hosts "Koffee with Kiewit" twice a year. This event is designed to bring all the local Kiewit entities together to ***meet and greet*** with small businesses and to highlight upcoming opportunities. Other small business support agencies, Connect2DOT, CCD, Small Business Development Center, and Denver International Airport to name a few, also attend so that it can be a one stop shop for small businesses. At the most recent installment of this event held in June 2015, over 300 people attended.

Koffee with Kiewit meet and greet event

- The Kiewit Diversity Council also looks at ways to help small businesses ***increase their capacity*** and developed a series of ***workshops*** that include a presentation and hands-on training on a variety of topics. These topics include How to Estimate and Bid Design-Build Projects, Cost vs. Budget, Contacts to Contracts, Safety: Saving Hurts and Dollars, Knowing your Contract, Job Start Up and Close Out, and Scheduling.

(6)	**Describe your achievements in developing the workforce on Reference Projects, including whether you have met program requirements and/or electively implemented any non-required approaches to workforce development such as partnering and/or outreach**

Response:

Whether mandated by the owner or undertaken because we feel it is the right approach, Kiewit-Meridiam Partners believes that it is important to participate in workforce development programs. Approaches include partnering with organizations and existing training programs, developing our own programs, or doing targeted outreach to low income, minority, or local groups. The table that follows summarizes some of our achievements on General Reference Projects and includes information on approaches used to reach our goals.

Form F Projects	Workforce Development Achievements
Port of Miami Tunnel	968 direct hires, with 80% Miami-Dade residents; targeted outreach to Miami-Dade residents; on-the-job training program
Goethals Bridge	2,250 direct construction jobs; $224M in wages; $872M in economic activity for the region
Waterloo LRT	$42M in local wages; 12-month Track School Program to train and develop local craftsman
DFW Connector	2011 Texas Workforce Commission Employer of the Year
T-REX	Peak workforce of 800+; partnered with many local community organizations, such as the Hispanic Chamber, to advertise work force opportunities
Port Mann	Craft mentoring program; engineering student training

Denver Union Station	Fostered use of apprentices and encouraged subs to do the same; participated in new WIN program
Midtown Tunnel	Hired and trained more than 70 craftsman with no prior construction experience
I-225 LRT	9% participation in Workforce Initiative Now (WIN) program
ORB East End Crossing	Project-specific workforce development program
I-595 Express	Participated in Annual Construction Career Days at local high schools
I-495 Express	Proactively hired veterans
HCTRA	Implemented Employee Referral Program to promote local hiring

Summarized highlights of successful programs:

Local hires are trained for Port of Miami Tunnel

- Since breaking ground in May 2010 for the **Port of Miami Tunnel**, the concessionaire has made every effort to make the project a reflection of the community through diversity. Meridiam required contractors, including their own construction joint venture, to ***hire locally***, enhancing Florida's economy by directly hiring 968 people, with more than 80% of those employees being Miami-Dade residents.
- Meridiam's **Port of Miami Tunnel *on-the-job training*** program helped employees and has had positive impacts on the lives of many community residents. Some of these employees were recruited out of Camillus House, a humanitarian service for the poor and homeless and other organizations such as the City of Miami Neighborhood Enhancement Team (NET) offices, to specifically target neighboring minority populations.
- On **Waterloo LRT** Meridiam and Kiewit have implemented an ***on-the-job training*** program aimed at developing 40+ local craftsmen to help grow the economy in the area. The training program was put together in coordination with the local chapter of the Laborer's International Union of North America (LiUNA).
- On the **I-225 LRT**, the Kiewit team is participating in the ***Workforce Initiative Now (WIN) Program*** established by the RTD to encourage people from the adjacent communities to become part of the construction and transportation industries. We have a goal of 8% of all man-hours to be enrolled in the WIN Program. The I-225 project is approximately 60% complete and so far, the team has achieved 9.6% of WIN hours. The team includes the WIN goal in all subcontracts so that everyone participating on the team is encouraged to use WIN and engage more people in construction and transportation. The WIN participants include lab technicians, receptionists, civil engineers, document control and design engineers, operators, asphalt crews, truck drivers, electrical apprentices, and ground man/traffic controllers.

I-225 LRT participation with Workforce Initiative Now Program

- Jorgensen has had great success ***hiring veterans and reserve military*** for **I-495 Express** in Virginia. Jorgensen attends job fairs and posts open positions on select military sites including civilianjobs.com, MOAA transition site, and Military Stars and Stripes.

Key Personnel
Form I

FORM I: KEY PERSONNEL

Proposer Name: Kiewit-Meridiam Partners

Form I: List of Key Personnel

By submitting this completed form, Proposer is deemed to confirm that each of the below named individuals is, and is reasonably expected to remain, available to serve in the position indicated by their name in connection with the Project for the period for which such position will be required to be filled as specified below.

Design-Build Manager

Position Description:	The Design-Build Manager is responsible for overseeing all aspects of the design and construction work.
Minimum Period of Availability:	From commercial close to total construction completion.
Name:	**Tom Howell**
Title:	**Vice President, Director of Operations**
Current Employer:	**Kiewit**
To be seconded to/employed by:	Lead Contractor

Design Manager

Position Description:	The Design Manager is responsible for the management of the design team, including ensuring all design requirements are met.
Minimum Period of Availability:	From commercial close to total construction completion.
Name	**Doug Andrew, PE**
Title	**Assistant Vice President**
Current Employer	**Parsons Brinckerhoff**
To be seconded to/employed by:	Lead Engineer

O&M Manager

Position Description:	The O&M Manager is responsible for all operations, maintenance and/or (at Proposer's election) rehabilitation work.
Minimum Period of Availability:	From commercial close to end of Project Agreement term.
Name:	**Abraham Henningsgaard, PE**
Title:	**Vice President**
Current Employer:	**Roy Jorgensen Associates, Inc.**
To be seconded to/employed by:	Lead Operator

Quality Manager

Position Description:	The Quality Manager is responsible for ensuring that Developer (and all sub-contractors) satisfy all quality requirements on the Project, including, as a minimum, oversight of the establishment and maintenance of a quality maintenance system.
Minimum Period of Availability:	From commercial close to total construction completion; and Separately through to the end of Project Agreement term.
Name:	**Gordon Peterson, PE**
Title:	**Project Lead Quality Manager**
Current Employer:	**Kiewit**
To be seconded to/employed by:	Developer

Environmental Manager

Position Description:	The Environmental Manager is responsible for ensuring compliance with all environmental obligations.
Minimum Period of Availability:	From commercial close to the second anniversary of total construction completion.
Name:	**Jenn Bradtmueller, PE**
Title:	**District Environmental Manager**
Current Employer:	**Kiewit**
To be seconded to/employed by:	Developer

Utilities Manager

Position Description:	The Utilities Manager is a management role with a minimum of five years of relevant experience on major infrastructure projects. This role is responsible for managing all required utility works and coordination with utility companies.
Minimum Period of Availability:	From commercial close to total construction completion.
Name:	**Kevin Custy**
Title:	**Utilities Manager**
Current Employer:	**Jacobs Engineering Group Inc.**
To be seconded to/employed by:	Lead Contractor

Community and Public Relations Manager

Position Description:	The Community and Public Relations Manager is responsible for media relations, crisis management and community engagement activities in coordination with HPTE and BE.
Minimum Period of Availability:	From commercial close to the second anniversary of total construction completion.
Name:	**Hunter Sydnor**
Title:	**Public Information Manager**
Current Employer:	**Kiewit**
To be seconded to/employed by:	Developer

[35] For purposes of this confirmation, a Proposer may reasonably expect an individual will remain available to serve in a particular position while also anticipating that the Project Agreement will provide a mechanism to allow the Developer to identify suitable replacements under customary circumstances for a project of this kind.
[36]The Construction Manager must be employed by or seconded to Lead Contractor.
[37]The Design Manager must be employed by or seconded to Lead Engineer.
[38]The O&M Manager must be employed by or seconded to Lead Operator.
[39]The Quality Manager must be employed by Developer.
[40]The Environmental Manager must be employed by or seconded to Developer.
[41]The Community and Public Relations Manager must be employed by or seconded to Developer.

KEY PERSONNEL RESUME

TOM HOWELL (Design-Build Manager)

(a) Introduction | Under Tom's leadership and management, he has guided high-profile, billion-dollar transportation projects to on-time delivery within budget including many of Colorado's largest transportation projects such as T-REX. Tom has 34 years of experience managing transportation construction projects where he oversaw design and construction operations, and worked with clients to help them meet project goals. For over a decade Tom has been locally based in Kiewit's Englewood offices and as recently as 2013 he served as the Project Manager for the east end of the $34 million US-34 Big Thompson Canyon Emergency Repairs. The project required daily coordination and communication with CDOT to facilitate an aggressive project schedule to mitigate damages from this historic flooding event. Tom's experience with managing complex construction projects and local knowledge will be vital to the team. He will provide leadership to the team ensuring the project stays on schedule and budget, stakeholders concerns, or ideas are addressed promptly, and will draw upon lessons learned to guide the team to a successful delivery. In Tom's words, the success of T-REX was rooted in the client, contractor, and designer "working as one team." Tom will bring the "one team" approach to successfully deliver the I-70 East Corridor Project.

(b) Years of experience performing similar work | 34 years

(c) Length of employment; current employer, prior employers in last 10 years

- Current 34 Years (Kiewit)

(d) Experience [Title, employer, roles and responsibilities]

(i) Form F Project Experience

Project Manager, Kiewit, T-REX, CDOT/RTD, Denver, CO. $1.29 billion| This Kiewit-led design build project expanded 17-miles of interstate highway and constructed a new 19-miles double track light rail with 13 stations. The project included 61 bridges, 14 LRT bridges, three LRT tunnels, 800 utility relocations, 200 new power feeds, and $40 million in drainage structures and pipeline. Tom served as the Project Manager responsible for design, construction, budget and schedule control, quality, agency and utility coordination, subcontractor management, and permitting. Tom worked closely with CDOT to ensure delivery of a quality project 22 months ahead of schedule and under budget.

Off-Site Management and Project Management, Kiewit, Denver Union Station Transit Improvements, Denver Union Station Project Authority, Denver, CO. $336 million| This project involved the design and construction of the transportation elements for the historic Denver Union Station turning it into a multi-modal transportation hub. Tom served as the initial Project Manager during the RFP phase and during initial design and construction work. He played an instrumental role in working with RTD and City and County of Denver to develop a design management approach, that included task forces of design, construction, and clients respresentation to facilitate timely delivery of design

packages. The team invested two years into streamlining the client's design concept that would also comply with budget goals and leave them satisfied. Further, adjacent property developers were included in this collaborative environment, to ensure both parties had a clear understanding of their ROW boundaries to facilitate construction delivery of DUS elements without impacting adjacent properties construction progress.

Executive Management Team and Project Manager, Kiewit, I-225 Rail Line, RTD, Aurora, CO. $410 million| This project involves the design and construction of 10.5 miles of light rail line in Denver and Aurora, Colorado. The project traverses a congested urban area with substantial utility conflicts, traffic handling/phasing requirements, and significant coordination with adjacent contractors, local governments, and businesses. As Project Manager, Tom provides on-site management of overall operations and serves as an adviser to the discipline management team. He works with RTD and facilitates partnering agreements with RTD and 3rd parties (SBEs). Tom's continued commitment to safety and quality performance is reflected through exceptional performance to-date on this project.

Second DB/O&M Estimate Manager, Kiewit, DFW Connector, TxDOT, Dallas, TX. $991 million| DFW Connector is a design-build-maintain project of 8.4 centerline miles of urban interstate toll road adjacent to Dallas/Fort Worth International Airport. Tom led a team of over 20 DB and O&M estimaters responsible for developing the team's Alternative Technical Concepts. Tom also participated in early MOT scheming and sequencing of work around the DFW International Airport. Currently, the maintenance is on budget during the first optional 5-year maintenance period agreement demonstrating validity in the project estimates.

(ii) Other Relevant Project Experience

Area Manager and Executive oversight, Kiewit, KCIcon, Missouri DOT, Kansas City MO. $249 million| The KCIcon project involved reconstruction of 4 miles of I-29/35, including the construction of interstate-to-interstate interchanges and a 1,000-ft.-long, 137-ft.-wide cable-stayed bridge over the Missouri River. The project also involved the construction of eight bridges and the widening of five existing bridges. As Kiewits's senior off-site executive manager, Tom was ultimately responsible for supporting the project's management team. Under this role his key responsbilities included partnering with MDOT and direction of the project team, bugetary and schedule oversight, and overall project quality and compliance. KCIcon was ranked the #1 road project in November 2010 issue of Roads and Bridges.

Construction Manager, Kiewit, I-15 Reconstruction, Utah Department of Transportation, Salt Lake City, UT, $1.3 billion| The Kiewit-led I-15 design build reconstruction project included demolition, design, and reconstruction of over 16 miles of freeway, including several interchanges, walls, and bridges. As manager of the Downtown Segment Tom worked with the design build team to address constructability issues and UDOT's oversight team to ensure compliance and client satisfaction. Tom was also responsible for managing utility and electrical subcontractors that required extensive coordination.

(e) (i) licenses and/or registrations, (ii) community or professional organization service activities or recognitions and/or (ii) professional disciplinary actions

- n/a

Annex A to Form I
Form for Key Personnel References

Proposer Name: Kiewit-Meridiam Partners
Position: Design-Build Manager
Individual: Tom Howell

References

Required Information	Reference No. 1	Reference No. 2	Reference No. 3
Project(s)/Transaction(s) (name and cross-reference in SOQ to relevant Form F (if applicable)):	T-REX (Form F) I-225 (Form F) Denver Union Station (Form F)	KCIcon	T-REX (Form F) KCIcon I-15
[redacted]			

KEY PERSONNEL RESUME

DOUG ANDREW, PE (Design Manager)

(a) Introduction | Doug Andrew is a senior project manager experienced in the leadership of large multi-disciplined transportation infrastructure projects. He DBFOM projects. On every project, Doug ensures that design requirements are satisfied, life-cycle efficiencies are incorporated; impacts to the public from construction are minimized; stakeholder input is incorporated; and project goals are met. In the past 10 years, Doug has been involved as part of the leadership or as a technical advisor with over 30 DB or DBFOM projects in a dozen states.

(b) Years of experience performing similar work | 33 years

(c) Length of employment; current employer, prior employers in last 10 years

- Current 4 years (Parsons Brinckerhoff)
- Previous 12 years (Jacobs)

(d) Experience [Title, employer, roles and responsibilities]

(i) Form F Project Experience

Design Manager, Parsons Brinckerhoff, Downtown Tunnel/Midtown Tunnel/Martin Luther King Freeway Extension, Virginia Department of Transportation, Portsmouth and Norfolk, VA. $1.46 billion| In December 2011, VDOT entered into a $2.1 billion comprehensive agreement with the developer, ERC, to build a new Midtown Tunnel; rehabilitate the existing Midtown Tunnel and two Downtown Tunnels; and extend the Martin Luther King (MLK) Expressway. ERC hired SKW Construction (a JV including Kiewit) as the contractor and Parsons Brinckerhoff as lead engineer. Final design began in May 2012. Doug's experiences from the Midtown Tunnel project will be directly applicable to the I-70 East Project.

On a day-to-day basis, Doug monitored the technical aspects of the work by attending technical group meetings and daily interaction with the contractor's staff. Doug was co-located with the contractor and worked closely with their staff, including Kiewit employees on the Project. Doug also monitored the design progress relative to submittal and construction milestones and made staffing changes when needed. He oversaw all commercial aspects of the work including monthly reporting, project finances, and the performance of sub-consultants.

Design Manager, Jacobs Engineering Group, I-15 South from Tropicana Avenue to Silverado Ranch Boulevard, Nevada Department of Transportation, Las Vegas, NV. $262 million| Performed under a DB delivery method, the work included widening 6 miles of limited access interstate including the addition of collector-distributor roads. This segment of I-15 serves as the southern entrance to Las Vegas's famous Strip. Because the resorts on the Strip are an important part of the local economy, special attention was provided for maintaining the urban traffic including scheduling operations to avoid peak

travel times, including weekends. Numerous utilities required relocation and a Union Pacific Railroad bridge crossing I-15 was lengthened using accelerated bridge construction techniques.

Doug was responsible for all design activities. From the project hub office, he provided direct oversight for the design staff ensuring a quality product that met NDOT's goals in a timely manner. The hub office allowed for daily interaction with the whole team – contractor, NDOT, and designers fostering a spirit of partnering and leading to the success of the project. Doug had responsibility for the financial performance, monitoring changes in the work and sub-consultant performance.

(ii) Other Relevant Project Experience

Deputy Design Manager, Jacobs Engineering Group, Intercounty Connector Contract "A" - MD 200 from I-370 to MD 97, Maryland State Highway Administration, Montgomery County, MD. $479 million| Designed and constructed using a DB delivery method, the $479 million project consisted of 7.2-miles of new limited access open-road tolled freeway. The project included 3 interchanges, 18 bridges, 8 major culverts, 4 retaining walls, and approximately 5 miles of noise walls. This highly controversial project had been studied since the early 1960s along a corridor in suburban Washington, DC. To overcome project opposition, the Record of Decision contained over 200 various environmental requirements. A checklist was submitted with every design submittal and monthly status meetings were held with the Inter Agency Working Group – over 30 local, state, and federal stakeholders to monitor these commitments. Toward the middle of the project, a 612-foot-long urban deck designed to meet current fire life safety codes covered the roadway to provide connectivity to the Cashell Estates neighborhood bisected by the planned roadway. Also included was a bridge crossing CSX railroad and numerous utility relocations. The design work exceeded the 20% minority participation goal.

Doug's role was to assess the status of the design and make changes in staffing or approach to keep the work on schedule. At the time of award, Contract "A" was the largest DB contract in the history of the state and Doug was instrumental in working via the partnering process to resolve issues and make this project become reality. Working in a project office with the contractor, design team, and Maryland State Highway staff, he developed constructible solutions and ensured a quality design.

Project Director, Dulles Corridor Metrorail Project, Phase 2 – Preliminary Engineering for Extension to Dulles Airport/Route 772. $2.8B| Phase 1 of the Dulles Corridor Metrorail Project is currently in service and Phase 2 extends the Silver Line 11.5 miles from Reston through Dulles International Airport terminating in Ashburn, VA. Working with the Owner, Doug worked with the project Owner to develope preliminary engineering documents to be used for design-build procurement. Doug's responsibilities included supporting; designs for track, signals, traction power, five at grade stations and one aerial station. Preliminary designs for utility relocations, fire and life safety approvals for stations.

(e) (i) licenses and/or registrations, (ii) community or professional organization service activities or recognitions and/or (ii) professional disciplinary actions

- PE, Colorado, 0049166

Annex A to Form I
Form for Key Personnel References

Proposer Name: Kiewit-Meridiam Partners
Position: Design Manager
Individual: Doug Andrew, PE

References

Required Information	Reference No. 1	Reference No. 2	Reference No. 3
Project(s)/Transaction(s) (name and cross-reference in SOQ to relevant Form F (if applicable)):	Downtown Tunnel / Midtown Tunnel / Martin Luther King Extension (Form F)	I-15 South Corridor (Form F)	Intercounty Connector Contract "A" - MD 200 from I-370 to MD 97
[redacted]			

KEY PERSONNEL RESUME

ABRAHAM HENNINGSGAARD, PE (O&M Manager)

(a) Introduction | Abraham Henningsgaard's career with Jorgensen has included responsibilities as a maintenance engineer, project manager, general manager, regional manager, and vice president for the past 13 years on large infrastructure projects in the highway industry. He has significant and relevant experience in the development and implementation of project maintenance and operational management systems, value engineering, capital expense budgeting, and project management. Abraham currently serves as a Vice President on the Jorgensen Board of Directors and as a Regional Manager responsible for overall project direction, including interface with Department of Transportation managers, subcontractors, and public clients on multiple performance based asset management contracts. Additionally, he participates in business development initiatives including proposal development, bid estimating, project condition assessments, PPP project development, and OPEX and CAPEX forecasting.

(b) Years of experience performing similar work | 13 years

(c) Length of employment; current employer, prior employers in last 10 years

- Current 10 years (Jorgensen)

(d) Experience [Title, employer, roles and responsibilities]

(i) Form F Project Experience

Senior Associate, Jorgensen, I-495 Express Lanes, Transurban (USA) Inc., Arlington, VA. $17.6 million| As senior lead for I-495 Express, Abraham developed a performance based O&M cost model, comprehensive work plan, and mobilization plan for the long-term O&M to be performed by Jorgensen. He prepared engineering analyses to include KPI risk assessment, toll-way condition assessments, and development of O&M inventory plans for the 14 centerline mile limited access urban toll-way. He also continued operational support for the maintenance management system, capital maintenance considerations, and maintenance work plan modifications.

Senior Associate, Jorgensen, I-595 Corridor Roadway Improvements, Florida Department of Transportation, Broward County, FL. $56.6 million| Abraham served as a senior associate in the pursuit and award of the first PPP project to be financially closed in Florida – I-595 Express. During the procurement phase where Jorgensen acted as a technical advisor to the Developer, he was involved in aiding and developing a long-term O&M program used to allocate routine maintenance and capital expenditures for the project term. Upon project award, Abraham supported contract negotiations to provide O&M services during construction and subsequent operational periods. He also provided input and development section of O&M plans and manuals and aided in mobilization efforts to procure staffing and resources.

(ii) Other Relevant Project Experience

Regional Manager, Jorgensen, I-95 Georgia Comprehensive Maintenance, Georgia DOT, Statewide, GA. $6.8 million| Jorgensen was awarded Georgia's first lump sum performance based comprehensive O&M contract of routine maintenance, and emergency and periodic maintenance repairs and operations for the 113-mile I-95 network in Georgia. Key activities included incident response and emergency repair, mowing, litter removal, herbicide applications, guardrail and attenuator repair, shoulder repair, tree trimming/clearing, road service patrol, bridge maintenance, and traffic sign maintenance. Abraham was responsible for the operational direction of the project including staffing, maintenance plans, third-party claims, and budgeting. He also implemented chemical herbicide management strategies, sign reflectivity replacement programs, and bridge maintenance to raise the condition of roadway assets.

Project Manager, Jorgensen, Jacksonville Interstate Asset Maintenance, Florida DOT, Jacksonville, FL. $29.6 million |Jorgensen was awarded a seven-year lump sum performance based asset maintenance contract administration for over 160 centerline miles of interstate roadways in the Jacksonville, Florida area. Key responsibilities included performance of routine maintenance, incident response, and third-party claims. Abraham's responsibilities as project manager included developing and executing an annual maintenance work plan, managing the in-house maintenance work force, and supervising specialty maintenance subcontractors. This project is in an urban area of Jacksonville, Florida requiring a high demand for customer and client service. Abraham organized a responsive customer service approach and methodologies for documenting and transparently reporting O&M work.

Senior Associate, Jorgensen, Loop 375 Border West Highway Extension, Texas DOT, El Paso, TX. $19.2 million| Abraham was a key member of the Jorgensen bidding team for the Loop 375 toll road project in El Paso. This project was awarded to a joint venture of Abrams/Kiewit with Jorgensen serving as the O&M contractor. Abraham is currently participating in the design review for maintainability during the design-build phase while assisting in the development of the long-term O&M program for all roadway assets and ITS components. Upon construction completion, Jorgensen will be performing O&M activities on a multi-year contract – three, five-year terms.

Regional Manager, Jorgensen, Asset Maintenance Clay, Nassau, and Bradford Counties, Florida DOT, Clay, Nassau, and Bradford Counties, FL. $22.3 million| Jorgensen performs O&M works for all state roadway networks in Clay, Nassau, and Bradford Counties (3 contracts) under a lump sum performance base model, each with a 7-year term with renewal options. Key activities include incident response and emergency repair, mowing, litter removal, herbicide applications, guardrail and attenuator repair, shoulder repair, tree trimming and clearing, road service patrol, drainage and utility stormwater repairs, and traffic sign maintenance. Abraham is responsible for the overall operational direction of the project including staffing, maintenance plans, third-party claims, budgeting, public outreach, and customer services.

(e) (i) licenses and/or registrations, (ii) community or professional organization service activities or recognitions and/or (ii) professional disciplinary actions

- PE, Florida 72244, PE, Georgia PE036228, PE Illinois 062.063723, PE, Texas 109231, PE, South Carolina 29318, PE, Puerto Rico 25222 , Certified GC in FL CGC1514526

Annex A to Form I
Form for Key Personnel References

Proposer Name: Kiewit-Meridiam Partners
Position: O&M Manager
Individual: Abraham Henningsgaard, PE

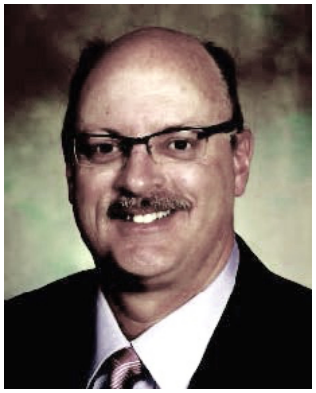
References

Required Information	Reference No. 1	Reference No. 2	Reference No. 3
Project(s)/Transaction(s) (name and cross-reference in SOQ to relevant Form F (if applicable)):	I-495 Express (Form F)	Georgia Comprehensive Maintenance, Georgia Department of Transportation	Jacksonville Interstate Asset Maintenance Asset Maintenance Clay, Nassau, and Bradford Counties
[redacted]			

KEY PERSONNEL RESUME

GORDON PETERSON, PE (Quality Manager)

(a) Introduction | Gordon Peterson has served on many award-winning, design build urban transportation projects. Most recently, he was lead quality manager on the successful $991 million DFW Connector in Dallas, which includes many of the same elements as the I-70 East Project. Gordon will leverage his 30+ years of experience with inspection, design, rehabilitation, and quality control to ensure CDOT receives a high-quality result for the I-70 East Project. Specifically, he will implement quality planning and training and manage the team's quality management processes. Gordon will assure Kiewit-Meridiam's commitment to high-quality construction for CDOT in completing the Project. Gordon developed the first contractor AASHTO certified lab in Colorado and has served on the board of the Colorado Asphalt Paving Association.



(b) Years of experience performing similar work | 33 years

(c) Length of employment; current employer, prior employers in last 10 years

- Current 31 years (Kiewit)

(d) Experience [Title, employer, roles and responsibilities]

(i) Form F Project Experience

Construction Quality Control Manager, Kiewit, DFW Connector, Texas Department of Transportation, Dallas, TX. $991 billion| DFW Connector, a $991 million design-build-maintain urban interstate toll road located adjacent to Dallas/Fort Worth International Airport had the potential of impacting 200,000 drivers a day as well as the local businesses of Grapevine, Las Colinas, Westlake, and Southlake, TX. For this project, Gordon developed project-specific quality programs, including construction quality control procedures, into an ISO 9001:2008 certified quality management plan. He managed the entire quality program (at peak there were close to 80 people that included 55 Quality Acceptance people). His duties included administration of the program, document control, and oversight of supervisors, engineers and technicians and testers on the QC and QA staff. Gordon interfaced regularly with the Professional Services Quality Control Manager and the Quality

Acceptance Manager. He was responsible for assuring that testing was performed in adherence to TxDOT specifications and that quality-related issues were quickly documented and resolved. Further, Gordon authored the maintenance quality plan (MMIS and MMP) prior to the project entering into the first option maintenance period. This included establishing assets and developing work order procedures to address maintenance elements of work. Gordon was routinely "right in the middle" of management and operations from day to day. His hands-on approach was necessary to ensure crews were following the Quality Plan per specification and to report compliance status to TxDOT directly. He coached field crews on the filing of noncompliance incidents and chaired pre-activity meetings regularly to maintain a consistent presence and serve as a reminder to crews on proper quality performance procedures. In

addition, Gordon utilized a virtual-based document-sharing platform to manage the exchange of documentation in preparation for punch list closeout. To mitigate the lack of experience with quality acceptance inspectors, Gordon co-chaired an Inspector Development Program alongside TxDOT for 18 months that all QA inspectors were required to attend. The focus was on coaching these inspectors to accept their roles as auditors of construction performance at the appropriate hold points. This effort led to collaborative solutions and transparency once the program was "off the ground". This project received a National Recognition Award at ACEC's 2013 Engineering Excellence Awards.

Lead Quality Manager, Kiewit, T-REX, CDOT/RTD, Denver, CO. $1.29 billion| This $1.29 billion Kiewit-led design-build project expanded 17-miles of interstate highway and constructed a new 19-miles double track light rail with 13 stations. The project included 61 bridges, 14 LRT bridges, three LRT tunnels, 800 utility relocations, 200 new power feeds, and $40 million in drainage structures and pipeline. The project was completed 22 months ahead of schedule and under budget. Gordon was the lead quality manager for state certified Kiewit materials and testing lab. He was responsible for oversight of the testing, reporting, and documenting of materials incorporated into the paving materials for the project. He also served on a working group that developed the initial Kiewit DB quality management plan (QMP).

Lead Quality Manager, Kiewit, Denver Union Station Transit Improvements, Denver Union Station Project Authority, Denver, CO. $336 million| For this project, Gordon provided senior oversight to the project quality team in developing the project-specific quality programs, including quality system, construction quality control and quality acceptance procedures for this $374 million design build project. Following contract award, Gordon supported training efforts for supervisors, engineers, technicians, and testers on staff. He coordinated with the Workforce Investment Network to arrange quality workers for the project to augment Kiewit's project-specific quality staff. Gordon took responsibility for authoring a quality plan that was ISO certified and tailored the plan to the client's needs.

(ii) Other Relevant Project Experience

Lead Quality Manager, Kiewit, Midtown Crossing (SH 183 Managed Lanes), Texas Department of Transportation, Dallas, TX. $850 million| For this project, Gordon developed the project-specific quality programs, including construction quality control procedures for this $850 million design-build-operate-maintain project. He interfaces regularly with the Construction Quality Acceptance Firm, while his duties also include administration of the program, document control, and oversight of supervisors, engineers and technicians and testers on staff. Gordon interfaces regularly with the Professional Services Quality Control Manager and the Construction Quality Control Manager. Further, Gordon is actively training his replacement, a common trait among Kiewit mangers, to develop bench resources that are capable of "stepping-up" should the need arise. Once again, Gordon has a strong quality program "off the ground" and gaining traction with operations. Consistent with his prior work, achieving ISO 9001:2008 certification is an objective for this quality program.

(e) (i) licenses and/or registrations, (ii) community or professional organization service activities or recognitions and/or (ii) professional disciplinary actions

- PE-Civil, Colorado 27243
- PE-Civil, Arizona 22901
- PE-Civil, Texas 106790

Annex A to Form I
Form for Key Personnel References

Proposer Name: Kiewit-Meridiam Partners
Position: Quality Manager
Individual: Gordon Peterson, PE

References

Required Information	Reference No. 1	Reference No. 2	Reference No. 3
Project(s)/Transaction(s) (name and cross-reference in SOQ to relevant Form F (if applicable)):	DFW Connector (Form F)	DFW Connector (Form F)	Mid Town Crossing

[redacted]

KEY PERSONNEL RESUME

JENN BRADTMUELLER, PE (Environmental Manager)

(a) Introduction | Jenn Bradtmueller, PE has managed environmental programs for multi-million and billion dollar complex design-build projects for over 12 years. Jenn brings best management practices from I-225 Rail Line, DUS, and T-REX among other projects across the country to ensure compliance with all applicable environmental regulations and permit applications. Jenn has a solid relationship with regulatory agencies, including the Colorado Department of Public Health and Environment, and she is committed to monitoring the Colorado I-70 East Project and ensuring compliance throughout construction up to final completion

(b) Years of experience performing similar work | 12 years

(c) Length of employment; current employer, prior employers in last 10 years

- Current 5 years (Kiewit)
- Previous 7 Years (CH2M Hill)

(d) Experience [Title, employer, roles and responsibilities]

(i) Form F Project Experience

Environmental Engineer, CH2M Hill, T-REX, CDOT/RTD, Denver, CO. $1.29 billion| Jenn was the environmental engineer for CH2M Hill on this award-winning Kiewit-led design-build project. The project expanded 17 miles of interstate highway and constructed 19 miles of double track light rail with 13 stations. The project included 61 bridges, 14 LRT bridges, three LRT tunnels, 800 utility relocations, 200 new power feeds, and $40 million in drainage structures and pipeline. The project received the CCA's Environmental Excellence Award in Noise Mitigation and Monitoring. Jenn performed RECAT inspections, illicit discharge surveys, and BMP evaluations. She assisted CDOT in implementing a water quality control program.

Environmental Compliance Manager, Kiewit, Dallas/Fort Worth (DFW) Connector, TxDOT, Dallas, TX. $991 million| This design-build-maintain project consisted of consisted of the development, design, construction, and maintenance improvements along SH-114 in Tarrant County from SH-114L Business to east of International Parkway and SH-121 from FM 2499 to SH-360, including tolled managed lanes along SH-114 from east of FM-1709 to east of International Parkway. Jenn helped with the project start up, developed the initial design-build environmental program, and worked along TxDOT and EPA to define the controls of the program. She also oversaw environmental compliance for the project, trained field staff to make sure project complied with all the environmental regulations, and corrective steps were taken if necessary.

Environmental Manager, Kiewit, Denver Union Station Transit Improvements, Denver Union Station Project Authority, Denver, CO. $336 million| This $336 million design-build project included construction of a 22-bay bus terminal 23 ft. below grade, an eight track commuter rail train hall and relocation of a light-rail platform. Jenn oversaw the

environmental program including storm water control, dewatering of contaminated groundwater, hazardous and non-hazardous waste management, and asbestos and lead-based paint management.

Environmental Manager, Kiewit, I-225 Rail Line, RTD, Aurora, CO. $410 million| The I-225 Rail Line is design-build project that will construct 10.5 miles of light rail line and eight new stations in Aurora, CO. Jenn's involvement includes training, conducting internal environmental compliance audits, and securing all applicable environmental permits. Jenn oversees environmental compliance for the project, including compliance with the Clean Water Act, Clean Air Act, Resource Conservation and Recovery Act, Comprehensive Environmental Response Compensation and Liability Act, Migratory Bird Treaty Act, National Environmental Policy Act, Endangered Species Act, and the Emergency Planning and Community Right-to-know Act.

(ii) Other Relevant Project Experience

Environmental Manager, Kiewit, MoDOT 554 Bridges, MoDOT, Statewide, MO. $504 million| Jenn managed all environmental aspects on this $504 million Kiewit-led design-build project, consisting of 554 bridges. Jenn provided off-site management of the environmental program ensuring 100% compliance. This included managing storm water permits, 404 permits, 401 certifications, waste management, and compliance with the Emergency Planning Community Right to Know Act. Jenn also assisted in the disposal of asbestos contaminated material and material with lead-based paint. Jenn's commitment to upholding the highest environmental standards and compliance contributed to the nearly two-year early completion of the project, as well as delivering the project under budget.

Environmental Manager, Kiewit, Pecos Street over I-70, Denver CO. $18.5 million| This project replaced the structurally deficient bridge on Pecos Street over I-70 and improved traffic operations of the Pecos/I-70 interchange. In addition, along with the bridge replacement, the new interchange included reconstruction of the existing ramp intersections with roundabout type intersections, associated roadway improvements, and retaining walls. Jenn served as the environmental manager for this project. Her key responsibility was oversight of the projects compliance with environmental laws and regulations. Inclusive of confirming compliance she conducted enviornmetal compliance audits, and performed stormwater inpsections as required by CDPHE CDPS construction stormwater permits and the city and county of Denver construction activities stormwater discharge permits.

(e) (i) licenses and/or registrations, (ii) community or professional organization service activities or recognitions and/or (ii) professional disciplinary actions

- PE, Colorado 43750
- 40-hour hazardous waste operation and emergency response
- Environmental steering committee for AGC of America
- CDOT Integrative Contracting Advisory Committee environmental subcommittee
- Erosion control subcommittee with the Colorado Contractors Association

Annex A to Form I
Form for Key Personnel References

Proposer Name: Kiewit-Meridiam Partners
Position: Environmental Manager
Individual: Jenn Bradtmueller, PE

References

Required Information	Reference No. 1	Reference No. 2	Reference No. 3
Project(s)/Transaction(s) (name and cross-reference in SOQ to relevant Form F (if applicable)):	Pecos Street Bridge over I-70	MoDOT 554	I-225 Rail Line (Form F)
[redacted]			

KEY PERSONNEL RESUME

KEVIN CUSTY (Utilities Manager)

(a) Introduction | Kevin Custy is a knowledgeable expert in the field of utilities and advises utility engineers throughout the country. He has 27 years of utility management experience on billion dollar design build projects including experience managing personnel. His experience also includes working with utility company and local agency representatives in the Denver metropolitan area. He possesses in-depth knowledge of Colorado State Laws, local laws, and the Code of Federal Regulations as they apply to utilities. While Utilities Manager for CDOT, Kevin oversaw and authored the Design Build Utility Guidance document used on all alternative delivery projects for CDOT. He is a proven utilities expert that knows the local infrastructure, understands the laws and regulations surrounding utilities, and maintains utility company relationships. All of these elements are vital to the success of the most complex projects, including the I-70 East Project.

(b) Years of experience performing similar work | 27 years

(c) Length of employment; current employer, prior employers in last 10 years

- Current 5 years (Jacobs Engineering Group Inc.)
- Previous 30 years (CDOT)

(d) Experience [Title, employer, roles and responsibilities]

(i) Form F Project Experience

Senior Utility Manager, CDOT/RTD, T-REX, CDOT/RTD, Denver, CO. $1.29 billion| This design-build project expanded 17 miles of interstate highway and constructed 19 miles of double track light rail with 13 stations. The project included 61 bridges, 14 LRT bridges, three LRT tunnels, 800 utility relocations, 200 new power feeds, and $40 million in drainage structures and pipeline. Utility relocations were completed ahead of schedule and under budget with no major utility accidents and no contractor delay claims. Kevin's responsibilities on this project included:

- Supervised and trained staff utility team members
- Coached, mentored, and managed utility team staff to perform assigned duties, in accordance with CDOT, RTD, state and federal guidelines and policies, using sound engineering judgment
- Served on "T-REX Constructability Task Group"
- Developed strategy and made recommendations to change state laws (Senate Bill 00-203) to allow for better utility company coordination with CDOT on a statewide basis
- Developed processes and procedures for public and private utility company relocation scheduling, coordination, and contracting that were critical to this project (CDOT's first design build initiative)
- Authored the utility portion of the RFP
- Served as Utility Manager during Environmental Impact Statement stage of the project

(ii) Other Relevant Project Experience

Senior Utility Manager, Jacobs Engineering Group, RTD FasTracks Program, RTD, Denver, CO. $7 billion| The RTD FasTracks Program is a $7 billion dollar comprehensive transit expansion plan to build 122 miles of new commuter rail and light rail, 18 miles of bus rapid transit, 21,000 new parking spaces at light rail and bus stations, and enhanced bus service for easy, convenient bus/rail connections across the eight-county district with innovative project delivery including design-build, P3, and CM/GC. Under Kevin's leadership, the utility deliverables are ahead of schedule, under budget, with no major utility accidents and no contractor delay claims. Kevin's duties include supervising staff utility team members and performing utility senior leadership duties for FasTracks. Other project-specific duties include:

CDOT Utilities Manager, CDOT Assistant Utilities Manager, CDOT Region 6 (now known as Region 1)| During Kevin's tenure with CDOT, he became the utilities subject matter expert for all road construction and railroad/highway safety projects within CDOT's Region 6, the largest and most complex region in the state. He has worked on hundreds of CDOT projects providing unparalleled comprehension of the utility and railroad infrastructure on the I-70 East Corridor and the I-70/I-25 and I-70/I-225 interchanges. He developed working partnerships with all of the utility companies within the Denver metropolitan area, managed utility teams, coordinated thousands of utility relocations for transportation projects, and efficiently and effectively negotiated all of these conflicts resulting in creative, low-cost solutions. Kevin has served mutliple roles during his time at CDOT.

As a utilities manager he had the following responsibilities;

- Hired, coached, mentored, and managed utility unit staff to perform assigned duties, in accordance with CDOT, state and federal guidelines, and policies
- Coordinated with utility company representatives to implement schedules and work during design and construction phases, to promote "partnering" teamwork and ensure utility relocations for all projects were completed on time and within budget

Serving as Assistant Utility Manager for all Region 6 road construction projects he performed the following duties:

- Prepared written certification, based on investigation and development of specific courses of action, that all existing and proposed irrigation ditch and utility facilities were determined to be in accordance with accepted standards and practices
- Worked and acted jointly with others on street lighting design reviews and on railroad involvement within these projects
- Prepared documentation to reimburse costs for utility modifications on all projects

(e) (i) licenses and/or registrations, (ii) community or professional organization service activities or recognitions and/or (ii) professional disciplinary actions

- FHA: AASHTO 2006 Utility Outstanding Achievement Award for Exceptional Accomplishment in the Category of Utility Innovation valued at $100+M
- FHA: AASHTO 2006 Utility Outstanding Achievement Award for Exceptional Accomplishment in the Category of Subsurface Utility Engineering

Annex A to Form I
Form for Key Personnel References

Proposer Name: Kiewit-Meridiam Partners
Position: Utilities Manager
Individual: Kevin Custy

References

Required Information	Reference No. 1	Reference No. 2	Reference No. 3
Project(s)/Transaction(s) (name and cross-reference in SOQ to relevant Form F (if applicable)):	T-REX (Form F)	FasTracks	CDOT
[redacted]			

KEY PERSONNEL RESUME

HUNTER SYDNOR

(Community and Public Relations Manager)

(a) Introduction | Hunter Sydnor brings 14 years of experience in overseeing the execution of the public involvement plans (PIP) on high-profile transportation and highway projects. Hunter has been involved with transportation development in the Denver Metro Area since the late 1990s. She is familiar with the area and has relationships with many of the project's community leaders and stakeholders. Hunter will apply her experience to develop a communication process to keep CDOT, major stakeholders, and the public informed. She collaborates with client and contractor senior management teams to anticipate and respond to stakeholder concerns. Hunter has collaborated with CDOT personnel to develop and implement communication plans to ensure effective information dissemination to relevant stakeholders on projects including T-REX, Denver Union Station, and the recent Pecos Street over I-70. She brings a wealth in community knowledge and strategic thinking to our team. Her efforts on T-REX earned the *Gold Pick for the Best Communications Program Award* from the Public Relations Society of America.

(b) Years of experience performing similar work | 14 years

(c) Length of employment; current employer, prior employers in last 10 years

- Current 11 years (Kiewit)

(d) Experience [Title, employer, roles and responsibilities]

(i) Form F Project Experience

Public Information Manager, Kiewit, Denver Union Station Transit Improvements, Denver Union Station Project Authority, Denver, CO. $336 million| Hunter served as the Public Information Manager for this high-profile project to construct a 22-bay bus terminal 23 ft. below grade, an 8-track commuter rail train hall, and relocation of a light rail platform. Hunter was responsible for developing the project communication plan to inform the public of specific construction activities and addressing all public concerns. She coordinated information between the client and project management team and distributed internal and external up to-the-minute updates.

Public Information Officer, Kiewit, T-REX, CDOT/RTD, Denver, CO. $1.29 Billion| This $1.29 billion Kiewit-led design-build project expanded 17-miles of interstate highway and constructed a new 19-miles double track light rail with 13 stations. The project included 61 bridges, 14 LRT bridges, three LRT tunnels, 800 utility relocations, 200 new power feeds, and $40 million in drainage structures and pipeline. The project was completed 22 months ahead of schedule and under budget. Hunter served as Principal Contact for elected officials, residents, business owners, commuters, and emergency response teams. She worked with CDOT and RTD to determine issues with a political impact and strategized ways to minimize

these impacts. She developed communication plans, conducted public meetings, and organized special events. Through constant communication with the public, Hunter helped to deliver the nation's first multi-modal transportation project that received nation-wide acclaim and over 30 awards, including the Gold Pick for Best Communications Program Award from the Public Relations Society of America, Colorado Chapter.

Public Information Officer, Kiewit, DFW Connector, Texas Department of Transportation, Dallas, TX. $991 million| DFW Connector, a $991 million design-build-maintain urban interstate toll road located adjacent to Dallas/Fort Worth International Airport had the potential of impacting 200,000 drivers a day as well as the local businesses of Grapevine, Las Colinas, Westlake, and Southlake, TX. Hunter worked on the proposal for the project, researching the community, identifying stakeholders and developing communication tools. When the project started, she developed the Crisis Communication Plan, the Public Information Plan and got new staff trained. At project start, she worked with the construction management team and TxDOT to develop relationships and processes to share information as the project moved forward.

Public Information Manager, Kiewit, I-225 Rail Line, RTD, Aurora, CO. $410 million| As the Public Information Manager on this $410 million project to design and build 10.5 miles of light rail line in Aurora, Colorado, Hunter is responsible for keeping the public informed of all construction related activities. The project occurs in a congested urban area with significant utility conflicts, traffic handling/phasing requirements, and intense coordination with adjacent contractors, local governments, and businesses. Hunter is responsible for developing the communication and crisis management plan, as well as interfacing with stakeholders to keep all informed in a timely manner.

(ii) Other Relevant Project Experience

Public Information Officer, Kiewit, Orange Line Expansions I-1/I-2, DART, Dallas, TX. $436 million| This $436 million design-build light rail project included over four miles of bridge structures and ballasted, direct fixation, and embedded track construction. The light rail line extends nine miles from Bachman Station on the green line in northwest Dallas to Belt Line Road, located south of DFW International Airport. The project features eight bridges, 58,000 ft. of ballasted track, 27,000 ft. of direct fix track and 14,600 ft. of embedded track. Hunter partnered with DART to establish a public outreach/communication program and develop the Public Information Plan. She conducted community outreach, and prepared fact sheets, presentations, and brochures. She created committees for each station working with local artists and the design/construction team to include art elements at each station.

(e) (i) licenses and/or registrations, (ii) community or professional organization service activities or recognitions and/or (ii) professional disciplinary actions

- Member of Women's Transportation Seminar
- Volunteer for Hispanic Contractors of Colorado
- Volunteer for Conference of Minority Transportation Officials Committee

Annex A to Form I
Form for Key Personnel References

Proposer Name: Kiewit-Meridiam Partners
Position: Community and Public Relations Manager
Individual: Hunter Sydnor

References

Required Information	Reference No. 1	Reference No. 2	Reference No. 3
Project(s)/Transaction(s) (name and cross-reference in SOQ to relevant Form F (if applicable)):	Denver Union Station (Form F)	I-225 Rail Line (Form F) T-REX (Form F) Denver Union Station (Form F)	T-REX (Form F)
[redacted]			

5. Statement of Technical Approach

5.A. Technical Summary

Kiewit-Meridiam Partners brings an integrated technical team with national and international experience and a successful history of community-focused delivery in Colorado and across North America. As we initiate innovative technical solutions, establish management controls, and refine a functional plan for subcontracting, we will also embrace a partnering commitment to work with CDOT to optimize comprehensive solutions for I-70 East while addressing the needs of the communities. We will ***minimize impacts*** with an unwavering dedication to ***protect the safety of the workforce and public***. **Figure 13** illustrates this integrated team principle through the project phases with emphasis on the development of an overall approach augmented with the predictability of date-certain, fixed-price commitments for design, construction, and O&M services.

Technical

We commit to provide proven professionals to implement processes initiated during the development phase that include the integration of design, construction, and O&M with joint design task forces. During design development, we will assess a range of technical solutions to ***optimize the scope of the infrastructure to promote corridor-wide economic and community vitality***. This process facilitates a whole of life approach, requiring thorough life cycle analysis for all major project elements.

Project Management

During development, we will create one Project Management Plan (PMP) for the entire project. The PMP is a living document and will evolve as we move through design, construction, and O&M. Our PMP is driven by a project management directive focused on experience, defined roles and responsibilities, clear decision-making authority, a culture of issue resolution, and a commitment to continuity of personnel. The PMP supports ***optimizing operating and life cycle maintenance by delivering a quality project*** during the design, through construction, and into O&M.

Subcontracting

We commit to a robust subcontracting plan, including significant SBE/DBE outreach and participation to incorporate the expertise and resources of local firms. Kiewit, Parsons Brinckerhoff, and Jacobs' collective long-standing relationships with local subcontractors provide a powerful foundation to successfully deliver I-70 ***using collaborative processes to enhance community values and benefits***. Combined subcontracted dollars among Denver Union Station, I-25 T-REX, and I-225 Rail Line top $1.1 billion in funding that has been reinserted into local market spending over the last 10 years. We have renewed ongoing relationships with several local firms based on their quality work and proven understanding of our best practices. Further, we have already established exclusive subcontract agreements with this pool of local partners. Firms that perform well during construction will be considered for long-term work opportunities during the O&M phase. Together, we bring the ideal blend of international, national and local talent while committing to put the local market to work on a project of international scale.

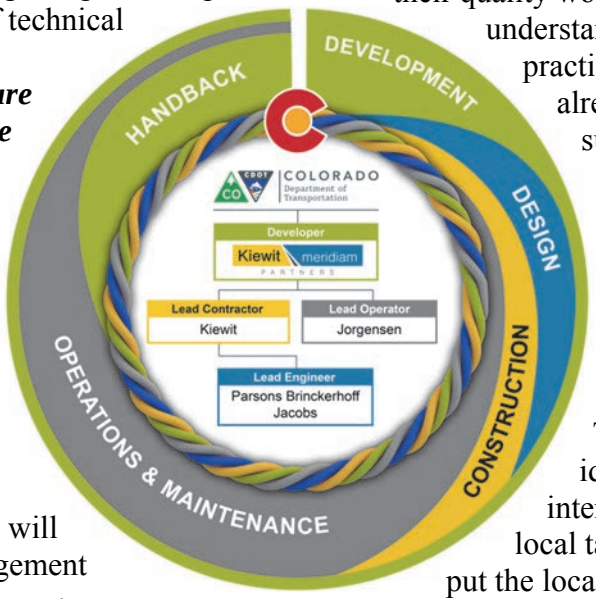


Figure 13 – Integration for Whole Life Delivery

5.B. Technical Challenges

Kiewit-Meridiam Partners' integrated structure is specifically designed to mitigate project challenges, control risk, and remain accountable to CDOT and the communities along the I-70 East corridor. Each team member has visibility during design development to provide input into the technical and life cycle solutions that ultimately drive our mutual decisions. Decisions are driven when all members have "skin in the game" for the expected outcomes. The technical challenges are significant; however, these are not new and/or insurmountable for the Kiewit-Meridiam team. The methods we will use to mitigate these challenges and achieve CDOT goals have been practiced locally. These measures are realistic, achievable and we bring a high degree of confidence in using them.

We have been very active analyzing the potential issues and have already leveraged proven strategies that work—strategies used on local projects such as I-25 T-REX and Pecos Street Bridge over I-70. **Figure 14** illustrates the major technical aspects along with major perceived challenges for each project segment. We will continue this process by developing a project risk register once details of the initial and subsequent RFP documents are received. The risk register will be the basis for both our technical assessment and commercial communication with the procuring authorities to ensure we ***optimize the scope of the infrastructure in order to promote corridor-wide economic and community vitality***. We will continue to resolve challenges, identify and categorize risk based on financial/economic analysis, safety/security factors, community impacts, and performance-related items. In conjunction with the project agreement, we will allocate responsibilities to the parties who are best able to mitigate and monitor each challenge/risk.

*Figure 14 – I-70 East Project Technical Approach and **Challenges***

Segment 1 - Brighton Blvd to Quebec Pkwy

Major Technical Aspects

- Re-construct I-70 below grade
- Remove existing viaduct
- Urban landscaped freeway cover
- Reconstruction of 46th Ave. at grade
- 3 new railroad bridges, 7 new city street bridges
- Onsite/offsite stormwater drainage
- Hazardous material management & mitigation
- New interchanges at Colorado, Steele/Vasquez, Dahlia, Holly, Monaco, and Quebec
- Managed lanes and associated tolling infrastructure

Major Challenges Driving Design/Construction

- Dewatering contaminated groundwater
- Maintaining the existing viaduct
- Drainage for the Montclair Basin
- Utility investigation and relocation
- Maintaining community connectivity
- Railroad coordination

Segment 2 - Quebec Pkwy to Chambers Rd

- At grade widening of I-70 in both directions
- New I-270 SB to I-70 EB ramp flyover bridge
- New bridge over I-70 at Peoria St.
- Pavement rehabilitation and widening
- Managed lanes and associated tolling infrastructure
- Commercial access during construction
- Pre-determined detour routes with local agencies
- MOT and construction phasing

Kiewit meridiam PARTNERS

Figure 15 provides a high-level description of some perceived technical challenges and risks associated with the project, along with a brief overview of potential innovations, applications, and existing techniques for addressing and overcoming challenges. The Kiewit-Meridiam team has the advantage of a deep understanding of the specific project requirements and unique corridor characteristics, and is prepared to aggressively implement innovative techniques and mitigation measures that have been tested and proven on projects of similar complexity.

Figure 15 – Technical Challenges

Perceived Technical Challenges *and Risks*	Innovation/Techniques and Mitigation	Proven Success
Design Development • Optimize scope through a design optimization strategy • Interface design disciplines across project to eliminate conflicts • Managed lane design considerations • Corridor design aesthetics • Snow storage and positive drainage on paving • Efficient design *resource coordination and startup* • Timely *design review coordination with railroads* • Interface our design with CDOT and *3rd party expectation*	[redacted]	• T-REX • DFWC • PM/H1 • 225 LRT • DUS • MTT • I-4 • Goethals • LBJ • NTE • NEAH • Waterloo • POMT
MOT/Phasing • Minimize impact to the traveling public • Maintain traffic flow of the adjacent circulation with effective north-south/east-west access on local streets • Coordinate with other construction projects and operations in the area • *Safe access for pedestrian traffic* and protection from work zone • *Construction traffic egress/access* (e.g., material deliveries, trucking)		• T-REX • DFWC • PM/H1 • DUS • I-4 • US 36 • Goethals • LBJ • NTE • NEAH • Waterloo • POMT
Utilities • Identify all conflicts (~200) • Utility interruption to residents/businesses • *Balanced process for effectively reacting to previously unknown utilities*		• T-REX • DUS • DFWC • 225 LRT • PM/H1 • MTT

Perceived Technical Challenges *and Risks*	Innovation/Techniques and Mitigation	Proven Success
• *Timely execution of MUAs* • *Timely design and relocation*	[redacted]	• I-4 • Goethals • LBJ • NTE • NEAH • Waterloo • POMT
Deep Excavation & Drainage • Support of excavation (SOE) next to existing viaduct • Storm water control in lowered section • Materials management (deliveries and trucking) • Protection of existing structures • Fully understands 404 Permit requirements • *Tunneling under high groundwater table* • *Groundwater control in lowered section*		• T-REX • DUS • DFW • MTT • PM/H1 • Goethals • LBJ • NEAH • POMT
Bridges/Walls • Limited ROW • Long-term maintenance • Phased construction • Maintain community connectivity on roadways during bridge construction • *Protection of existing structures* • *Design and construction of drilled shafts* • *Coordination with railroads*		• T-REX • DFW • DUS • PM/H1 • 225 LRT • EEC • I-4 • Goethals • LBJ • NTE • NEAH • POMT
Geotechnical - General • Conduct thorough field explorations in urban environments prior to design • Coordinate with property owners and other 3rd parties • Tie-back walls vs. ROW constraints • *Poor soil conditions* • *Groundwater*		• T-REX • 225 LRT • PM/H1 • DFWC • I-4 • Goethals • LBJ • NEAH • POMT
Landscaped Cover Over Highway • Incorporate future additional elements into design • Maximize cover with meeting technical requirements • Fire and life safety		• Klyde Warren • DUS • T-REX • EEC

Perceived Technical Challenges *and Risks*	Innovation/Techniques and Mitigation	Proven Success
• Ventilation • Lighting • *Long-term maintenance and life cycle* • *Water control for landscaping*	[redacted]	• LBJ • POMT
Paving • Maximize pavement life cycle • Minimize tire pavement noise • Maintain positive drainage • *Existing asset condition for widening segments*		• T-REX • DFWC • NW Pkwy • PM/H1 • LBJ • NTE • NEAH
Aesthetics & Landscape • Satisfy local community concerns • Cover design • Minimize water usage and maintenance • Historic preservation • *Cost-effective solutions* • *Manage public expectations*		• T-REX • DFWC • PM/H1 • Pecos • LBJ • NTE • Waterloo • POMT
Lighting/Electrical/Signing • Maximize illumination while minimizing light pollution, energy usage, and maintenance • Coordinated signal timing of crossing streets with MOT • Intelligent vehicle/ highway systems (IVHS) consideration • *Coordinate and integrate the ITS/ETCS elements*		• T-REX • DFWC • PM/H1 • I-4 • US 36 • Waterloo
Hazardous Material • Contaminated soil • Contaminated groundwater • Migration of hazardous material • *Discover of unknown hazardous material*		• DUS • MTT • T-REX • DFWC • NEAH

Perceived Technical Challenges *and Risks*	Innovation/Techniques and Mitigation	Proven Success
Unknown/Unforeseen Conditions • *Poor soil conditions* • *Buried objects/archeology* • *Utilities* • *Groundwater* • *Weather*	[redacted]	• MTT • PM/H1 • T-REX • DFWC • Goethals
Operations and Maintenance • Incident/emergency response • Maximize asset life cycle • Reliable lane availability to maximize toll revenue • Coordinate with CDOT for crossover activities (i.e., ITS, tolling, IVHS) • Incorporate proven CDOT best practices • Community/stakeholder communication for maintenance work, special events, etc. • Transition of O&M responsibilities from CDOT to Developer • Clear handback expectations • *Accurate traffic predictions to establish life cycle performance of assets* • *Optimize O&M cost while meeting the level of service and performance requirements of the project*		• I-595 • I-495 • HCTRA • DFWC • SH-183 • Goethals • LBJ • NTE • NEAH • Waterloo • POMT
Coordination With 3rd Parties • Major events (NWSS) • Other construction projects • Emergency responders • *Railroads* • *City and County of Denver* • *Adams County* • *Denver Public Schools* • *RTD* • *City of Aurora* • *DIA/E-470*		• T-REX • DUS • DFWC • 225 LRT • PM/H1 • Goethals • LBJ • NTE • Waterloo • POMT
Positive impact on community • Minimize impacts to residents and businesses • Enhance community values • Address community concerns • Community involvement • Minimize impact to regional operations		• MTT • T-REX • DUS • DFW • Pecos • 225 LRT • PM/H1 • LBJ • NTE • Waterloo • POMT

5.C. Preliminary Project Plan Overview

Kiewit-Meridiam brings the relevant, requisite experience and boots-on-the-ground knowledge of the I-70 East corridor with a project plan focused on full integration and a whole-of-life approach to the long-term interests of the project. **Figure 16** provides an overview of the project plan for each phase—in reference to quality management, resource management, and proposed measures to ensure continuity of personnel, safety, and schedule management. Additional details of the plan implementation and roles/responsibilities of the management structure can be found in SOQ section 2.1.4 Organizational and Management Structure.

Figure 16 – Project Plan	**Development** *Kiewit-Meridiam Partners*	**Design** *Parsons Brinckerhoff/Jacobs*	**Construction** *Kiewit*	**Operations & Maintenance** *Jorgensen/Kiewit-Meridiam*
Quality Management	• Develop, implement, and oversee the overall project management plan (PMP) • Implement quality management plan (QMP) • Gordon Peterson as quality manager • Engage an independent quality assurance firm • Establish project-wide document control system • Quality auditing for consistency • Develop project asset register	• Initiate design task forces to ensure requirements and encourage engagement • Dedicated design quality manager • Project specific design quality management plan (DQMP) with a repeatable approach to checking and protocol reviews for all submittals • On-going constructability reviews with contractor • Interdisciplinary reviews for every design submittal	• Develop work plans and conduct pre-activity meetings • Quality inspection checklists and inspection hold points • Implement construction quality control plan (CQMP), no learning curve associated with a JV of multiple firms • Regularly scheduled quality meetings with developer/O&M/CDOT to discuss quality status o Utilize Kiewit's four square quality matrix to track and resolve issues as well as promote successes o Executive level participation	• Participate in task force meeting and constructability reviews throughout development of design • Recommend low maintenance and sustainable assets • Post construction asset inspections to confirm compliance with O&M performance requirements • Develop quality plan and implement quality management system
Resource Management	• Responsible for overall performance of the project • Experience closing 7 complex DBFOM projects in the US with 50+ multi-discipline staff in North America • Strong advisory team in place with significant P3 experience • I-70 East is our top priority for allocating and planning resources in Colorado	• Responsible for developing and integrating the design • Dedicated design teams for each discipline and segment • Hit the ground running with combined local and national resources of PB and Jacobs • Knowledgeable, local sub-consultants	• Responsible for managing the design and construction activities • Support partnerships with extensive local subcontract resource pool – proven relationships, understood systems • Subcontract coordinators to support indoctrination, monitor safety, quality compliance, schedule, and performance • $2B privately owned equipment fleet with access to more • Currently over 1,400 staff and craft employees in Colorado	• Responsible for developing and implementing O&M • Providing O&M staff mobilization and training • Allocation of maintenance task suitable for specialty subcontractors • Develop a minimum resource/spare part inventory need and monitor inventory levels with the MMS • Develop equipment inventory and procurement method utilizing MMS system to track condition of equipment
Continuity of Personnel	• Team members are committed to project for the term • Maintain key personnel through appropriate project phases • Maintain board of directors through construction and into O&M period • Key personnel selected based on expertise, tenure with company and past experience	• Maintain key personnel from RFP through construction • Provide additional leadership at meaningful levels • Maintain documentation of all meetings, action items and decisions • Use web-based tools for organized record keeping • Key personnel selected based on expertise, tenure with company and past experience • PB/Jacobs, and our sub-consultants will maintain a presence in Denver through O&M to support the team	• Maintain key personnel from RFP through start of O&M • Tom Howell proposed as construction manager (worked as deputy director and director on T-REX for full project duration, oversight on DUS and I-225 LRT) • Key personnel selected based on, expertise, tenure with company and past experience • Additional commitments of management and construction personnel that have similar project experience. • Continuity of systems and programs, no JV learning curve	• Utilize same staff during procurement, design, construction, and O&M periods • Key personnel selected based on tenure with company and knowledge and experience with O&M and P3 projects • Additional O&M staff to be hired locally • Highly trained courtesy patrol personnel • Incident management program development with experienced staff
Safety Management	• All project meetings start with safety • Commitment to public and project personnel safety • Incorporate 3rd party safety requirements into project safety plan (railroads, utilities) • Safety indoctrination, on-going monitoring, and documentation for all • Communication with and involvement from community, local agencies, & motorists • Crisis communication plan	• Specific MOT plans, detour routes, and protection of work areas considered in design to ensure safety of the public • Design project features with safety in mind o Safety of the public in the ultimate configuration o Safety of the public and operations during construction • Design staff receive ongoing safety training with contractor led site specific safety plan • Specific safety reviews of preliminary design packages	• Dedicated project safety manager and staff • One industry-leading safety program, no JV learning curve • Plan safety of workers and public into every operation • Site specific safety orientation required for all project personnel and subcontractors • Craft voice in safety program • Stop work authority for all • Executive participation in safety	• Develop safety plan that includes policies and procedures for working safely for all O&M activities • Designated safety manger during O&M • Development of practices and methodologies for the safe implement of all work activities • Develop safety training program for project staff – O&M staff become the long term "eyes of the I-70 East Corridor of Safety"
Schedule Management	• Overall responsibility for the project schedule • Implement and update the overall project schedule including design, construction, and O&M • Use partnering process to quickly resolve issues • Integrate with new CDOT PMO systems and tools • Monthly progress schedule updates, with recovery plan triggers	• Use task force meetings and constructability reviews to ensure involvement of all parties and eliminate conflicts and surprises to fast track overall design process • Integrated design and construction schedule • Include schedule time for 3rd party and CDOT reviews • Subordinate schedules and monthly reporting to track progress	• Dedicated and experienced project scheduler • Use of subordinate schedule to track progress daily o P6 CPM for DB, 90 day schedule, 3 week schedule, Play of the day • Weekly look ahead meeting with CDOT, design team, and PI team	• Utilize the MMS system to track, monitor, schedule, and confirm completion of O&M work • Use historical data to develop the O&M program include work activities, quantities, and cyclical work • 90/10 approach to maintenance—90% preventative; 10% reactive for unforeseen issues (damage, weather) • Look ahead schedule for major repairs • Regularly scheduled inspections

5.D. Public Interest and Engagement Plan

I-70 East goes through the heart of Denver and is part of the *Gateway to the Rockies*. Improving travel through this area while maintaining and enhancing community identities, minimizing impacts, and providing a safe travel environment are essential for accomplishing CDOT's project goals.

Major highway construction can be difficult for all stakeholders, whether adjacent to the project or traveling through. CDOT and the communities have collaborated for over a decade on this project. In fact, FHWA selected I-70 as a case study for environmental justice best practices because of the extensive outreach to all population groups within the area.

The Kiewit-Meridiam team sees reaching milestones and completing construction as just the first step in achieving success. Making CDOT proud of the end product with the road in full operation and seeing the affected communities enjoying the benefits of the facility are the true test of our success.

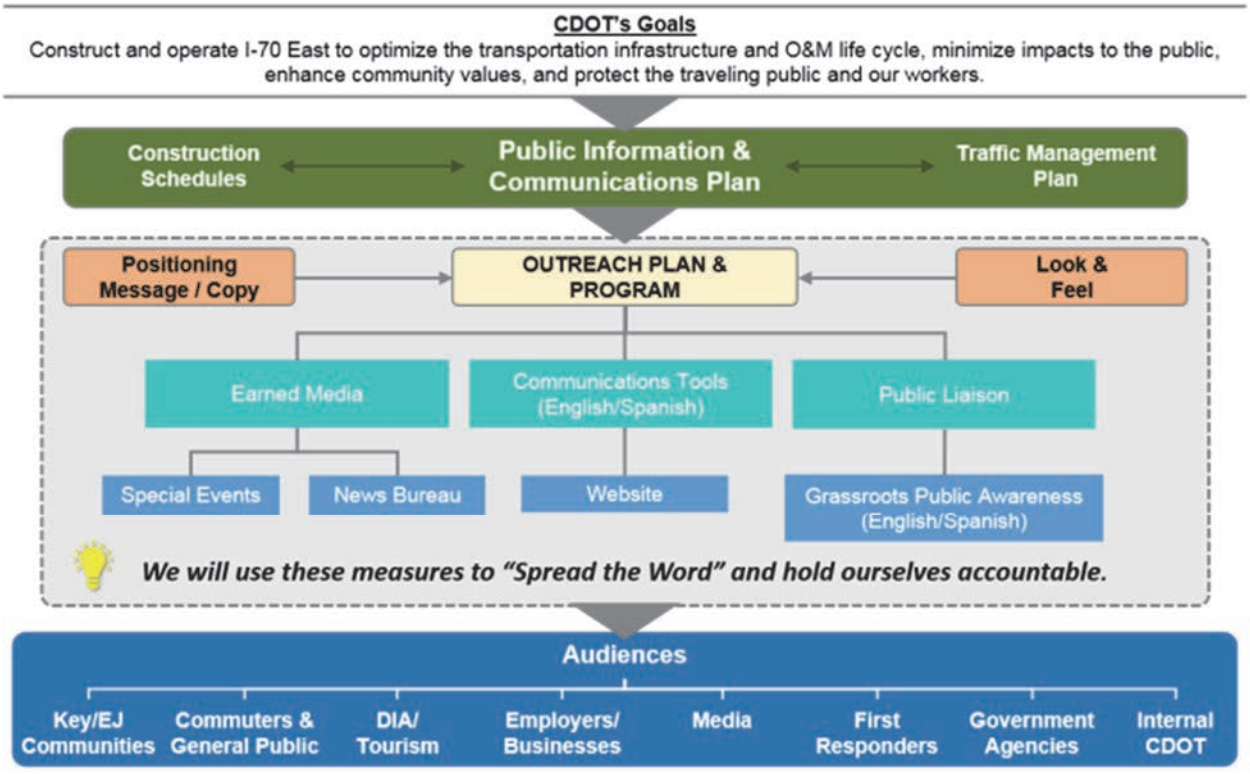
Figure 17 demonstrates a transparent approach using a full range of community relations audiences and activities we will implement for effective engagement.

Management of Construction Activities and Operations

Our public information (PI) team will be integrated with field operations, including schedule and work plan development. We will act as the intermediary between the stakeholders, construction, and O&M to enable roadway activities while communicating and helping to reduce impacts.

Access through the corridor is essential; therefore, we will establish effective detour notification and way-finding. PI will support work schedules to facilitate construction activities quickly and safely. For example, based on our local knowledge, we understand the access needs for National Western Stock

Figure 17 – Public Information and Communications



Show events, Dick's Sporting Goods Park games, Northfields patrons, and the Safeway distribution center traffic, as well as the importance of year-around tourist and business traffic to and from DIA.

Early planning, constant coordination with CDOT, and effective communication with the community gives people the information they need to understand what is occurring and what is coming up next. We have found that consistent information reduces impacts on the path to ***optimized transportation and infrastructure, promoting corridor-wide economic and community vitality.***

Environmental, Health, and Safety Management and Mitigation Program

Our team has a long-standing familiarity with the Denver area and the characteristics of I-70's footprint. We are aware of the area's environmental sensitivity, the risks the footprint poses, and the necessity to minimize work impacts on natural conditions and the community. We have experience developing site-specific environmental, health and safety, management, and mitigation plans. We will collaborate with CDOT, stakeholders, and local authorities to ensure that all needs are met.

Our plans will address the safe removal of any hazardous materials; the management of wetlands; and the reduction of noise, vibration, and dust impacts during the construction and O&M period. Our environmental program, overseen by Jenn Bradtmueller (ref. 2.1.2 Organizational Chart), will manage permit commitments, and thresholds to ensure full compliance. A major element of the environmental, health, and safety management and mitigation plans will be the traffic management to provide for continuous travel through the corridor, minimizing congestion and associated air quality degradation with specific action plans to respond to emergencies and incidents. These plans will enable us to successfully accomplish the goal of ***protecting the safety of the public.***

Community/Stakeholder Engagement

Our PI team, who has worked with CDOT and other local agencies on I-25 T-REX, DUS, and Pecos Street Bridge over I-70, will help develop innovative communication tools as well as using CDOT's successful current tools. As technologies, stakeholders, and the project phases change, we will adjust, always providing the most accurate and timely information to CDOT and to stakeholders.

Supporting now-traditional PI tools—telephone town halls, newsletters, social media, a website—throughout the term of the project, we will hold regularly scheduled meetings with stakeholders, community representatives, local residents, and businesses to provide a platform for sharing information and updates so they can voice their concerns and visions for I-70 East. To increase accessibility for public meetings, we will continue to provide childcare and meals, which has been successful for CDOT thus far. We will promote excitement about the project by celebrating milestones and providing opportunities for the community to "watch the work" at designated viewing areas and events.

Public Interest Benefits and Accommodations

The communities along the I-70 East corridor have different interests and may be looking for unique benefits from the project. The Kiewit-Meridiam team will continue the work CDOT has performed with these communities to continue to define the needs—better community connectivity, opportunity for local workforce involvement, special aesthetics to reflect community identities, and community-inspired landscaping of the highway cover near Swansea Elementary School to reflect the neighborhood. This is not a one-size fits all project, and our outreach to the community will be inspired to meet the distinct need and vision of each. As the project evolves, communication will also evolve and the tools will be updated for maximum effectiveness.

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PARTNERS

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I-70 East Project

Statement of Qualifications:

Kiewit meridiam PARTNERS

Original of Volume 2

1.1 Description of Organizational and Management Structure and Expertise

1.1 ORGANIZATIONAL AND MANAGEMENT STRUCTURE AND EXPERTISE

Kiewit-Meridiam Partners will be the single entity to enter into the contract for delivery and execution of the Project. Fully integrated with the technical organizational elements set out and discussed in Vol. 1, Sec. 2.1.3 and 2.1.4, we will use a proven organizational and management structure that follows the traditional allocation of specific responsibilities under a P3 delivery model.

The Developer will be responsible for delivery of the financing and ongoing effective monitoring of all financial matters. To achieve the goal of structuring and executing a competitive and long-term financial solution, the team will apply its demonstrated expertise from its strong track record of successfully closing (and continued management) of nine DBFOM P3 projects in the U.S. This is enhanced by additional international experience of more than 36 closed project financings, and more than 23 further projects closed by our advisors in North America alone.

During the **Development Phase** (including the RFP up to financial close), our team of experienced professionals, enhanced by trusted advisors, will implement discipline-specific work streams. Our team members have bid and delivered successful project solutions in often difficult market and procurement conditions.

The development efforts will be led by a seasoned Developer Bid Management Team[1] with a member of both Meridiam and Kiewit, **John Dionisio** and **James Geer** respectively. They will be tasked with overall project management efforts across all project disciplines including technical, finance/commercial working streams. This team will create specific working groups to drive key Development Phase progress.

A finance-specific working group will work under the leadership of Meridiam and Kiewit acknowledged finance experts **Sven Kottwitz** and **Sam Chai**, each having closed major projects in the US, Canada and internationally. The finance working group will analyze and implement the initial financial solution (as described in our Statement of Financial Approach) and provide a hands-on working forum for key finance tasks to be executed in the Development Phase. The working group will be supported by **Sam Gilmore**, who has played an instrumental role in commercial structuring of all of Kiewit's P3 pursuits.

The financial advisory tandem of Barclays Capital, Inc. and Agentis Capital Partners will provide Kiewit-Meridiam Partners access to local P3 finance experts and a strong financial modeling team. Barclays, led by **Stephen Howard**, has over 30 years of experience financing a broad range of infrastructure projects including roles with the sponsors on Goethals Bridge, North Tarrant Express, and Port of Miami Tunnel. Barclays also brings established relationships with municipal issuers in Colorado, having been selected as senior manager or co-manager on 26 Colorado state authorities, agencies, or municipalities' financings with a total par value of $4.42 billion over the last five years. Agentis, led by **Robert Van Belle**, is an independent financial advisor with substantial experience in advising private sector consortia on P3s and raising more than $6 billion in committed financing.

A clear delineation of responsibility will govern this deep bench of advisory resources for Kiewit-Meridiam Partners during the Development Phase. Barclays will provide expertise and leadership for advice on debt structuring, rating agency advisory, due diligence and debt execution. Agentis will provide leadership on financial modeling and managing the Kiewit-Meridiam Partners'

[1] See chart in Vol. 1, Sec. 2.1.3

interface concerning bid optimization, and sensitivity and scenario testing.

Kiewit-Meridiam Partners has also retained RBC and Barclays as underwriters. RBC has helped the State of Colorado finance approximately $4.5 billion in 108 deals since 2012. They will take part in the finance working group to discuss key debt structuring alternatives. Both are also experienced in the interaction of TIFIA with PABs financing, and Barclays is supporting Meridiam in its groundbreaking sourcing of committed private placement debt for the Indianapolis Justice Center project where Meridiam was appointed preferred bidder.

Kiewit-Meridiam Partners' Steering Committee will convene regularly during the Development Phase to bring to the Project their public and private sector expertise as well as experience in navigating through the issues related to TIFIA, PABs and other financial matters.

Meridiam and Kiewit are two firms that bring collective experience in closing numerous major, complex P3 projects that have been instrumental in helping to develop the P3 financing market, including: Goethals Bridge (PABs, TIFIA); North Tarrant Express (2 closings each with PABS, TIFIA); Port of Miami Tunnel (TIFIA, Bank); Long Beach Courthouse (bank, then private placement debt); and Presidio Parkway (Bank, TIFIA)[2].

During the **Execution Phase**, the ongoing financial management of Kiewit-Meridiam Partners will be led by the project's CFO. The CFO will report directly to the CEO and be accountable for all ongoing financial matters, including comprehensive financial management and overseeing the management and reporting systems under the project agreement's payment mechanism. The CFO's tasks include:

- Preparing ongoing reporting requirements under the project agreement with CDOT
- Ongoing reporting to equity providers and debt holders (and rating agencies if required)
- Managing the books and records of the Developer including tax filing including on-time delivery of audited financial accounts

Other corporate and administrative functions including management of insurance, financial controls, corporate policies, and procedures. **Figure 1** shows key debt product-specific responsibilities of the CFO.

Figure 1 – Key debt product-specific responsibilities of the CFO

Financial Source	Debt Product-Specific Finance Management	Common Finance Management
PABs	• Regular posting of information to EMMA	• Manage construction account flows (PABs, private placements) or drawdown requests (TIFIA, banks) • Coordinate lender relationships • Support LTA Certification process • Manage regular debt service payments • Ensure key covenants are met • Manage ongoing ratings affirmation processes • Ensure timely reporting to lenders • Manage waivers where needed
Private Placement	• Administer investor register	
TIFIA	• Maintain categorization for eligible vs. non-eligible expenditure	
Bank Debt	• Manage the term limit of the Bank Finance and assess any refinance risk • Administer swap payments/ receipts	

Continuity between the phases will be achieved through the ongoing involvement of the Development Phase professionals with the CFO past the point of Financial Close. In addition, members of the Board of Directors of Kiewit-Meridiam Partners and specialist resources from the wider Kiewit and Meridiam organizations are available to augment the skills of the CFO as needed.

[2] See also Volume 1, Sec. 4.1

1.2 Available Financial Capacity

1.2 AVAILABLE FINANCIAL CAPACITY

Kiewit-Meridiam Partners has the financial capacity to develop a competitive and bankable proposal, as well as deliver and ultimately operate and maintain the I-70 East Project. Our team's exceptional financial strength coupled with the knowledge gained from not only existing projects in Colorado and the greater Denver area but also from bidding, closing, delivering, and operating transportation P3 projects across North America will be valuable in assisting the Procuring Authorities and CDOT to meet the Project Goals.

Equity Members and Financially Responsible Parties

As development co-leads and Equity Members, Meridiam and Kiewit have satisfied the equity requirements for every one of the projects they have bid or closed. Meridiam and Kiewit have experience working together to bid, close, and execute numerous P3s throughout North America. Their combined strength will ensure that 100% of the equity requirement will be available at Financial Close and their deep experience will ensure a committed and deliverable proposal will be developed for the I-70 East Project.

Meridiam Equity Member

Meridiam I-70E CO, LLC will fund its equity commitment and share of the development costs for the Project from cash of Meridiam North America Fund II ("MNII Fund"). The MNII Fund is managed by Meridiam Infrastructure North America Corp. MNII Fund's financial statements are provided in Section 4.1 of its Vol. 2 SubVolume in accordance with Section 2.2 of the Financial Requirements. Additionally, MNII Fund's letter of support is provided in Vol. 2. Sec 3.1 in accordance with Section 2.4 of the Financial Requirements.

Meridiam is a leading participant in the North American P3 market, currently executing eight other transactions in North America through the end of 2016, the expected date of financial close under the Procurement Schedule. The financing for these projects is already committed and not earmarked for the I-70 East. Meridiam is currently preferred bidder on two key projects: Indianapolis Justice Facility and LaGuardia Central Terminal Building Redevelopment. As summarized **Figure 2**, Meridiam is currently active on 14 North American P3 projects.

Figure 2 – Meridiam North American P3 projects in addition to I-70 East

Project	Type	Location	Financial Close	Current Equity %	Project Phase
POMT[Form F]	Availability Payment	Florida, USA	Oct. 2009	93%	Operations
NTE[Form F]	Revenue Risk	Texas, USA	1-2: Dec. 2009 3AB: Sept. 2013	33% 40%	Operations Construction
Montreal University Hospital Research Centre	Availability Payment	Quebec, Canada	May 2010	40%	Operations
LBJ Express[Form F]	Revenue Risk	Texas, USA	June 2010	42%	Construction
Long Beach Courthouse	Availability Payment	California, USA	Dec. 2010	100%	Operations
Northeast Anthony Henday[Form F]	Availability Payment	Alberta, Canada	May 2012	50%	Construction
Presidio Parkway[RP]	Availability Payment	California, USA	June 2012	50%	Construction
Waterloo LRT[Form F]	Availability Payment	Ontario, Canada	May 2014	35%	Construction
LaGuardia Airport Central Terminal Building Replacement	Limited Revenue Risk	New York, USA	Anticipated June 2015		Preferred Proponent
Indianapolis Courthouse	Availability Payment	Indiana, USA	Anticipated early 2016	70%	Preferred Proponent
UMass Dormitory	Limited Revenue Risk	Massachusetts, USA	Anticipated late 2015		Shortlisted Proponent
Saint John City Water System	Availability Payment	New Brunswick, Canada	Anticipated 2016		Shortlisted Proponent
Edmonton LRT	Availability Payment	Alberta, Canada	Anticipated 2016		Shortlisted Proponent
Purple Line	Availability Payment	Maryland, USA	Anticipated 2016		Shortlisted Proponent

Reference Projects are noted with a superscript RP

Kiewit Equity Member

Kiewit will fund its equity commitment and share of the development costs for the Project through Kiewit Development Company (KDC) from existing cash resources, and current and incoming flows from active operations of KIG, the Financially Responsible Party for KDC. Kiewit has bid, closed, and executed numerous P3s throughout North America.

KIG's financial statements are provided in Section 4.1 of its Vol. 2 SubVolume in accordance with Section 2.2 of the Financial Requirements. Additionally, KIG's letter of support is provided in SOQ Vol. 2 Sec. 3.1 in accordance with Section 2.4 of the Financial Requirements.

As demonstrated by the robustness of its financial statements, KIG has more than sufficient capital to fund KDC's 40% equity share in the Project. As described in KIG's equity funding support letter, KDC has reviewed the I-70 East Project with the Kiewit Investment Committee and confirms the project is consistent with Kiewit's investment objectives and meets all corporate strategy and investment policy requirements.

Kiewit is a very active participant in the North American P3 market, currently executing nine other transactions in North America. For those projects that involve equity, the financing for these projects is already committed and not earmarked for the I-70 East. Kiewit is currently active on 12 North American P3 projects. **Figure 3** summarizes these projects.

Figure 3 – Kiewit North American P3 projects in addition to I-70 East

Project	Type	Location	Financial Close	Role	Project Phase
DFW Connector[Form F]	Design-Build-Maintain	Texas, USA	Oct. 2009	Developer & Contractor: 65%	Operations
Midtown Tunnel[Form F]	Revenue Risk	Virginia, USA	April 2012	Equity: 0% Contractor: 40%	Construction
Presidio Parkway[RP]	Availability Payment	California, USA	June 2012	Equity: 0% Contractor: 35%	Construction
Carlsbad Seawater Desalination Plant	Water Purchase Agreement	California, USA	Dec. 2012	Equity: 0% Contractor: 60%	Construction
Goethals Bridge[Form F]	Availability Payment	New York, USA	Oct. 2013	Equity: 10% Contractor: 70%	Construction
Waterloo LRT[Form F]	Availability Payment	Ontario, Canada	May 2014	Equity: 10% Contractor: 49%	Construction
Loop 375[RP]	Design-Build-Maintain	Texas, USA	Aug. 2014	Developer & Contractor: 40%	Construction
SH 183[RP]	Gap Financing /Design-Build-Maintain	Texas, USA	Nov. 2014	Developer: 100% Contractor: 70%	Construction
East Rail Maintenance Facility[RP]	Availability Payment	Ontario, Canada	March 2015	Equity: 10% Contractor: 40%	Construction
South Mountain/Loop 202	Design-Build-Maintain	Arizona, USA	Anticipated Nov. 2015	Developer & Contractor	Shortlisted Proponent
Edmonton LRT	Availability Payment	Alberta, Canada	Anticipated 2016	Equity Member & Contractor	Shortlisted Proponent
Purple Line	Availability Payment	Maryland, USA	Anticipated 2016	Equity Member & Contractor	Shortlisted Proponent

Reference Projects are noted with a superscript RP

Lead Contractor and Financially Responsible Party

KIG will be the Financially Responsible Party for Kiewit Infrastructure Co, the Lead Contractor. KIG's financial statements are provided in Section 4.1 of its Vol. 2 SubVolume in accordance with Section 2.2 of the Financial Requirements. KIG is a member of Kiewit Corporation, one of North America's largest construction, mining and engineering firms. In 2014, Kiewit Corporation had revenues of $10.4 billion. With its 130-year history of project delivery, no operational long-term debt, and a strong balance sheet, clients can be assured of a successful completion.

KIG's letter of support is provided in Vol. 2 Sec. 3.1 in accordance with Section 2.4 of the Financial Requirements. Additionally, letters from Eligible Sureties are provided in Vol. 2 Sec. 3.2 in accordance with Section 2.5 of the Financial Requirements.

Kiewit will provide performance security in an amount determined in coordination with the Equity Members and lenders to be adequate for their protection. KIG will provide a parent company guarantee for KIC, providing the ultimate backstop to its liabilities as Lead Contractor, thereby assuring the Equity Members, Lenders, and Procuring Authorities that the I-70 East Project is built with quality that the Kiewit group is proud to stand behind. KIC will provide a liquid security package, which will secure its obligation as the Lead Contractor for completion support security. This ensures that the I-70 East Project will always have adequate cash flows. This provides the Procuring Authorities, the lenders and Equity Members with assurance that even in the case of delays or relief events, the I-70 East Project will progress to completion.

As demonstrated by its financial statements, KIG has more than sufficient capital to fund KIC's role as Lead Contractor.

Lead Engineer

Parsons Brinckerhoff (PB) and Jacobs have experience working with developers and contractors including Meridiam and Kiewit to bid, close, and execute numerous P3s throughout North America. Given PB's and Jacobs' role as Lead Engineer, their financial stability and capacity serve as additional redundancy given Kiewit's role as Lead Contractor.

On October 2014, PB became a wholly owned independent subsidiary of WSP Global. Together WSP/Parsons Brinckerhoff are one the largest professional services firms in the world with approximately 31,500 employees in 500 offices serving 39 countries. PB's financial statements are provided in Section 4.1 of its Vol. 2 SubVolume in accordance with Section 2.2 of the Financial Requirements.

Jacobs' financial statements are provided in Section 4.1 of its Vol. 2 SubVolume in accordance with Section 2.2 of the Financial Requirements.

As demonstrated by their financial statements, PB and Jacobs have more than sufficient capital to fund their role as Lead Engineer.

Lead Operator

Kiewit-Meridiam Partners intends to self-perform the life cycle obligations of the role of Lead Operator. Jorgensen will be responsible for routine operations and maintenance obligations. Jorgensen's financial statements are provided in Section 4.1 of its Vol. 2 SubVolume in accordance with Section 2.2 of the Financial Requirements.

As demonstrated by its financial statements, Jorgensen has more than sufficient capital to fund its role as Lead Operator.

1.3 Project Financing Experience

1.3 PROJECT FINANCING EXPERIENCE

Kiewit-Meridiam Partners has recent and relevant experience in developing committed proposals and converting these into closed North American P3 transportation projects. **Figure 4** summarizes the relevant Form F Reference Projects for which our Equity Members—Kiewit and Meridiam—were involved in raising project finance debt and equity in North America.

Figure 4 – Kiewit-Meridiam Partners North American Project Finance Experience – Form F Projects

Projects	Project Type	Finance Type	Procurement Model		Financing Products Utilized			Team Members	Current Phase
		Non-Recourse	Availability Payment	Revenue Risk	TIFIA closed by Developer	PABs	Other		
POMT	Road/ Highway	✓	✓		✓		✓ Bank	Meridiam, PB, Barclays	Operation
NTE	Managed Lanes	✓		✓	✓	✓		Meridiam, Barclays	Operation Construction
Goethals Bridge	Road/ Highway	✓	✓		✓	✓		Kiewit, Barclays	Construction
Waterloo LRT	LRT over existing roads	✓	✓				✓ Bond/ bank	Kiewit, Meridiam, PB, NRF	Construction
NEAH	Road/ Highway	✓	✓				✓ LT bonds	Meridiam	Construction
LBJ Express	Managed Lanes	✓		✓	✓	✓		Meridiam	Construction

Financing Projects on a Project Finance Basis

Since its participation as equity member and lead contractor in the SR-91 Express Lanes project in California in 1993, Kiewit has been involved in the delivery of 13 P3s in North America four of which Kiewit has made an equity investment.

Since 2005, Meridiam has closed 33 P3 projects, including nine in North America. In addition, Meridiam's transportation P3 experience is demonstrated by the fact that 24 of these projects are transportation projects, seven of which are in North America.

In total, Meridiam has invested over $1.7 billion in equity and raised debt in excess of $19 billion globally (including $4.8 billion in the US).

The experience of our Equity Members is complemented by the experience of our Lead Contractor, Lead Engineer, Lead Operator, and specialist advisors, all of whom have and are currently delivering P3 projects. Their understanding of bidding and negotiating fixed-price, date-certain agreements with optimal P3 performance security packages will be valuable in developing a competitive proposal for the I-70 East Project. In addition, PB and Jacobs' recent experiences from SH 288, I-77 HOT Lanes, and I-4 will be valuable for optimizing design of managed lanes and associated ITS-supporting infrastructure.

In the last 10 years, Meridiam and Kiewit as equity members have closed 12 North American P3 project financings. This includes combined Kiewit and Meridiam equity commitments of $797 million, five TIFIA loans for $3 billion, four PABs issuances for $1.8

billion, five other bond issuances for $836 million and raised $1.1 billion in bank debt. Our underwriters (Barclays and RBC) have participated in three additional P3 PABs issuances for $1.5 billion. Using this experience, the team will apply the following specific lessons learned to I-70 East to ensure a successful project:

- Understanding and comfort with appropriation risk
- Leveraging strong financial networks and relationships
- Evaluating a range of debt sources to optimize capital structure using blend of bank loans, TIFIA, PABs, private placement, to allow their respective characteristics (e.g., short term and long term) to deliver a balanced, optimized structure
- Enhancing debt rating by including an optimal performance security package
- Maintaining redundancy in debt sources

Participation in Availability Payment Projects

Kiewit and Meridiam, individually and collectively, have significant experience developing and investing equity in North American availability payment-based P3 projects. Their equity investment criteria prioritize availability payment transactions. All but two of Kiewit and Meridiam's current North American P3 investments are in projects using an availability payment model.

Our skills and experience closing availability payment projects in FL, CA, NY, NJ, and in the Provinces of Ontario and Alberta, combined with Meridiam's global experience and Kiewit's experience in Colorado provides us with a deep understanding and ability to develop a fully committed proposal and ultimately to reach a timely financial close. We will leverage lessons learned from our experiences to develop alternative financing, technical concepts, and efficient O&M execution during the RFP phase that can ultimately result in lower Performance Payments.

POMT's availability payment mechanism with construction completion payments meant that a bespoke funding structure had to be developed. Our solution was to raise two commercial bank loans (one five-year loan and one six-year loan) to match the first year's availability payment. During the process, a significant challenge was that the financial crisis caused banks to retreat from debt tenors greater than six years, and therefore the longer-term availability payments were not available. The team remained flexible and determined that an efficient way to address the issue was to structure a long-term TIFIA loan for the remaining debt, which involved working intensively with the TIFIA JPO through the full P3 structure.

Figure 5 summarizes other General Reference Projects for which our Equity Members—Kiewit and Meridiam—were involved in raising project finance debt and equity in North America and globally.

TIFIA, PABs, and other US Financing Products

Kiewit and Meridiam have been at the forefront of US P3 financings. We have extensive experience closing TIFIA loans, issuing PABs, raising bank debt, and introducing other products such as private placement debt. In particular, we have developed market firsts such as the first use of unwrapped PABs, the first combination of long and short term TIFIA and the first development to lead private placement investors in appropriations-backed projects. We will apply this spirit of innovation, close funder relationships (and knowledge of their needs), and constant presence in multiple financial markets to develop a robust and efficient financing solution for the Project. For example, the relationships we have built with

Figure 5 – Kiewit-Meridiam Partners Project Finance Experience – Other Projects

Projects	Project Type	Other General Reference Project Requirements			Team Members	Current Phase
		[redacted]	Financial Close	Delivery Model		
E18 Highway II (Finland)	Transport		June 2015	AP	Meridiam	Construction
Yozgat Health (Turkey)	Social		2015	AP	Meridiam	Construction
A66 (Spain, refinance)	Transport		2015	AP	Meridiam	Construction
East Rail Maintenance Facility (Ontario)	Transport		Mar 2015	AP	Kiewit	Construction
Adana Health (Turkey)	Social		Dec 2014	AP	Meridiam	Construction
M8/M73/M74 (UK)	Transport		Feb 2014	AP	Meridiam	Construction
Marseille L2 Bypass (France)	Transport		Oct 2013	AP	Meridiam	Construction
VNF Dams (France)	Env.		Oct 2013	AP	Meridiam	Construction
A66 Highway (Spain)	Transport		Jul 2013	AP	Meridiam	Construction
University of Hertfordshire (UK)	Social		May 2013	AP	Meridiam	Construction
Isle of Wight Road Maintenance (UK)	Transport		Sep 2012	AP	Meridiam	Construction
Presidio Parkway (CA)	Transport		Jun 2012	AP	Meridiam, Kiewit, PB	Construction
CNM HSR (France)	Transport		Jun 2012	AP	Meridiam	Construction
E18 Highway I (Finland)	Transport		Dec 2011	AP	Meridiam	Operations
Nottingham Express (UK)	Transport		Dec 2011	AP	Meridiam	Construction
SEA HSR (France)	Transport		Jun 2011	AP	Meridiam	Construction
Long Beach Court House (CA)	Social		Dec 2010	AP	Meridiam	Construction
CRCHUM (Quebec)	Social		May 2010	AP	Meridiam	Construction
Saint Quentin Velodrome (France)	Social		Dec 2009	AP	Meridiam	Construction
R1 Highway (Slovakia)	Transport		Aug 2009	AP	Meridiam	Operations
A2 Highway II (Poland)	Transport		Jun 2009	Revenue Risk	Meridiam	Operations
A5 Highway (Germany)	Transport		Mar 2009	AP	Meridiam	Operations
A2 Highway I (Poland)	Transport		Dec 2008	Revenue Risk	Meridiam	Operations
Fulcrum LIFT (UK)	Social		May 2007	AP	Meridiam	Construction
A5 Highway (Austria)	Transport		Dec 2006	Mixed	Meridiam	Operations
Limerick Tunnel (Ireland)	Transport		Aug 2006	AP	Meridiam	Operations

AP = Availability Payment

direct debt investors will allow us to bring them to a new market – Colorado – where they will have the confidence to be partnered with an experienced developer team. Our Lead Contractor, Engineer, and Operator have also been involved on deals that have benefitted from TIFIA, PABs and bank debt. As market conditions change, we will maintain focus on the NPV of financing propositions as defined by the required level of Performance Payments under each structure.

Similar to the I-70 East Project, **Goethals Bridge** is an availability payment DBFOM with demolition of existing infrastructure over a long-term concession period. The financing plan includes both TIFIA and PABs. The structure also includes a partial monoline wrap of the PABs, which resulted in a further reduction to the owner's overall project costs. Investors were very interested as demonstrated by the issuance being 10 times oversubscribed.

Like I-70 East, Meridiam's **NTE** and **LBJ Express** projects are managed lanes projects built in an urban area. The PABs investors' comfort with these projects was demonstrated by the three successful financings, each using TIFIA and PABs, being oversubscribed each time. Different rating agencies were used from

one financing to the next. The projects are structured with long-term concession periods and therefore long-term debt financings.

TIFIA

The team has demonstrated experience with TIFIA on deals such as Port of Miami Tunnel, Goethals Bridge, NTE (two financings), and LBJ Express. We will be closely supporting CDOT and its team in its procurement process for including TIFIA to ensure a transparent, efficient procurement with a level playing field such as including a common TIFIA term sheet.

POMT demonstrates our team's ability to close a TIFIA loan and raise bank debt to create a robust financing structure suited to the particular payment profiles, during a financial crisis. The team successfully sought out and built into the financing structure a long-term TIFIA loan despite this not being initially identified as a financing source, thus delivering additional value for money to our client, the City of Miami. POMT demonstrates our ability to adapt to changing market conditions and leverage our experience to close projects and reduce execution risk, thereby ensuring the project timelines (and the Project's success) are maintained.

TIFIA Experience

Our Equity Members' experience closing six TIFIA loans worth $3 billion ensures we understand how to leverage the benefits of the TIFIA financing structure, and the timing and amortization requirements required by the program are utilized in the most efficient manner to minimize costs and lower Performance Payments.

NTE was closed in two phases. The second phase of **NTE** (3AB) was not an exact copy of the first financing structure (which also included TIFIA). It required renewed discussions with TIFIA JPO due to the developments in TIFIA's loan portfolio in the meantime. TIFIA tightened certain terms such as the average life of their outstanding debt, which needed to be mitigated to minimize their effect on the cost of the project to TxDOT. This project also required careful structuring and explanations to rating agencies, TIFIA and PABs investors, how the integration of Segment 3B (which is being constructed by TxDOT and will then transfer to our team to operate and toll) would be achieved. Finally, the rating agencies have been adapting their understanding and analysis of traffic risk and financial structures over time, particularly for projects such as NTE and LBJ Express that include managed lanes. This made it necessary to present, review and explain all aspects of the traffic and financing to the rating agencies again, despite the success of both the first phase (NTE 1-2) and also LBJ Express, which also includes TIFIA. Both of these projects demonstrate our understanding of how operating and maintaining managed lanes.

PABs/Bonds

A major benefit of a bond solution is that there are long tenors available that can effectively provide fixed, full concession-term financing. This is true in the tax-exempt PAB market and the 4(2) private placement market.

NTE presented the challenge of a then-new financial structure for a traffic risk concession that combined private equity with unwrapped PABs. The financing of the first phase of the project (NTE 1-2) was in fact the first unwrapped PABs structure for a P3 project. Compounding this difficulty was the attempt to implement the structure during the global financial crisis. During the approach to financial close, the team was running a bank and a bond solution concurrently to determine which structure was both more efficient and most deliverable. This was key to ensuring that the financing could be delivered, since 2009 marked a year when many banks retreated from long-term financing and monoline providers

collapsed, thereby closing down these forms of debt financing.

The starting point for advancing this new PABs approach was the analysis of similar municipal projects for the sake of understanding the dynamics of PABs coupled with demand risk and required an understanding of bondholders' risk tolerance for a capital structure that included private equity. Once the team settled on a structure, which replaced senior bank debt exclusively with PABs, the team undertook a road show process to attract bond investors. The first issue was well received by the market, and was 2.4 times oversubscribed.

PABs Experience

Our Equity Members' $1.8 billion experience on four PABs issuances ensures we leverage the benefits of the tax-exempt market to minimize costs and lower Performance Payments.

Our underwriters' recent experiences from the PABs issuances for Portsmouth Bypass (Barclays), Goethals Bridge (Barclays), and NTE (Barclays), paired with their very strong presence in the Colorado financing market, will be invaluable in developing a financing structure that is well received by the market and therefore provides comfort to all that the financing for the Project is delivered.

Other Financing Products

On the **Waterloo LRT**, in which both Kiewit and Meridiam are equity investors, the financing solutions included a short-term credit facility, private placement bonds and rated bonds. The team selected a short-term credit facility and bonds as the most competitive solution that satisfied the liquidity requirements of the project. Short-term financing, which is being used to fund a percentage of the construction costs, will be fully repaid following receipt of the substantial completion payment, approximately 3 years following financial close. In addition to our experience working together on Waterloo LRT, the Presidio Parkway project demonstrates Kiewit's and Meridiam's experience working together to close an availability payment based transportation P3 in North America.

The project financing for **Northeast Anthony Henday** included a comprehensive analysis of all available financing tools that included a bank solution, private placement bond and widely distributed bonds in addition to an underwriters' competition to ensure the best financing terms. By working closely with the rating agency to address multiple rounds of technical and commercial due diligence (including working with a new rating methodology from S&P), an A-level rating was achieved resulting in a cost effective senior funding solution.

Bank financing is a further source of financing which Meridiam has used in many jurisdictions and sectors. A prime example is POMT where bank financing was used to bridge a large completion payment over the construction period. Initial plans considered a PABs solution, but at the height of the financial crisis of 2008/9, debt capital markets retreated. Despite the banking markets having become more risk averse, Meridiam was able to utilize its global relationships with banks to receive committed financing from a 10-bank club deal.

Kiewit and Meridiam are at the forefront of analyzing and incorporating additional types of funding where these provide an advantage in terms of pricing, deliverability and overall efficiency. This is demonstrated by projects such as the Long Beach Courthouse that used a private placement funding solution, and Meridiam's wider European project financing experience whose funders are also interested in the US markets for project financings.

2. Statement of Financial Approach

2.0 STATEMENT OF FINANCIAL APPROACH

Kiewit-Meridiam Partners, along with its financial advisors, Barclays and Agentis, have formed a financing working group to execute the optimal capital structure and deliver the best value to CDOT and the Procuring Authorities. The private financing requirement for the Project will be a material part of its successful delivery. We will look to maximize overall value by appropriately mitigating risk, optimizing the capital structure, minimizing financing costs over the short and long-term and maximizing execution certainty from the bid date. We understand the Project's payment mechanism will include milestone and progress payments during construction as well as a long-term availability payment stream, and our financing team will develop an approach that is tailored to the final Project structure.

The financing plan has been developed using our team's experience to address foreseeable market conditions taking into account the CDOT's anticipated Project Agreement provisions, funding sources, and overall Procurement Schedule. It is based on our experience gained from developing proposals with committed financing, achieving financial close and ultimately delivering more than 30 P3 projects across North America (Vol. 2, Sec. 1.2). The foundations of this preliminary financing plan include:

- **Financial Strength –** Leveraging the financial strength of our Core Team Members, in particular our Lead Contractor – Kiewit.
- **Execution Certainty –** Securing and executing a fully committed financing solution based on our relationships in the North American and global markets and our proven track-record closing P3 transactions.
- **Competitive Solution –** Evaluating multiple debt structures and running a multi-track process to evaluate and compete each structure to ensure the low cost structure is used.

In support of our SOQ, the financing working group has already received a sample of six letters of support (Vol. 2, Sec. 3.2) from a range of types of potential providers of financing. This early support is indicative of the strong relationships, track record, and reputation of our providers of financing and a testament to our strong domestic and global funder relationships.

Multi-Track Process

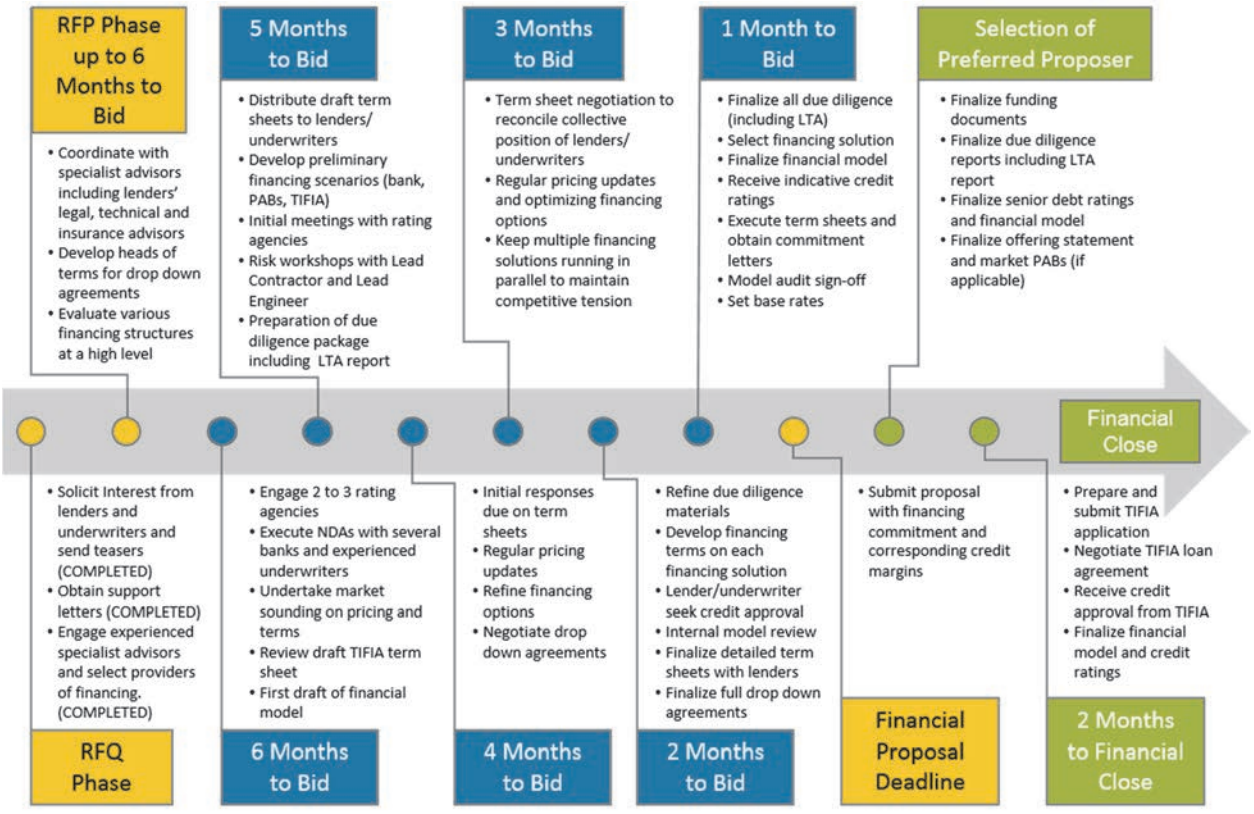
The financing working group will run a multi-track approach that will analyze the following sources of funding:

- **TIFIA Loans |** We have extensive experience in negotiating with the TIFIA Joint Program Office (JPO) and closing more than 10 TIFIA loans in a variety of project and financial structures (often market "firsts"). We understand that the Procuring Authorities intend to advance the TIFIA process as far as possible prior to the Financial Proposal Deadline. We will assist CDOT and the JPO for the benefit of the Project.
- **Tax-Exempt Private Activity Bonds (PABs) |** We understand that the Procuring Authorities have begun the process of applying to the US DOT's Office of Infrastructure Finance and Innovation requesting an allocation of borrowing capacity for PABs. Our co-underwriters participated in seven of the 12 P3 projects to have closed with PABs, and the Equity Members are invested in five (POMT, NTE, LBJ, Presidio, Goethals).
- **4(2) Private Placements |** We have extensive experience (Vol. 2, Sec. 1.3) in finding value-enhancing solutions from the private placement market via close relationships with infrastructure debt funds, as currently in use (or proposed) in two US Meridiam projects – Long Beach Courthouse and Indianapolis

Justice Center – as well as 3 more in Europe. This has proven to be a competitive and robust funding solution.

- **Bank Markets |** We will solicit terms from the major local and international project finance lending banks that will likely be interested in financing a Project of this nature. Meridiam and Kiewit have long-standing relationships with key players in the bank market and are able to attract international players to the Project to complement strong Colorado banks.
- **Tax-Exempt Governmental Purpose Bonds (GPs), if applicable |** We are looking for innovative ways to reduce the cost of capital on the Project. In certain cases, when a component of an asset is not being operated under a private O&M contract as part of the public-private partnership, that section of the exempt bonds (GPs are fully tax-exempt whereas PABs are subject to the Alternative Minimum Tax). Upon receiving the I-70 East RFP, the Finance Team will explore whether the Project can benefit from the use of GPs.
- **144A Bond Markets |** If we use a highly enhanced structure in which construction risk is fully mitigated, the taxable public bond markets would become a potential source of capital for the Project. We would seek to use 144A bonds as a supplement to or in connection with a PAB solution.
- **Monoline-Insured Solutions |** Certain monoline companies are active in the market. Under certain market conditions and maturities, the application of credit insurance can produce lower all-in yields, which would further reduce the overall level of payments required from CDOT to deliver the Project. Based on this preliminary assessment of debt funding alternatives, we view the potential use of TIFIA and PABs as a baseline which can be improved upon by exploring alternatives. If the milestone and progress

Figure 6 – Anticipated Timelines and Milestones



payments proposed by CDOT create large short term financing needs, a short-term bank and long-term TIFIA structure could be used. PABs, TIFIA and bank loan financing instruments are all particular strengths of our Finance Team.

Anticipated Timelines and Milestones

As represented in **Figure 6** on the previous page, the financing working group has outlined a preliminary timeline for the multiple track funding competition that is consistent with the CDOT and the Procuring Authorities' estimated procurement timeline.

Key Considerations and Challenges

In **Figure 7** we identify relevant key considerations and challenges to financing the I-70 East along with proposed solutions.

Figure 7 – Key Considerations and Challenges

Key Challenge	Proposed Solutions
Ensuring that all proposed funding sources are fully committed	• Fully negotiate drop down contracts with the Lead Contractor and Lead Operator so that lenders are able to understand the risk profile of the transaction before bid submission. • Negotiate a comprehensive term sheet with funders, including a complete list of conditions precedent, representations and warranties, covenants and events of default.
Obtaining an Investment Grade rating	• Develop a robust security package for the lenders and rating agencies. Kiewit is one of the most financially robust construction companies in North America and maintains one of the strongest investment grade ratings in the industry. • Provide lenders and rating agencies with access to highly qualified, independent advisors to assist with identifying and mitigating any credit issues before bid submission.
Ensuring competitive financing terms	• Run multi-track funding competition among lenders as the best pricing and terms will be achieved by maintaining competitive tension between various sources of debt capital. • Continue monitoring and comparing different funding markets to ensure that the optimal financing mix is applied to the project.
Lender Redundancy	• Develop a solution with adequate redundancy within and between lending groups, and include strong relationship lenders reducing the risk of a lender becoming unsuitable for the Project.
Appropriations Risk	• Appropriation risk is often a key concern for lenders. We will leverage the strength of CDOT's credit as well as the underlying funding sources for the payments in our financing approach to optimize ratings and minimize pricing premiums. • In marketing the debt for this transaction, we will address the details of TABOR laws in Colorado. Barclays, our financial advisor and underwriter, has specific experience in structuring, marketing, and placing over $400 million of PABs in the Denver FasTracks Eagle P3 transaction, which included payments subject to TABOR provisions. • Meridiam and Kiewit have successfully explained appropriation risk to many funding sources ranging from private placement institutions, to banks and PABs investors.
Payments During Construction	• Progress payments, milestone payments and/or substantial completion payments during the construction period will influence the financing structure, specifically whether short-term financing is required. • Meridiam and Kiewit will evaluate the impact of any payments during construction on project cost and will work to minimize the total cost of the Project to CDOT.

Key Challenge	Proposed Solutions
Project Resiliencies during Operations	• The level of payments from CDOT during construction will affect the robustness of the operating period resiliencies to withstand cost increases due to the higher level of operational gearing. We will develop approaches to ensure adequate equity resiliency by passing down appropriate risk to our Lead Operator Jorgensen, and structuring appropriate reserve accounts
Operational Risk	• We will balance the costs and benefits of locking-in O&M and lifecycle costs at financial close through long-term O&M contracts. With more of the long-term O&M and lifecycle costs fixed, financing costs can be lower as the risk profile is perceived to be lower. • With Jorgensen, we have unparalleled expertise in the operations and maintenance activities of road infrastructure to complement Kiewit and Meridiam's in-house experience.
Maintaining closing timeline with TIFIA post-award	• We will leverage our extensive experience in working with TIFIA, given our strong relationships with TIFIA JPO staff program and within the FHWA. • We will be proactive in anticipating key TIFIA issues based on our Finance Team's recent experiences to ensure the finalization of TIFIA documentation is a swift and efficient process.
Managed Lanes Operating Complexity	• We have industry-leading expertise in the operations and maintenance of managed lanes. Rating agencies and lenders will assess the complexity of the operations period, in part, through a review of the activities allocated to the private and public partners and the adequacy of the interface mechanism between the parties. We will extrapolate from our expertise with prior transactions to ensure an optimal allocation of risk and achievement of the best financing terms

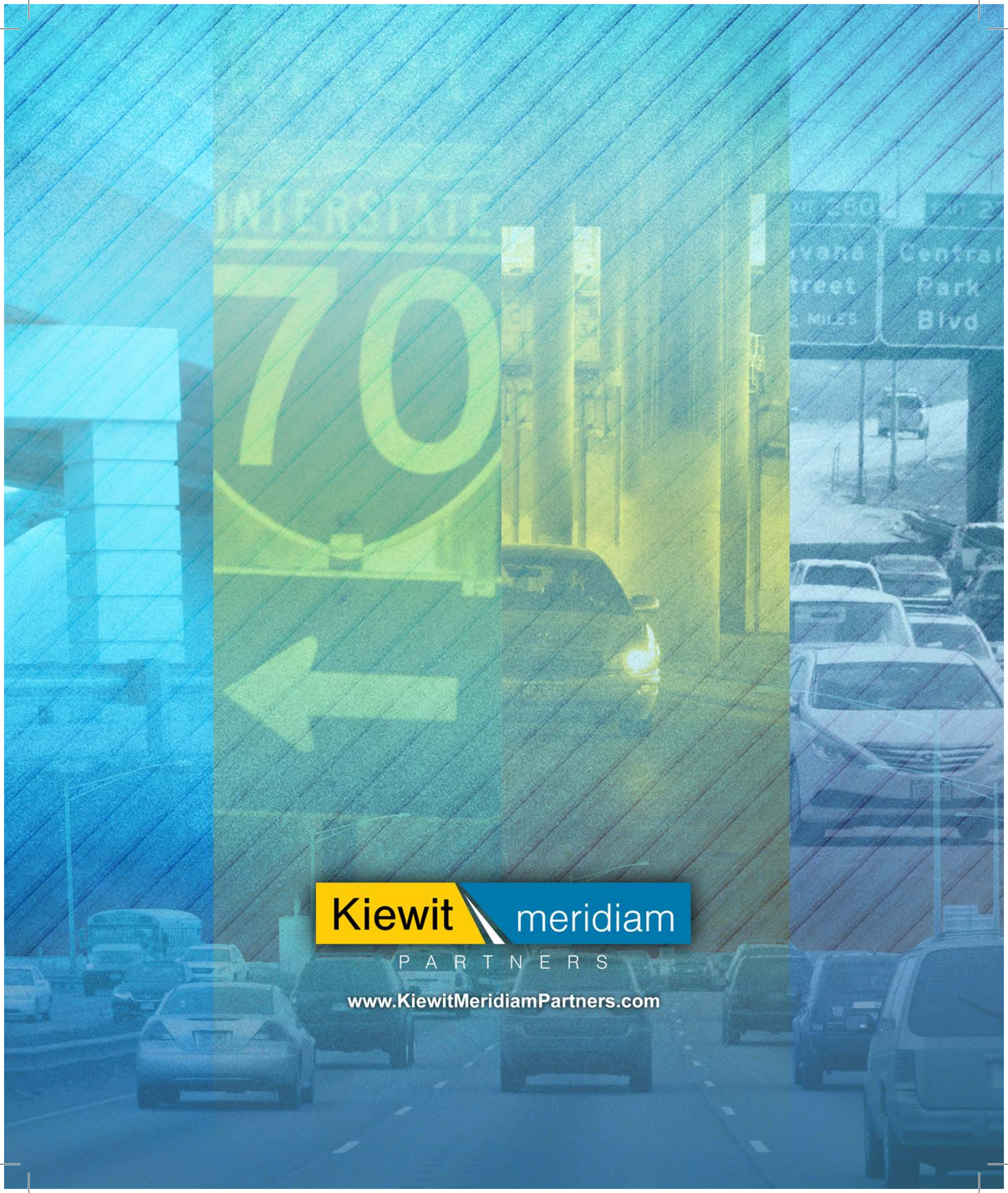
Financing Partner Selection

Barclays and RBC are supporting Kiewit-Meridiam Partners on an exclusive basis should the Project require bond underwriting. Considering the size of the project, Kiewit-Meridiam Partners felt that an approach using two underwriters gives us access to a large pool of debt funding relationships even beyond those of Kiewit and Meridiam while providing competitive tension on underwriting fees.

Upon evaluating the I-70 East RFP and Project Agreement, the finance working group will determine how best to finalize its selection of providers of financing using a competitive process to ensure the Project ultimately benefits from the best balance of pricing and terms available. The financial partner selection standards will be applied to lenders, underwriters, placement agents, infrastructure debt funds, monolines, or any other type of institution.

The selection process will evaluate:

- Long-term investment strategy and approach required to be an appropriate long-term infrastructure financing partner.
- All-in pricing competitiveness including credit spreads,associated base rates, other fees and impact of structural terms in the financial model.
- Track record in the North American P3, infrastructure and project finance markets.
- Ability to provide committed financing by the Financial Proposal Deadline and hold this commitment for as long as required.
- Tenors offered (both for principal repayment and interest rate hedging if applicable).
- Rating requirements (ratings level, number of ratings, identity of rating agency institutions).
- Financial strength and credit rating.



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