

**North Dakota Department of Transportation
INVITATION TO BID**

Bid Number: 968-62-20-050	Bid Opening Date & Time: 07/09/2020 02:00 PM
Items: Retroreflective Data Collection	Buyer: Sean Lackner
Bid Mailing Address: 608 East Boulevard Avenue	Telephone Number: 701-328-2571
City, State, Zip: Bismarck, North Dakota, 58505-0700	Email: selackner@nd.gov
Contract Period: 07/15/2020 TO 12/31/2021	Date Prepared: 06/25/2020

BID RESPONSE

Please submit your bid response on the attached forms in conformance with the instructions and specifications in the NDAC 04-12-01 – 04-12-16. One copy of your bid response must be returned to the North Dakota Department of Transportation (NDDOT) prior to the time and date specified for the bid opening. Bid responses received after the time and day specified for the bid opening will be rejected. Mark envelope with word "BID" and the opening time and date. **If your bid response is accepted by NDDOT, then your bid response will constitute a binding contract.**

CONTRACT

This contract is made and entered into by and between NDDOT for the state of North Dakota (hereinafter state) and

Vendor Name Beck & Co. Engineering, Inc.	Vendor Address 8727 Pheasant Run Circle, Woodbury, MN 55125
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(hereinafter vendor). In consideration of and for the acceptance by the state of the offer made by the vendor pursuant to the bid response, the vendor agrees and promises to sell, furnish, and deliver to the state, at the time, places, and prices specified in the bid response, all goods, merchandise, supplies, commodities, equipment, or other items contained in the bid response and for which the vendor has been awarded this contract by the state. The vendor shall fully perform this contract in accordance with the terms and conditions contained in the bid response including all specifications, rules, or regulations mentioned therein, and shall comply with all applicable provisions of the NDAC 04-12-01 – 04-12-16 promulgated by the State Purchasing Division; such manual being made a part of this contract by reference. The Risk Management Appendix and Appendices A and E of the Title VI Assurances, attached, are hereby incorporated into and made a part of this agreement.

The following must be completed by the vendor; failure to do so may result in the rejection of the vendors bid proposal.

Vendor Name Beck & Co. Engineering, Inc.		
Mailing Address 8727 Pheasant Run Circle, Woodbury, MN 55125		
Telephone Number 612-805-1637	Fax Number 651-501-0015	E-mail Address rick.bcengineering@gmail.com

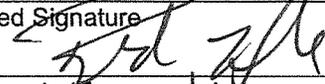
Richard A. Beck, P.E. President
Name & Title (Type or Print)

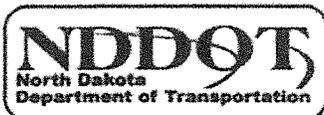
RICHARD A. BECK, P.E.
Signature

7/7/2020
Date

To be signed by **Owner; Partner; Corp. Pres., Vice Pres., or other authorized Corp. Officer** or bid may be rejected. (if signed by other authorized Corp. Officer, please attach copy of Power of Attorney or other documentation showing authority to sign.)

FOR ND DEPARTMENT OF TRANSPORTATION USE ONLY Accepted by the state according to provisions of award.

Authorized Signature 	Date <u>7/22/2020</u>
Recommended for approval 	Date <u>7/20/20</u>
Approximate contract amount \$ <u>50,000</u> ⁰⁰ / ₁₀₀	



APPROVED as to execution this
21st day of July 2020
ATTORNEY GENERAL
By 
SPECIAL ASST. ATTORNEY GENERAL


CLA 7480 (Div. 50)

MAILING INSTRUCTIONS

Mail only one completed and signed request for bid document per envelope, unless instructed otherwise. Request for bid documents not signed or received after the date and time specified in the request for bid will be rejected.

BID IS: SEALED NOT SEALED

Address the envelope containing your response in the following manner:

BID NUMBER – 968-62-20-050
BID OPENING DATE/TIME – July 9, 2020; 2:00 PM Central
N. D. DEPT. OF TRANSPORTATION
PROCUREMENT SECTION
608 E BOULEVARD AVE
BISMARCK ND 58505-0700

BIDDERS INSTRUCTIONS

1. **Additional Terms and Conditions.** Additional terms and conditions submitted with a bid response are of no effect unless accepted in writing by the Purchasing Agency. Bids with additional terms and conditions may be rejected as non-responsive. (N.D.A.C. § 4-12-11-06)
2. **Assistance to Bidders with a Disability.** Bidders with a disability and/or language assistance, contact Civil Rights Division, NDDOT, 701-328-2978 or civilrights@nd.gov or TTY 711, as soon as possible so that reasonable accommodations can be made. Additionally, the Request for Reasonable Accommodations form (SFN 60135) can be accessed at the following NDDOT website location: <http://www.dot.nd.gov/forms/sfn60135.pdf>.
3. **Award.** Award will be made to a responsive, responsible bidder with the lowest price considering conformity with specifications, terms of delivery, quality, and serviceability. NDDOT reserves the right to consider bids varying in minor respects from any specific requirements herein, but judged to meet the intent of this request. Bidders interested only in the total low bid for all items are to state 'all or nothing' on their bid response. Award will be made as follows:
 - All or none.
4. **Award – Tie Bid Preference.** After applying any reciprocal preference, if a tie occurs between two or more bidders with equal bid prices or offerors with identical evaluation scores:
 - Preference must first be given to bids submitted by resident North Dakota vendors.
 - If a tie remains, preference is given to approved vendors on the Bidders List.
 - If a tie still remains, award shall be made in accordance with N.D.A.C. § 4-12-11-05.
5. **Award – Preference Laws.** If Bid Responses are received from nonresident (out-of-state) Bidders, the Procurement Officer will apply reciprocal preference, if applicable, in accordance with N.D.C.C. §44-08-01. See OMB Guidelines on North Dakota Preference Laws.
6. **Bid Bond.** Waived in this instance: however, bidder(s) failing to enter into a contract with this office, upon notification of award, may be subject to removal from the bidder's list.
7. **Bid Held Firm.** Bids are not awarded at the bid opening. Bid responses will be firm for 30 days, unless stated otherwise.
8. **Bid Opening.** Due to COVID-19 restrictions in place, public openings WILL NOT be conducted. NDDOT Central Office location is closed to the public. Bidders who wish to hand deliver sealed bids to the NDDOT MUST contact the Procurement Officer for drop off instructions.
9. **Bid Summary.** Interested parties may contact the Procurement Officer to obtain a summary of all bid responses received and the award. When bids are issued using the State's electronic bidding system, the bid summary will be posted and available for download from: <https://www.nd.gov/omb/vendor>. Bid summaries will be mailed to those bidders who supply a self-addressed, stamped envelope with their bid

response. A copy of the bid summary may also be obtained by visiting the NDDOT Procurement Office during normal working hours.

10. **Bidder Checklist.** HAVE YOU REMEMBERED TO:

- Review all instructions, terms and conditions, and specifications to ensure your bid response complies?
- Prepare your price in the specified unit of measure, F.O.B. Destination, Freight Prepaid to the delivery location listed on the cover sheet?
- Indicate whether you can meet the delivery date indicated on the cover sheet?
- Sign your bid response on the cover sheet?
- Initial all changes and corrections?
- Submit any required samples or enclosures, if applicable?
- Mark the envelope as indicated above?
- Review and complete all requirements contained in this solicitation to ensure compliance.

11. **Clarifications, Bid Changes and Questions Deadline.** The Procurement Officer is the point of contact. Any irregularities, lack of clarity, requested bid changes and all questions regarding this bid and the procurement process must be addressed to the Procurement Officer referenced on the first page of this document not later than end of business July 2, 2020. (Contact information is indicated on cover page). If a bid amendment is required, it will generally be issued after this date.

The bidder is cautioned that the requirement of this solicitation can be altered only by written amendments and that verbal communications from whatever source are of no effect.

12. **Corrections.** The bidder's authorized representative must initial any corrections and alterations (i.e. erasures, whiteouts, correction tape, etc.) made to the bid response. Those bid responses with corrections and alterations that are not initialed are subject to confirmation by the Procurement Officer.

13. **Definitions.**

- Bidder - any person or firm submitting a competitive bid in response to a solicitation.
- Bid summary - a summary of all bid responses received by the NDDOT Procurement Office.
- Bid response - the executed document submitted by a bidder in response to a solicitation.
- Coefficient of reflection luminance, R_L - the ratio of the luminance of a projected surface to the normal illuminance at the surface on a plan normal to the incident light, expressed in millicandelas per square meter per lux ($\text{mcd}\cdot\text{m}^2\cdot\text{lux}^{-1}$).
- Contract - a deliberate written agreement between two or more competent persons to perform specific act or acts.
- Contractor - any person or firm having a contract with a governmental body.
- Retroreflection – a reflection in which the reflected rays are returned preferentially in directions close to the opposite of the direction of the incident rays, this property being maintained over wide variation of the direction of the incident rays.
- Solicitation - the process of notifying prospective bidders that the State wishes to receive bids for furnishing goods or services.

14. **Electronic & Facsimile Bids.** Bid responses are not to be email attached or faxed to the NDDOT unless this transmittal method has been authorized by the Procurement Officer or bid document. (Contact the Procurement officer regarding additional requirements and exceptions.) Bid responses electronically submitted or faxed may be rejected as non-responsive. Bids may be faxed to a third party who will put it in a properly-addressed envelope and deliver it to the NDDOT Procurement Office before the date and time specified in the solicitation.

15. **Upload Response Through the State Procurement Online System (SPO Online).** Bidders may electronically submit Bid Responses through the State Procurement Online system (SPO Online) by the Bid Response Closing Deadline.

A. This solicitation is posted on SPO Online at: <https://www.nd.gov/omb/vendor>

B. Click on "Bidding Opportunities." Go to "Recent Solicitations" and find this solicitation.

C. Use "Upload Response" to upload a maximum of five (5), clearly labeled documents before the deadline for receipt of proposals in the Bid Response closing deadline.

D. Offerors must upload their Technical Proposal and Cost Proposal in separate files.

E. The maximum file size allowed is 50mb per file.

F. All field entries must be alphanumeric. Dashes and underscores are allowed; however the system does not accept other special characters such as apostrophe, & symbol, quotation marks, etc.

G. Bidders will receive an email confirmation from infospo@nd.gov that the upload response was received including the "File Description" for the uploaded files. Review this email to ensure all files were successfully uploaded. If you do not receive an email confirmation, the upload was not successful, and you will need to upload the files again. If you do not receive an email confirmation after the reattempt, contact the Procurement Officer or the State Procurement Office at infospo@nd.gov or 701-328-2740.

Visit <https://www.nd.gov/omb/vendor/bidder-resources> for the SPO Electronic Response Job Aid which describes how to submit an electronic response.

16. **Freight/F.O.B. Destination.** Freight and transportation charges are to be included in the price of the products, unless otherwise specified in the solicitation. (F.O.B. - Free On Board).
17. **Indemnification.** Bidders must review the attached Risk Management Appendix for indemnification and insurance requirements. The indemnification and insurance provisions are incorporated and made part of this solicitation and the resultant final contract. Objections to any of the provisions of the indemnification and insurance requirements must be made in writing to the attention of the Procurement Officer by the time and date set for receipt of questions. No alteration of these provisions will be permitted without prior written approval from the Purchasing Agency or Entity in consultation with the North Dakota Risk Management Division. Upon receipt of the Notice of Award, the successful bidder must obtain the required insurance coverage and provide the Procurement Officer with proof of coverage prior to contract approval. The coverage must be satisfactory to the Purchasing Agency or Entity, in consultation with the North Dakota Risk Management Division. A bidder's failure to provide evidence of insurance coverage is a material breach and grounds for withdrawal of the award or termination of the contract.
18. **Late Bids.** It is the bidder's responsibility to ensure that a bid response is physically deposited with the NDDOT Procurement Office prior to the date and time specified for the opening. Late bids will be rejected, regardless of the degree of lateness, unless the delay is due to the error of the Purchasing Agency and discovered before the selection of the successful bidder.
19. **Minor Informalities.** The State reserves the right to waive minor informalities in bid responses in accordance with N.D.A.C. 4-12-10. Minor informalities are insignificant omissions or nonjudgmental mistakes that are matters of form rather than substance, evident from the bid document, with a negligible effect on price, quantity, quality, delivery, or contractual conditions that can be waived or corrected without prejudice to other bidders.
20. **Mistakes.** The Procurement Officer may confirm the Bid Response in the event of apparent errors, such as an unreasonably priced Bid Response. Mistakes will be handled in accordance with N.D.A.C. ch. 4-12-10.
21. **Multiple Bid(s).** Bidders may submit more than one bid response(s) for the item(s) specified in the solicitation. Each bid submitted must comply in all aspects with the bid requirements and these instructions.
22. **Negotiation.** NDDOT reserves the right to negotiate with the successful bidder to ensure the best possible consideration is afforded to all concerned.
23. **New Equipment and Materials.** Unless otherwise indicated in the detailed specifications of this solicitation, all equipment and materials shall be new and under current production for use in the United States.
24. **Open Records Requests.** Bid responses are exempt records until the date and time of the bid opening. After the bid opening, all bid responses are subject to North Dakota open records laws. Interested parties may contact the Procurement Officer to request information related to this solicitation.
25. **Performance Bond.** Successful bidders will not be required to furnish a performance bond; however, failure to perform satisfactorily will result in the immediate termination of the contract(s) and bidders may be subject to removal from the bidder's list.

26. **Preparation of Bid.** Bids will be accepted on NDDOT forms only. If the document is located on the State Procurement Office website, then bidder is to download the document and type or write their responses as indicated by the bid document. Alteration of the bid document may be cause for bid rejection. Bidders are cautioned to examine specifications and all instructions. Failure to do so will be at the bidder's risk.
27. **Pricing.** Unit prices are to be stated in United States currency and based on the unit of measurement specified in the solicitation, F.O.B. Destination, to the NDDOT delivery locations specified herein.

In the event of mathematical differences between the unit price and extended total, the unit price will prevail.

28. **Protests.** Protests of the solicitation must be received by the Procurement Officer within seven days before the bid closing deadline. Protests of the award or Notice of Intent to Award must be received by the Procurement Officer within seven days after receiving notice of award. Seven calendar days after award or issuance of the Notice of Intent to Award it will be assumed that all interested parties knew or should have known all the facts surrounding the award. Protests must be made in writing to the Procurement Officer and include the basis for the protest. (N.D.C.C. § 54-44.4-12; N.D.A.C. § 4-12-14.)
29. **Rejection.** The State reserves the right to reject any and all Bid Responses in whole or in part. The Procurement Officer will send a rejection notice, including the reason for rejection. Bid responses may be rejected if:
- The bid response is not legible.
 - The bid response is not completed as requested.
 - The bid response is faxed to the procurement office.
 - The bid response is not responsive to the specifications or other requirements of the solicitation.
 - The bid response is received after the time and date specified.
 - The bidder has not met Vendor Registration requirements or is suspended or debarred.
 - The bid document has been altered by the bidder.
 - The bidder is determined to be not responsible (N.D.A.C. 4-12-11-04).

If all bids are rejected, the Procurement Officer will send written notice to bidders, including the reason all bids were rejected.

30. **Signature.** The bid must be signed manually in ink. The name and title of the person signing the bid response must be typed or printed above the signature. The bid must be signed by Owner, Partner, Corp. Pres., Vice Pres., or other authorized Corp. Officer or the bid may be rejected. If signed by other authorized Corp. Officer or representative, please attach a letter signed by the Owner, Partner, Corp. Pres., or Vice Pres. indicating the individual has authority to enter into a contract on behalf of the company (or a Power of Attorney).
31. **Specifications, Brand Name or Equivalent.** Unless otherwise indicated in the detailed specifications of this solicitation, the use of a specific brand name or make/model is for illustrative purposes only, and the State will consider equivalent products. If a commodity or service put forth by a bidder is rejected as not being equivalent, the Procurement Officer will notify the bidder of the rejection.
32. **Specifications, Compliance.** All Bid Responses must comply with the stated specifications, and the successful Bidder will be held responsible. Bidders who desire to submit commodities or services that deviate from these specifications or have any objections to the stated specifications must contact the Procurement Officer by the deadline for questions or at least seven days before the Bid Response closing deadline, so the Procurement Officer can determine whether the specifications need to be amended.
33. **Supplemental Terms and Conditions.** Bids including supplemental terms and conditions will be accepted, but supplemental conditions that conflict with any conditions contained in this ITB or that diminish the State's rights will be considered null and void. The State is not responsible for identifying conflicting supplemental terms and conditions before issuing a contract award.

After award of contract:

- a) If a conflict arises between a supplemental term or condition included in the bid and a term or condition of the ITB, the term or condition of the ITB will prevail, and,
- b) If the State's rights would be diminished as a result of application of a supplemental term or condition included in the bid, the supplemental term or condition will be considered null and void.

Changes, modifications, additions, or alterations to the bid document could be cause for rejection of the submitted bid at the sole discretion of the NDDOT. Contact the Procurement Officer in writing prior to the deadline for clarifications.

34. **Taxes.** The State does not pay sales tax or federal excise tax. The state sales tax exemption number is E-2001. The federal tax-free transaction number is 45-70-0010K. The Purchasing Agency will furnish a tax exempt certificate upon request.
35. **Vendor Registration.** Bidders must comply with requirements related for Office of Management and Budget (OMB) Bidders List application and Secretary of State registration [N.D.C.C. § 54-44.4-09]. Bidders Lists are used to notify vendors when solicitations are issued on the State Procurement Online system (SPO Online).

Bids will be accepted from bidders that are not on the Bidders List. The successful bidder must complete the Bidders List application process and comply with Secretary of State registration requirements within 60 calendar days from the date a notice of intent to award is issued. If the successful bidder does not register within this time, its bid may be rejected.

Vendor Registration Information Websites:

Secretary of State Registration. Complete the online Secretary of State registration process (fees apply): <https://firststop.sos.nd.gov/>. Select "Start a Business." You will need to create a username and password. Contact the Secretary of State, Business Services at 701-328-2904 or sosbir@nd.gov for assistance.

Bidders List Application Process. Complete the online Bidders List application process: <https://www.nd.gov/omb/vendor/bidders-list-application-and-maintenance>. Contact the OMB State Procurement Office for assistance at 701-328-2773 or email infospo@nd.gov.

Bidders List Used for this Solicitation. Notices related to this RFP will be sent to the Bidders List for the needed commodity or service and other known potential offerors. The following commodity codes were used for the Bidders List for this solicitation: **968-62**

36. **Withdrawal or changes to a bid response prior to the bid opening date and time.** A bidder may withdraw or make a change to his bid response prior to the bid opening date and time. The request to make a change or withdraw must be in writing by a representative of the firm. The request to withdraw or change must be signed by the bidder or his designated representatives.
37. **Withdrawals after the bid opening date and time.** After the bid opening, no changes may be made to the bid response. The bidder may make a written request to withdraw the bid response, subject to approval by the NDDOT Procurement Office. Vendors continually withdrawing bids after the bid opening may be removed from the Vendor Database.

GENERAL CONTRACT TERMS AND CONDITIONS

1. **Affirmative Action.** The contractor will take affirmative action in complying with all Federal and State requirements concerning fair employment and employment of individuals with disabilities, and concerning the treatment of all employees without regard to discrimination by reason of race, color, religion, sex, national origin, or disability.
2. **Applicable Law and Venue.** Any dispute arising out of this agreement will be resolved under the laws of the State of North Dakota.
3. **Billing and Payment Procedures.** Invoices are to be submitted to Justin Ramsey, Environmental & Transportation Services, 608 East Boulevard Avenue, Bismarck, ND 58505, or jramsey@nd.gov unless otherwise instructed. Failure to submit correct invoices to the appropriate location may delay contractor payment.

Payment will normally be made within thirty days after delivery and acceptance of commodities or services under this contract and receipt of a correct invoice. All invoice and payment inquiries must be directed to the purchasing agency.

4. **Binding Contract.** The acceptance of a bid response in writing by the purchasing agency constitutes a contract between the bidder and the State. Written acceptance from the purchasing agency may be made by execution of a contract, purchase order, or order using a state purchasing card. Any oral agreement or arrangement by a bidder with a State employee or purchasing agency will have no force or effect unless reduced to writing.
5. **Compliance with Laws.** The contractor must, in performance of work under this contract, fully comply with all applicable federal, state or local laws, rules, regulations and policies, including those relating to nondiscrimination, affirmative action, accessibility and civil rights including Title VI of the Civil Rights Act of 1964. The contractor agrees to file all required reports on time, to make required payroll deductions, and to pay all taxes and premiums owed on time, including sales and use taxes and unemployment compensation and workers' compensation premiums. The contractor shall have and keep current at all times during the term of this contract all licenses and permits required by law.
6. **Contract Amendments, Waivers.** After a binding contract has been entered into, no changes (i.e. additions, substitutions, subcontracting or a price adjustment) may be made, unless prior approval has been obtained from the purchasing agency and Procurement Officer.

The terms of this contract shall not be waived, altered, modified, supplemented, or amended, in any manner whatsoever, except by written instrument signed by the parties. No waiver consent, modification or change of terms of this agreement shall bind either party unless in writing and signed by both parties. Such waiver, consent, modification, or change, if made shall be effective only in the specific instance and for the specific purpose given. There are no understandings, agreements, or representations, oral or written, not specified herein regarding this agreement.

7. **Contract Price Adjustment.** The Contract Unit Prices shall be firm for the twelve (12) months of the contract period. On an annual basis, all unit prices may be subject to price adjustment (increase / decrease). The request for a price adjustment shall be submitted to the Procurement Office at least forty five (45) days before the scheduled contract expiration date and must include justification for the proposed change. The Procurement Officer will respond as follows:
 1. The request may be granted,
 2. The contract may be cancelled and solicitation may be re-advertised, or
 3. The contract may be continued without change.

If a price increase is approved by the NDDOT, the date the increase will be effective along with the new unit prices will be included in an amendment document. Approval of any price increase renews the twelve month firm price period.

The State shall also be advised of and receive the benefit of any price decrease. The same notification and review process will apply to a decrease in cost.

8. **Contract Term and Renewal Option.** The NDDOT will enter into a contract with an effective date **beginning July 15, 2020, and ending December 31, 2021**, inclusive. This contract may be renewed upon satisfactory completion of the initial contract term. The NDDOT reserves the right to execute up to four options to renew this contract for a period of twelve (12) months each, not to exceed sixty (66) months total. Renewals will be documented by amendment.

The NDDOT reserves the right to renegotiate price and terms provided that such negotiated price and terms fall within the original scope of work for this bid. Negotiations may be conducted annually or at such times that additional and unexpected services falling within the scope of the contract may occur. Such changes will be documented by amendment to the contract.

9. **Contract Termination.**

- a. **Termination without Cause.** This contract may be terminated by mutual consent of both parties, or by either party upon 30 days' written notice.
- b. **Termination for Lack of Funding or Authority.** The State may terminate this contract effective upon delivery of written notice to the contractor, or on any later date stated in the notice, under any of the following conditions:
 - i. If funding from federal, state, or other sources is not obtained and continued at levels sufficient to allow for purchase of the services or supplies in the indicated quantities or term. The contract may be modified by agreement of the parties in writing to accommodate a reduction in funds.
 - ii. If federal or state regulations or guidelines are modified, changed or interpreted in such a way that the services are no longer allowable or appropriate for purchase under this contract or are no longer eligible for the funding proposed for payments authorized by this contract.
 - iii. If any license or certificate required by law or regulation to be held by the contractor to provide the services required by the contract is for any reason denied, revoked or not renewed.

Any such termination of this contract under (i), (ii), or (iii), above, shall be without prejudice to any obligations or liabilities of either party already accrued prior to such termination.

- c. **Termination for Cause.** The State by written notice to the contractor may terminate the whole or any part of this contract:
 - i. If the contractor fails to provide services required by this contract within the time specified herein or any extension thereof; or
 - ii. If the contractor fails to perform any of the other provisions of this contract, or so fails to pursue the work as to endanger performance of this contract in accordance with its terms and after receipt of written notice from the State, fails to correct such failures within ten days or such longer period as NDDOT may authorize.
 - iii. The rights and remedies of the State provided in the above clause related to defaults by the contractor are not exclusive and are in addition to any other rights and remedies provided by law or under this contract.
- d. **Termination, Deliveries.** If the contract is terminated for any reason, the contractor is responsible for delivery of all commodities and services ordered prior to the termination, unless those orders had been canceled by the Purchasing Agency or Entity.

- 10. **Inspection and Investigations.** The State reserves the right to conduct inspections and investigations related to the bidder and the offered commodities or services, including but not limited to the firm, personnel, qualifications, and the commodities and services offered to make determinations regarding compliance with the bid requirements and responsibility of the bidder. All material and workmanship are subject to inspection and testing by the State at the point of manufacturer, place of storage, or upon receipt. The State reserves the right to reject any commodities or services and terminate the contract if the Contractor fails to comply with the specifications, terms and conditions, or the seller's express or implied warranties. Rejected commodities will be removed at the Contractor's expense. Failure to satisfactorily perform may result in suspension or debarment from the Bidders List.
- 11. **Materials and Workmanship.** All material and workmanship shall be subject to inspection and testing at the discretion of the purchasing agency either at the point of manufacturer, place of storage, or upon receipt.
- 12. **Receiving.** Deliveries must arrive at the designated destination(s) during normal business hours unless other shipping/receiving instructions are issued by NDDOT personnel. The contractor shall contact the NDDOT to schedule delivery dates and times at least 24 hours in advance of delivery.

All NDDOT offices will be closed in recognition of State holidays. Any day declared a holiday by the President or Governor will also be recognized by office closure.

- 13. **Subcontracts, Assignment.** The contractor shall not subcontract, assign or transfer the contractor's interests or duties under this contract without express written consent of the purchasing agency. However, the contractor may enter into subcontracts provided that any such subcontractor acknowledges the binding nature of this contract and incorporates this contract, including any attachments. The contractor is solely responsible for the performance of any subcontractor. The contractor shall not have the authority to contract for or incur obligations on behalf of the State.
- 14. **Successors in Interest.** The provisions of this agreement shall be binding upon and shall inure to the benefit of the parties hereto, and their respective successors and assigns.
- 15. **Service Representative.** The contractor must provide a dedicated customer service representative to provide support for this contract. The contractor shall notify the Procurement Officer in the event the representative is changed.

NAME: Richard A. Beck, P.E.
(Name of person servicing this contract)

BUSINESS NAME: Beck & Co. Engineering, Inc.

MAILING ADDRESS: 8727 Pheasant Run Circle

CITY & STATE: Woodbury, MN ZIP CODE: 55125

PHONE NUMBER: 612-805-1637 TOLL FREE: NA

FAX NUMBER: 651-501-0015 E-MAIL: rick.bcengineering@gmail.com

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS FOR LINEAR PAVEMENT MARKING ASSESSMENT AND DATA COLLECTION

The North Dakota Department of Transportation (hereafter referred to as the Department) is seeking services for pavement marking retroreflectivity measurements collected with a 30-meter mobile retroreflectometer. The purpose of this work is to perform activities related to acquiring retroreflectivity data. Using mobile instruments will provide immediate feedback to establish pavement marking quality and will aid the Department in the evaluation of pavement markings placed on state highways.

SCOPE OF WORK

Work shall consist of furnishing all labor, materials, tools, equipment, and incidentals necessary to furnish the Department with data collected from pavement retroreflectivity readings on various routes throughout the state of North Dakota as decided by the Department.

The edgelines and centerlines of north bound and south bound lanes of I-29 from RP 33.409 to RP 44.039 shall be collected annually beginning in 2020 with the last data collection occurring in 2025.

Additional routes shall be two lane and multilane with the decision of which lines to read being up to the Department. Roadways will be in the area bound by the ND-MN border from the ND-SD border to Grand Forks; US Highway 2 from Grand Forks to Minot; US Highway 83 from Minot to the ND-SD border; and the ND-SD border from US Highway 83 to the ND-MN border.

The sequence of retroreflectivity readings can be decided by the contractor performing the data collection with the exception noted below for the I-29 segment noted above. Total mileage for any request will be determined by the Department, the contractor shall read with an approved mobile retroreflectometer, a minimum of one-mile sections of Retroreflectivity within North Dakota. One "Road Mile" shall consist of one white edgeline, one yellow centerline or yellow edge line and one broken white lane line (where applicable). There will be no minimum amount of "Road Miles" to be guaranteed annually.

I-29 Segment Requirements:

- Initial 2020 Evaluation: initial evaluation upon completion of all warranted pavement markings after 7 days and within 30 days for liquid materials or within 45 days for tape-type materials of the completion of marking placement. If a combination of both types are placed, the tape-type material timeframe will govern the timing of the evaluation. If upcoming adverse weather conditions will limit the ability to perform the evaluation, the Engineer may shorten these windows.

- Annual Evaluations (2021-2025): Complete annually before July 15th.

The Contractor will provide the Department with data regarding state highway line miles of striping on an as-needed basis throughout the term of the contract.

The Department will provide to the Contractor a list of road sections and maps indicating the sections to be evaluated upon request. The maps shall be of sufficient detail to allow clear identification by the Contractor of the starting and ending points for each section. This list of road sections shall be those road sections that The Department requires retroreflectivity measurements on.

The following deliverables shall at a minimum be provided when retroreflectivity data is collected. Values taken from the readings shall meet the following requirements:

- A. Only electronic media will be used.
- B. All software required to analyze reported data will be included in the bid price.
- C. Double yellow lines will be accounted and recorded separately.
- D. Average readings will be collected in 0.10-mile intervals of each Line Mile but be able to be reported with averages covering each 0.10, 0.50 or 1.0 mile of each Line Mile. This shall be done with a click of a button, so data can be analyzed however the Department determines.
- E. Readings will be performed each year between the dates of May 15th and August 31st, with the exception of the additional requirements for the I-29 segment noted above.
- F. Readings shall be reported numerically and graphically on an interactive mapping system.
- G. The working range of the instrument shall be 0 Mcd²/mlux to 1500 Mcd²/mlux.
- H. NDDOT maintains a linear referencing system using Esri's Roads and Highways software. For reporting purposes, highway route names must match NDDOT's naming convention for Routelds within that system. NDDOT will provide the contractor a file geodatabase the following feature classes to ensure the Routeld accuracy: State Roads, Reference Points and District Boundaries.
- I. For reporting purposes, GPS will report Lat and Lon distances to 8 significant figures, i.e. GPSLat 43.97599501N and GPSLon 92.46027511W

All data, forms, procedures, manuals, system descriptions and work flows developed or accumulated by the contractor under this contract shall be owned by the Department. The Contractor may not release any materials without the written approval of The Department.

All data, information and reports shall be made available via a secure (HTTPS) website only available to Department personnel.

The website should be capable of displaying retroreflectivity readings based on their GPS coordinates on a map with each 0.10-mile reading represented by a geospatially accurate marker. Clicking on a marker should display the following information about the 0.10-mile interval; chainage, retro, highway name, line type and event code. The readings shall be able to adjust the markers and value outputs from 0.10-mile to 0.50-miles to 1-mile intervals with one click

Lines should connect the markers on each roadway and the color of the line should depend on the retro reading where red is poor, yellow is average and green is good. The thresholds for the colors must be configurable by the end user.

The map must have the ability to filter the data that is displayed on it, specifically the ability to filter by; district, county, highway, material, line type color.

All summary reports and raw data must be available for download on the website on an ad hoc basis. Reports and raw data should be organized by year and project. Any photographs or videos that may have been collected during the surveying should be available and viewable on the website.

The website must have the capability to draw a chart for each highway, with the chainage on the X-axis and retroreflectivity on the Y-axis. The chart should display the current color thresholds defined by the user, to easily denote what intervals are failures. Charts must be exportable to PDF and png.

All routes/roadways that are going to be surveyed by the contractor for the Department must be made available on a map, grouped by year or project. Each route/roadway should contain the following attributes; total distance, line types, directions (northbound, southbound, etc) and free form notes. Also, a checkbox to mark a route/roadway completed must be available and used by the contractor as the work is completed. The Department must have the ability to add additional routes/roadways as needed or if required.

All data must be made available on the website defined above within 7 days of data collection in the field.

Data output requirements are included in the Data Output Table.

REQUIRED DOCUMENTATION

Retroreflectometer Specifications. Documentation that describes the Retroreflectometer standard features and manufacturer's recommended calibration method and device maintenance must be provided with the bid response. Failure to submit may be cause for rejection.

Calibration Certificate. A certificate of calibration for each retroreflectometer from the manufacturer or industry approved source showing that the Supplier's retroreflectometer intended for use this contract has been calibrated shall be furnished to Department. The letter shall be no more than one (1) year old. Meters must be calibrated annually or per manufacturer's recommendation. The Department may request a new letter if renewals are exercised.

REQUIRED EQUIPMENT

Acceptable devices for this project must be capable of meeting the requirements and specifications described in herein. The Contractor shall provide pavement marking retroreflectivity values using an approved 30-meter geometry retroreflectometer with a traceable, repeated calibration source to collect data. A letter of verification from the manufacturer shall be furnished to Department showing that the meter has been calibrated' (the letter shall be no more than one (1) year old).

The required field-testing apparatus consist of a vehicle equipped with the following devices:

- A. 30-meter geometry mobile retroreflectometer (or comparable equipment)
 - a. The retroreflectometer must be capable of collecting data in accordance to the 30-meter geometry conforming to ASTM E 1710.
 - b. The retroreflectometer must be capable of collecting pavement marking data at speeds up to the posted speed limit while accounting for horizontal wander and vertical movement of the host vehicle.
 - c. The retroreflectometer must be capable of measuring retroreflectivity of pavement markings ranging from 0 to 1500 ($\text{mcd}\cdot\text{m}^{-2}\cdot\text{lux}^{-1}$).
 - d. The retroreflectometer must be capable of being operated on either side of the host vehicle.
- B. A Distance Measuring Instrument (DMI) with an accuracy of $\pm 0.1\%$ per mile and/or a Global Positioning System (GPS). The absolute positioning of the $1/10^{\text{th}}$ mile GPS coordinates for every raw data file must have a precision accuracy within ± 3 feet, 1-meter (and reported to 8 significant decimal points) in order to properly map the data on a geospatially accurate marker. Failure to demonstrate these accuracies and maintain them throughout the life of the contract will be terms for terminating the contract.
- C. An operating system for data entry, acquisition, display, and storage. The computer is used to operate the mobile retroreflectometer, the HD video recording system the DMI, GPS devices and vehicle tracking systems which are all part of the mobile unit system. The computer must be equipped with an operation system for data entry, acquisition, display and storage. It must have sufficient capabilities to analyze the collected data and operate the software and receive input from the mobile retroreflectometer. The computer must be up to date with the most recent version of software to provide accurate data. At no time is any software correction or data manipulation allowed for data collection, all raw data must be collected in its true form and recorded in the analyzing of retroreflectivity averages.

MEASUREMENTS

- A. The MUTCD, AASHTO, ASTM or internal QC guidelines will govern general work practices of the crew.
- B. All readings shall be done using a 30-meter geometry mobile retroreflectometer which has an accuracy of $\pm 5\%$.

- C. The 30-meter geometry retroreflectometer shall be calibrated using calibration devices as recommended by the manufacturer.
- D. A log will be kept of the calibrations.

METHOD OF SAMPLING

The intention is to measure 100% of the line miles requested. The retroreflectivity data collected shall be reported in millicandelas per meter squared per lux (mcd/m²/lux). The unit of measure for retroreflectivity data collected shall be per "Mile" of striping surveyed as defined in Section 17 (Bid Line Item(s)). Payment will be based per "Mile" surveyed.

DATA

The data provided with the mobile retroreflectometer shall be based on station intervals with average measurements recorded every 528 feet by DMI. The original raw data files which shall include videos will be kept and maintained during the life of the Contract and will be provided to the Department via a web-based data storage portal with the ability to download data. At a minimum data reported shall meet the requirements as listed in Data Output Table.

FREQUENCY

Contractor will conduct measurements at the Department's direction. Measurement timing to be coordinated by the Engineer.

A. Supplies and Materials

The Contractor shall supply sufficient labor, equipment, tools, means of transportation, and incidentals to perform work in accordance to specifications, and to ensure a safe work environment for employees and the traveling public within the time schedule specified.

B. Mobilization

When readings are required to be taken, the Department will notify the Company in writing. The Company shall began work within 30 days from the written notice.

The company will provide the Department within 10 days after notification, written estimation that includes the following:

1. Number of days required to complete the job (not to exceed 30 days).
2. Number of days necessary to generate the required report

The company has the right to collect data for the department outside normal business hours and on weekends or holidays.

The issuance of a project list for the year will be provided to the contractor shall indicate acceptance of estimate and authorization to perform services. Work performed shall not exceed the original estimate without prior written approval of the department.

DAMAGE

In the event that any damage occurs during and is caused by work operations, the Contractor will be required to repair or replace the damaged item with a like item at the Contractor's expense.

CONTRACTOR REQUIREMENTS

A. Supervisor

The Contractor will be completely responsible for supervising and directing the work under this contract.

The Contractor shall have a competent and experienced supervisor/foreman on duty at all times when work is being performed. The Supervisor/Foreman shall have a functional cellular phone with message or call waiting capability on his person during duty/work hours. At no time shall the Supervisor/Foreman's response time to the Engineer be more than 48 hours.

The Contractor shall own sufficient amount of data acquisition equipment, resources and experience with the equipment to meet the project schedule and scope of services. Consultant will have at a minimum three years of mobile retroreflectivity data collection experience with at least 100,000 cumulative miles collected.

The Contractor shall list at least five references that can verify the mobile retroreflectivity data collection experience of 100,000 miles.

B. Crew

The Contractor shall at all times provide personnel and staffing levels able to perform the work in accordance with this Contract. The personnel performing this work will be under the sole responsibility of the Contractor and have at least two years of verifiable experience in mobile data collection.

Crew members shall possess a valid driver's license by the state in which they reside if they are designated to operate a motor vehicle.

TRAFFIC CONTROL

The Contractor must supply, transport, and install all required traffic control devices in accordance with these special provisions and the Manual of Uniform Traffic Control Devices, current adopted edition.

MAPPING REQUIREMENTS

The following location information shall be submitted to the Engineer upon completion of the striping assessment in a format that is compatible with current NDDOT archiving and mapping software and in a web-based delivery system with downloadable reporting and video.

- A. District
- B. Highway Number
- C. Direction
- D. From RP
- E. To RP
- F. Description
- G. Total Miles
- H. Evaluation Date
- I. Image
- J. Assessment Ratings
- K. Name of Inspector
- L. Comments

1	NO LINE	0
2	CONST ZONE	0
3	THRU A TOWN	0
4	MAT CHANGE	0
5	CRACK SEAL	0
6	INT SEC/CHG	0
7	TURN LANE	0
8	BRIDGE	3
9	LINE DAMAGE	0
10	DIRT ON LINE	0

BID RESPONSE

Each mile measured by the Contractor will be paid per "Mile" regardless of color or location. Areas of double yellow markings will be considered a single marking for measurement purposes. If multiple lines in the same segment of roadway are collected, they will be paid for separately (# of lines x length of segment).

The bid item shall include the cost to provide the web-based cloud system for NDDOT personnel. That includes but is not limited to login ID's, secure passwords, training documents and onsite training if needed.

The bidder is to furnish all material, equipment, travel, mobilization, incidentals, reports as necessary to complete the scope of work.

All data must be made available on the website within 7 days of data collection in the field. Website maintenance shall include at a minimum:

- Unlimited access to website features described
- Individual logins for each NDDOT website user (1 user per district, 2 users for HQ and one for the project manager)
- New software updates
- Access to software support technicians
- 99.0% uptime guarantee

Total cost per lane mile: \$ 524.95

**NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
APPENDIX A OF THE TITLE VI ASSURANCES**

During the performance of this contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the Contractor) agrees as follows:

1. Compliance with Regulations: The Contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, the Federal Highway Administration, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. Non-discrimination: The Contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.
3. Solicitations for Subcontracts, Including Procurements of Materials and Equipment: In all solicitations, either by competitive bidding, or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the Contractor of the Contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.
4. Information and Reports: The Contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the Federal Highway Administration to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a Contractor is in the exclusive possession of another who fails or refuses to furnish the information, the Contractor will so certify to the Recipient or the Federal Highway Administration as appropriate, and will set forth what efforts it has made to obtain the information.
5. Sanctions for Noncompliance: In the event of a contractor's noncompliance with the Nondiscrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:
 - a. withholding payments to the Contractor under the contract until the Contractor complies; and/or
 - b. cancelling, terminating, or suspending a contract, in whole or in part.
6. Incorporation of Provisions: The Contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The Contractor will take action with respect to any subcontract or procurement as the Recipient or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the Contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the Contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.



**NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
APPENDIX E OF THE TITLE VI ASSURANCES**

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the Contractor) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq.*), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq.*), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq.*), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.P.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 *et seq.*).



Risk Management Appendix

Service Contracts with Private Individuals, Companies, Corporations, Etc.:

Contractor agrees to defend, indemnify, and hold harmless the state of North Dakota, its agencies, officers and employees (State), from and against claims based on the vicarious liability of the State or its agents, but not against claims based on the State's contributory negligence, comparative and/or contributory negligence or fault, sole negligence, or intentional misconduct. The legal defense provided by Contractor to the State under this provision must be free of any conflicts of interest, even if retention of separate legal counsel for the State is necessary. Contractor also agrees to defend, indemnify, and hold the State harmless for all costs, expenses and attorneys' fees incurred if the State prevails in an action against Contractor in establishing and litigating the indemnification coverage provided herein. This obligation shall continue after the termination of this agreement.

Contractor shall secure and keep in force during the term of this agreement, from insurance companies, government self-insurance pools or government self-retention funds authorized to do business in North Dakota, the following insurance coverages:

- 1) **Commercial general liability and automobile liability** insurance – minimum limits of liability required are **\$250,000 per person and \$1,000,000 per occurrence.**
- 2) **Workers compensation** insurance meeting all statutory limits.
- 3) The State of North Dakota, its agencies, officers, and employees (State) shall be endorsed as an **additional insured** on the commercial general liability and automobile liability policies.
- 4) Said endorsements shall contain a **“Waiver of Subrogation”** in favor of the state of North Dakota.
- 5) The policies and endorsements may not be canceled or modified without **thirty (30) days prior written notice** to the undersigned State representative.

Contractor shall furnish a certificate of insurance evidencing the requirements in 1, 3, and 4, above to the undersigned State representative prior to commencement of this agreement.

The State reserves the right to obtain complete, certified copies of all required insurance documents, policies, or endorsements at any time. Any attorney who represents the State under this contract must first qualify as and be appointed by the North Dakota Attorney General as a Special Assistant Attorney General as required under N.D.C.C. Section 54-12-08.

When a portion of a Contract is sublet, the Contractor shall obtain insurance protection (as outlined above) to provide liability coverage to protect the Contractor and the State as a result of work undertaken by the Subcontractor. In addition, the Contractor shall ensure that any and all parties performing work under the Contract are covered by public liability insurance as outlined above. All Subcontractors performing work under the Contract are required to maintain the same scope of insurance required of the Contractor. The Contractor shall be held responsible for ensuring compliance with those requirements by all Subcontractors.

Contractor's insurance coverage shall be primary (i.e., pay first) as respects any insurance, self-insurance or self-retention maintained by the State. Any insurance, self-insurance or self-retention maintained by the State shall be excess of the Contractor's insurance and shall not contribute with it. The insolvency or bankruptcy of the insured Contractor shall not release the insurer from payment under the policy, even when such insolvency or bankruptcy prevents the insured Contractor from meeting the retention limit under the policy. Any deductible amount or other obligations under the policy(ies) shall be the sole responsibility of the Contractor. This insurance may be in a policy or policies of insurance, primary and excess, including the so-called umbrella or catastrophe form and be placed with insurers rated "A-" or better by A.M. Best Company, Inc. The State will be indemnified, saved, and held harmless to the full extent of any coverage actually secured by the Contractor in excess of the minimum requirements set forth above.

RM Consulted 2007
Revised 5-09



Amendment No. 1

To: ALL INTERESTED SUPPLIERS
From: North Dakota Department of Transportation
Date: July 2, 2020
Re: Amendment to ITB 968-62-20-050, Retroreflective Data Collection

Bidders Instruction #11 of the solicitation established a deadline for receipt of questions. The responses to these questions are provided as addenda to the solicitation. When necessary, the solicitation has been amended.

Question 1:

Can NDDOT provide an estimate of how many line miles will be collected in a year's time?

Answer 1:

The minimum amount will be the I-29 segment described in the contractor requirements. Additional miles will depend on the cost of the service and what can be done with the project budget. The additional miles will be planned to give the contractor a reasonable route and to create as circular a collection path as possible, but the exact locations will depend on project status and timing.

Question 2:

Can NDDOT provide an estimate of how many times we will need to mobilize to ND?

Answer 2:

NDDOT will attempt to coordinate with the contractor to create a single trip, based upon the date restrictions outlined for the I-29 segment in the contract requirements

Question 3:

Does NDDOT desire competition on this bid? If so, our company would bid this contract if there was a minimum number of miles guaranteed annually.

Answer 3:

Yes, NDDOT desires competition. The edgelines and centerlines of north bound and south bound lanes of I-29 from RP 33.409 to RP 44.039 shall be collected annually beginning in 2020 with the last data collection occurring in 2025. There will be no minimum amount of 'Road Miles' guaranteed annually. The number of miles will depend on timing of work as well as contract costs and how many miles can be completed within budget.

Vendors are instructed to acknowledge receipt of and compliance with this amendment by signing below and returning this acknowledgement with your bid or proposal.

Any questions regarding this amendment must be submitted in writing to the undersigned Procurement Officer.

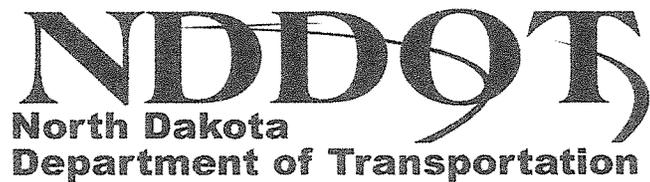
Sean Lackner, Procurement Officer
PHONE: 701-328-2571
E-MAIL: selackner@nd.gov

By my signature below, I hereby acknowledge receipt of and compliance with this amendment to the above referenced solicitation.

COMPANY NAME Beck & Co. Engineering, Inc.	
PRINTED NAME OF BIDDER OR OFFEROR <u>and</u> TITLE Richard A. Beck, P.E. President	
SIGNATURE Richard A Beck, P.E.	DATE 7/13/2020

**ITB #968-62-20-050
RETROREFLECTIVE DATA COLLECTION**

THE NORTH DAKOTA DEPARTMENT OF TRANSPORTATION



***Bid Close: July 13th, 2020 - 2:00 PM CST
Bid Open: July 13th, 2020 - 2:00 PM CST***

Proposal

Prepared By:

RICHARD A. BECK, P.E.

**Richard A. Beck, P.E. President/CEO
Beck & Co. Engineering, Inc.**

Consultant

It is with great pleasure that Beck & Co. Engineering, Inc has been afforded this opportunity to submit a proposal for this *Invitation to Bid (ITB) for Retroreflective Data Collection of Pavement Markings in the State of North Dakota.*

Business Organization

<u>Company Name</u>	Beck & Co. Engineering, Inc.
<u>Company Mailing Address</u>	8727 Pheasant Run Circle Woodbury, MN 55125
<u>Physical Address</u>	101 Bridgepoint Way, Suite 120 So. St Paul, MN 55075
<u>Contact Person</u>	Richard A. Beck, P.E. President, CEO
<u>Phone Number</u>	612-805-1637
<u>Fax Number</u>	651-501-0015
<u>E-Mail Address</u>	rick.bcengineering@gmail.com
<u>Federal Tax ID</u>	45-3601009

Beck & Co. Engineering, Inc. operates as a privately-owned corporation, and is incorporated in the State of Minnesota under and pursuant to the provisions of Chapter 302A, Minnesota Statutes. Beck & Co. Engineering, Inc. is an Equal Opportunity Employer and a drug free company.

If the state of North Dakota selects Beck & Co. Engineering's ITB, I hereby certify that:

If the contents of this proposal become contractual obligation, the proposal will remain valid for a period equal to the length of the contract.

Richard A. Beck, P.E.

Richard A. Beck, P.E.
President, CEO

Introduction and Qualifications

Beck & Co. Engineering, Inc. (BCE) is proud to offer 30-meter geometry data collection services utilizing our state-of-the-art mobile data acquisition technology, software, web-based interfaces and handheld units.

The Mission of Beck & Co. Engineering, Inc. is to serve the traffic safety industry in its drive toward ZERO highway fatalities. Since 2012, Beck & Co. Engineering key personnel have been providing its clients with the highest quality data collection services while ensuring safety, accuracy, and reliability of our systems. We specialize in ascertaining highly accurate data pertaining to the retroreflective properties of pavement markings; employing an array of state-of-the-art equipment, software, cloud-based data management systems, and expertly trained crews. Our team of experts have embraced the Mission at Beck & Co. Engineering, Inc. Our professionals work hard to guarantee our clients get the most accurate, reliable readings every time.

Beck & Co. Engineering specializes in pavement marking retroreflectivity surveying. We offer the highest level of practical experience, state of the art equipment, and confidentiality. Our focus is centered around a value-added approach to solving and ultimately managing pavement marking systems and the problems they present to their respective managers and engineers. BCE is a recognized and respected proponent of the traffic safety and engineering industry. The relationship of this ITB is directly related to the core competencies with respect to consulting services and lines of business that BCE offers.

BCE has more collective experience than any other firm with respect to pavement marking surveying, quality assurance, and management. Members of our team have been surveying pavement markings with mobile retroreflectometers longer than anyone in the industry. Key members of our organization have been continually helping the industry establish and develop mobile retroreflectivity technology. BCE employees have over 20 years of experience in the mobile measurement industry.

There are more new companies in the measurement industry today than there was 2-3 years ago. These new companies are a byproduct of today's marketing overreaches misrepresentations of the retroreflectivity equipment manufacturers. Their marketing campaigns imply that all you need to do is attach this device on any car and you will become an expert at measuring pavement marking retroreflectivity. BCE employees have been in the mobile measurement business for over 20 years and have experienced all the new technologies that have come along. No matter how good a piece of equipment is claimed to be, buying and operating it does not make you an experienced mobile retro data collection operator. They will be able to collect data yes but reliable accurate data is something that takes knowledgeable experienced personnel and stable, reliable equipment to obtain.

There are several agencies, contractors and material manufacturers who have utilized BCE for mobile retroreflectivity surveying of pavement markings. This includes mobile data collection for performance-based pavement marking contracts, pavement marking life cycle studies, materials engineering, new product development and several other types of work. BCE recently conducted an extensive mobile pavement marking survey for the National Transportation Safety Board (NTSB) as part of their accident investigation for a multiple fatality tour bus crash in Pennsylvania. BCE will not list in detail all of the customers we have previously or currently work with, as the list below is very extensive.

Should NDDOT wish to go into more detail we will be happy to expand the discussion of our other projects that make up our over 1,000,000.00 miles of data collection including but not limited to working for the following Agencies:

- **Minnesota DOT** – In 2008, 2009, and 2011 members of Beck & Co. Engineering conducted both dry and wet testing on several routes. From 2014 to present, BCE has conducted 80% of the DOT's independent third-party testing for mobile retroreflectivity testing on construction projects with pavement marking performance requirements.
- **Michigan DOT** - since 1999 Beck & Co. Engineering members have conducted approximately 75% of the mobile retroreflectivity surveying line miles in Michigan for both DOT and Contractors. In 2010 Beck & Co. Engineering members conducted 100% of MIDOT's R_L surveying.
- **Kentucky Transportation Cabinet** - from 1999 to 2003 and 2015 to 2018 Beck & Co. Engineering members had conducted 100% of the mobile retroreflectivity surveying line miles in Kentucky for the Transportation Cabinet.
- **South Dakota DOT** - Since 1998 and 2015 to present Beck & Co. Engineering members have conducted approximately 80% of mobile surveying line miles in South Dakota for the DOT.
- Numerous other State DOT's through contracts with private contractors in states like *New Jersey, South Carolina, Florida, Alabama, Georgia, Texas, Louisiana, Utah, Colorado and Kansas just to name a few.*
- **3M Company** - 2005-to present: Monitoring on an annual and bi-annual basis asset management projects located throughout the US in states such as Minnesota, Alabama, Idaho, Utah and West Virginia to name a few for 3M Company.
- Mobile surveying of pavement markings for life cycle analysis for agencies such as.
 - Kentucky Transportation Cabinet
 - Nebraska Department of Transportation
 - Montana Department of Transportation
 - North Dakota Department of Transportation
 - North Carolina Department of Transportation
 - South Dakota Department of Transportation
 - Pennsylvania Department of Transportation

- Development of pavement marking management systems (saving agencies \$100,000's per season each).
- Evaluating new materials, equipment, and procedures with respect to pavement markings and their applications.
- Training striping crews for proper application, and equipment setups and conducting before and after analysis for measuring the effectiveness of the training (both public-Missouri DOT and private sector applicators).

Examples of Beck & Co. Engineering's previous work will be available at any time the state of North Dakota requests. We encourage customers to contact our clients for information regarding quality of work and/or dedication of our work teams. In fact, we hope that checking all consultants' past performance is a prerequisite for this type of work.

Equipment

BCE has 20 fully equipped retroreflectivity units used for data collection. Each MRU is built to strict specifications in order to easily and safely mount the retroreflectometers on either side of the vehicle while maintaining repeatability and reproducibility across all vehicles and retroreflectometers.

Beck & Co. Engineering employs a variety of tools and mechanisms for its data collection. Most importantly, a BECK CEN-30 V7 Mobile Retroreflectometer. By custom building these CEN-30 V7 retroreflectometers in house we can eliminate the old out dated technology and continuously upgrade the units as the technology expands. Each MRU is equipped with two laser-based optics systems meeting ASTM E 1710 specifications alongside our unique data acquisition system. The equipment employed by BCE has been designed, manufactured, assembled, tested, and calibrated at our facility in South St. Paul, MN. Due to the proprietary nature of our software and equipment all of the details cannot be disseminated. A minimum of one terabyte bite of storage is installed in each laptop and data is automatically uploaded to BCE's cloud-based Data Portal Installed on these computers is our custom-built software, also proprietary. The software allows us to uniquely adapt to customer needs or specifications.

Laptop mounts, securely fastened to the front passenger seat frame, with a high definition laptop screen makes it easy for technicians to be in the passenger seat for the best view of both the roadway on which they are testing, and the screen they are viewing. Also, included as part of the data collection is a certified handheld retroreflectometer. These units are used for in the field quality control spot checking. Other minor mechanisms include at least 2 HD cameras, mobile Wifi device for daily data uploads, and high-resolution GPS devices.

As a continual checkup on all of our lasers, we run each of them through Beck & Co.'s Calibration Process both before and after every project. Over the last several years, we have shown the ability to complete comparison tests with our mobile operation crews versus handhelds taken at specific locations. Additionally, we have regularly shown to accurately fulfill the expectations of the DOT's on DMI tests. With the recent upgrades to our GPS units, we are even more accurate than the minimum requirements in this area.

The list and descriptions below of equipment and/or physical resources owned and available to Beck & Co. Engineering, Inc. pertaining to this ITB include but are not limited to:

- Mobile Retroreflectometers:
 - (4) 2019 Ford Expeditions equipped with:
 - Beck & Co. Engineering, Inc. Proprietary Laptop-based data acquisition systems & subsystems
 - BECK CEN 30-meter geometry optics box meeting ASTM E 1710 specifications. (2)
 - (2) Dell XPS 13's
 - Mobile broadband connectivity
 - Fully HD Video acquisition system
 - (2) 2017 Ford Expeditions equipped with:
 - Beck & Co. Engineering, Inc. Proprietary Laptop-based data acquisition systems & subsystems
 - BECK CEN 30-meter geometry optics box meeting ASTM E 1710 specifications. (2)
 - (2) Dell XPS 13's
 - Mobile broadband connectivity
 - Fully HD Video acquisition system
 - (3) 2016 and (3) 2015 Ford Expedition's equipped with:
 - Beck & Co. Engineering, Inc. Proprietary Laptop-based data acquisition systems & subsystems
 - BECK CEN 30-meter geometry optics box meeting ASTM E 1710 specifications. (2)
 - (2) Dell XPS 13's
 - Mobile broadband connectivity
 - Fully HD Video acquisition system
- Beck & Co. Engineering, Inc. cloud-based Data Portal and fully integrated web-server
- Windows 10 based graphical data logging software with GPS data logging capabilities
- Fully integrated field wet-testing system
- Full HD video overlay systems for recording raw data over video of roadway data collection
- HD camera integration (unlimited)
- Delta LTL X 30 meter hand held reflectometer (2)
- StripeMaster 2 Touch hand held retroreflectometer (2)
- MX-30 hand held retroreflectometer (2)
- Hunter Labs EZ Scan Colorimeter

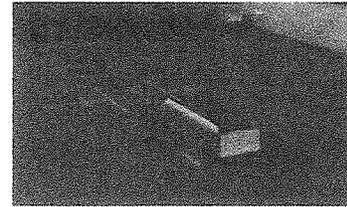
- Several Dell XPS Laptop workstations with mobile wireless capabilities
- Several field operated cameras and camera systems

MRU Manufacturer: BECK CEN-30 V7

Address: 101 Bridgepoint Way, Suite 120, So. St. Paul, MN 55075

Brief Description: See brochure in Calibration Document-January 2020

Equipment Certification and calibration dates: See Certification letters for three piece of equipment which is what each and every MRU will have with the equipment at all times for the NDDOT project manager to inspect or make copies of. All equipment is calibrated prior to leaving for any measurement projects and rechecked upon return. Internal proprietary self-calibration checks are occurring during data collection at all times and operators can monitor the results to ensure data is accurate and equipment is functioning at optimum performance.



Minimum Qualifications/References

Since 1996 members of Beck & Co. Engineering have performed consultant services in over 35 States and Provinces throughout the United States and Canada with Federal, State and Local Agencies as well as organizations in the Private Sector. Collectively, our staff has more experience in the area of pavement marking quality assurance, mobile retroreflectivity surveying and web-based data delivery of retroreflectivity data than any company in the country. The following paragraphs and examples of projects over the last five years give an in-depth view on the over 20 years of expertise and experience Beck & Co. Engineering has that meet and greatly exceed the minimum qualifications of this ITB.

Beck & Co. Engineering has measured over 1,000,000 million miles of mobile retroreflectivity readings throughout the United States and Canada. Our customers range from State and County Agencies, to large and small striping contractors and material manufacturers. Some of our customers include companies that maybe submitting proposals for this ITB. When the industry is seeking information on mobile retroreflectivity data collection, BCE is the first company that the industry turns to.

Since this information could become public through “Freedom of Information Act” not all of our customers are listed, only those pertaining to the work related to this ITB and only for the 5 requested in the ITB. If NDDOT would like a more in-depth list of or customers and experience, we would be happy to offer that during.

We have attempted to cross reference the experience and contacts material for each project pertaining to this ITB. Some of the services we have performed demonstrate that the Beck team meets and exceeds the minimum qualifications including but not limited to the following list:

Georgia DOT

Firm Providing All Services:

(BCE) Beck & Co. Engineering, Inc.
8727 Pheasant Run Circle
Woodbury, MN 55125

Services Provided For:

Georgia Department of Transportation

Project Location(s):

State of Georgia, United States of America

Project Manager(s) Contact Info:

Paul Harvey, P.E.
Phone: 404-608-4841
e-mail: pharvey@dot.ga.gov
Address: Georgia Dept of Transportation, 25 Kennedy Dr, Forest Park, GA 30297

Project Date(s):

April, 2018 to Present

Project Line Miles:

25,000.00 to 30,000.00 miles per year - total for 2 years approximately 25,000.00 to 30,000.00

Project Budget:

\$450,000.00 per year - total value of project approximately \$900,000.00

Project Scope:

Beck & Co. Engineering conducts network wide mobile retroreflectivity surveying on 25,000.00 to 30,000.00 miles per year for Georgia DOT. BCE personnel *Collect, analyze and report on the retroreflectivity of existing pavement markings throughout the state of Georgia. Each year, the Maintenance Office initially requests every Interstate route throughout the state to be surveyed within each district. Once the Interstates are completed, GDOT provides a list of all routes within each district to survey. GDOT uses this data to develop striping plans and determine how the performance of their Thermoplastic, Tape and High Build Paint pavement markings are performing after a season or two.*

Approximately 25,000 to 30,000 miles per year.

Kansas DOT

Firm Providing All Services:

(BCE) Beck & Co. Engineering, Inc.
8727 Pheasant Run Circle
Woodbury, MN 55125

Services Provided For:

Kansas Department of Transportation

Project Location(s):

State of Kansas, United States of America

Project Manager(s) Contact Info:

Jonny Madrid
Phone: 785-296-7432
e-mail: Jonny.Madrid@ks.gov
Address: Kansas Department of Transportation, 700 SW Harrison Street, Topeka, KS 66603-374

Project Date(s):

February, 2017 to Present

Project Line Miles:

50,000.00 miles per year - total for 3 years approximately 150,000.00 to date

Project Budget:

\$750,000.00 per year - total value of project approximately \$2,250,000.00 to date

Project Scope:

Beck & Co. Engineering conducts network wide mobile retroreflectivity surveying on 50,000 miles per year on Kansas roadways statewide for development of a Pavement Marking Management system. BCE personnel collect, analyze and report through a cloud-based data portal on the retroreflectivity of existing pavement markings throughout the state of Kansas. Each year, the Safety and Technology Office requests BCE to measure each and every District highway throughout the state to be surveyed from beginning of the route to the end of the route all lines. The data is upload to a cloud-based data portal that allows DOT personal to access and analyze the data customized to their needs. KDOT uses the data to develop striping plans for their District personnel and determine how their FHWA HSIP pavement marking project are performing over time. The Web-Based Data Portal is customizable to fit the needs of KDOT district personnel. The Data Portal has also helped KDOT develop striping quantities for future HSIP pavement marking projects for routes that have been identified as having high crash history. KDOT's ADT and crash data have been incorporated into the Web-Based Data Portal and users can easily toggle on and off the retro and condition of the markings in a given area as well as the ADT and crash history.

Missouri DOT

Firm Providing All Services:

(BCE) Beck & Co. Engineering, Inc.
8727 Pheasant Run Circle
Woodbury, MN 55125

Services Provided For:

Missouri Department of Transportation

Project Location(s):

State of Missouri, United States of America

Project Manager(s) Contact Info:

Thomas Honich, P.E.

Phone: 573-526-0122

e-mail: Thomas.Honich@modot.mo.gov

Address: Missouri Dept of Transportation, 830 MoDOT Drive, Jefferson City, MO 65102

Project Date(s):

January, 2013 to Present

Project Line Miles:

10,000.00 to 15,000.00 miles per year - total for 7 years approximately 70,000.00 to 100,000.00

Project Budget:

\$200,000.00 per year - total value of project approximately \$1,000,000.00 to \$1,500,000.00

Project Scope:

Beck & Co. Engineering conducts network wide mobile retroreflectivity surveying on 15,000 to 20,000 miles per year for Missouri DOT. BCE collects, analyze and reports on the retroreflectivity of newly applied pavement markings for new construction projects throughout the state of Missouri. Requests are presented to BCE and data is to be collected between 14-44 days from the last day of application. BCE then provide the MODOT Construction office with Engineering Inspection Reports for each project measured. The Independent Third-Party Testing Firm (BCE) is a critical inspection part of the project which ensures striping contractors are meeting performance requirements as laid out in the specifications. Contractors have an incentive/disincentive specification that pays them according to their overall performance and workmanship of the final project pavement markings. Approximately 7,500 to 10,000 miles per year.

BCE collects, analyze and reports through a cloud-based data portal on the retroreflectivity of existing pavement markings throughout the state of Missouri. Each year in the Spring/Fall the Traffic and Safety Office requests the major routes and minor routes throughout the state to be surveyed within each district. The data is upload to a Cloud-Based Data Portal that allows DOT personal to access and analyze the data customized to their needs. MODOT uses the data to develop striping plans and determine how pavement markings are performing prior to and just after winter operations. Approximately 7,500 to 10,000 miles per year.

North Carolina DOT

Firm Providing All Services:

(BCE) Beck & Co. Engineering, Inc.
8727 Pheasant Run Circle
Woodbury, MN 55125

Services Provided For:

North Carolina Department of Transportation

Project Location(s):

State of North Carolina, United States of America

Project Manager(s) Contact Info:

Mathew Springer, P.E.
Phone: 919-814-5025
e-mail: mspringer@ncdot.gov
Address: North Carolina Dept of Transportation, 750 N Greenfield Pkwy, Garner, NC 27529

Project Date(s):

September, 2014 to Present

Project Line Miles:

5,000.00 miles per year - total for 5-1/2 years approximately 27,500.00

Project Budget:

\$250,000.00 per year - total value of project approximately \$1,250,000.00

Project Scope:

Beck & Co. Engineering conducts network wide mobile retroreflectivity surveying on 25,000.00 miles per year for North Carolina roadways statewide for development of a database on their pavement marking effectiveness. Wider 6" edge line studies and project conformance for striping contractors are just a few aspects of the work items BCE conducts for NCDOT.

Pennsylvania Turnpike Commission

Firm Providing All Services:

(BCE) Beck & Co. Engineering, Inc.
8727 Pheasant Run Circle
Woodbury, MN 55125

Services Provided For:

Michael Baker, International
Private Striping Contractors

Project Location(s):

State of Pennsylvania, United States of America

Project Manager(s) Contact Info:

Lidia Miller, MBA
Phone: 717-831-7565
e-mail: lidmiller@paturnpike.com
Address: PA Turnpike Commission, 700 South Eisenhower Blvd, Middletown, PA 17057

Project Date(s):

March, 2013 to Present

Project Line Miles:

5,000.00 miles per year - total for the past 6 years and counting approximately 30,000.00

Project Budget:

\$100,000.00 per year - total value of project approximately \$500,000.00 and counting

Project Scope:

Beck & Co. Engineering members have conducted network wide mobile retroreflectivity surveying on the Pennsylvania Turnpike system for both the Pennsylvania Turnpike Commission (PTC) and several private contractors. The work for PTC is to monitor and develop degradation curves on the All-Weather Durable pavement markings that have been applied by private contractors over the past several years as well as a base line on the PTC's painting crews.

The work for the private contractors is related to contract performance requirements on their PTC projects. Our independent testing firm requirement includes performing ASTM tests:

- Dry field retro testing - ASTM E1710
- Wet field retro testing (both continuous and recovery) - ASTM E3828/ASTM E2177
- Adhesion testing - ASTM D6677
- Color (Chromaticity) testing – ASTM E1347

Contractors are required to meet prescribed levels of performance after an observation period of 30-90 days and those tests must be conducted by an independent testing firm. Reports are then turned into the PTC for contractor payment and/or identified corrections of failed areas.

Illinois State Toll Highway Authority

Firm Providing All Services:

(BCE) Beck & Co. Engineering, Inc.
8727 Pheasant Run Circle
Woodbury, MN 55125

Services Provided For:

(ARA) Applied Research Associates, Inc.

Project Location(s):

State of Illinois, United States of America

Project Manager(s) Contact Info:

Carmine Dwyer, P.E. and Rachel Becker
Phone: 217-316-4500
e-mail: Cdwyer@ara.com and rbecker@ara.com
Address: Applied Research Associates, 100 Trade Center Drive-Suite 200, Champaign, IL 61820

Project Date(s):

March, 2013 to December, 2017

Project Line Miles:

1,000.00 miles per year - total for the 5 years approximately 5,000.00

Project Budget:

\$20,000.00 per year - total value of project approximately \$100,000.00 and counting

Project Scope:

Beck & Co. Engineering members have conducted network wide mobile retroreflectivity surveying and condition assessment surveys on the Illinois Tollway System for Applied Research Associates and the Illinois State Highway Toll Authority. The work for was conducted to help Applied Research Associates monitor and develop degradation curves on the pavement markings that had been applied by private contractors on the Illinois Tollway System.

Florida DOT

Firm Providing All Services:

(BCE) Beck & Co. Engineering, Inc.
8727 Pheasant Run Circle
Woodbury, MN 55125

Services Provided For:

Florida Department of Transportation

Project Location(s):

State of Florida, United States of America

Project Manager(s) Contact Info:

Charles Holzschuher, P.E.
Phone: 352-955-6341
e-mail: Charles.holzschuher@dot.state.fl.us
Address: Florida Department of Transportation, 5007 N.E. 39th Avenue, Gainesville, FL 32609

Project Date(s):

January, 2013 to June, 2016

Project Line Miles:

25,000.00 miles per year - total for 3-1/2 years approximately 80,000.00

Project Budget:

\$425,000.00 per year - total value of project approximately \$1,500,000.00

Project Scope:

Beck & Co. Engineering conducted network wide mobile retroreflectivity surveying on 25,000.00 miles per year for Florida roadways statewide for development of a Pavement Marking Management system. Engineers and employees were housed at and utilized as an extension of the Florida Department of Transportation's Materials Division Office located in Gainesville, Florida. At the time of this contract BCE equipment and crews were the only mobile retroreflectivity unit (MRU) that had passed any of the Departments rigid standards for acceptance testing of the mobile unit.

Data Hosting and Access

The BCE Data Portal is a web-based software application suite that is used to provide 24/7 real time access to retroreflectivity data, including any high definition imagery and video collected as part of the project.

In addition to querying and reporting on the retro data, the Data Portal also can be used for operational analysis during the data collection process. It allows NDDOT to track roadways as they are being surveyed, update roadway meta data (such as material type, pavement type, and other factors), and track data collection vehicles in real time using AVL (automatic vehicle location).

As data is collected in the field it is securely uploaded to the Data Portal after each roadway is surveyed, which allows for instant backups along with expedited turnaround time to NDDOT. After a QC process, data is then available to be mapped and analyzed on the Data Portal. The average turnaround time from data collected on the road to viewable on a map on the Data Portal varies depending on the scope of the project. In cases where a customer has requested urgent or emergency readings, the data can be available to them on the Data Portal within hours of the final data collection. But in most cases the data will be available within 1-2 business days dependent on the entirety of a roadway or project being completed.

To provide 24/7 high speed secure access, the Data Portal uses state of the art hardware and network connectivity. Development and operations teams, based in the US, are constantly updating and monitoring the systems that make up the Data Portal. Backups of all data are stored in multiple secure locations along with a full operational standby system ready to take over is any issues arise in the main system.

Once published to the Data Portal, anyone with user access and permissions can log on to the web application using just a web browser (no software to install) at any time. Once authenticated, a user can view, query, and report on the data, view high definition imagery of the stripe and pavement material and watch video collected at time of survey.

Web-Based Interface

The Data Portal

Beck & Co. Engineering has been utilizing a cloud-based web application called the Data Portal. The system provides a single location where clients can securely access, analyze, download, upload, view, manage and geospatially visualize all of the data that has been collected. Data is not limited to retroreflectivity data, but also can include any related video or pictures taken while on the project and other relevant information such as crash data, ADT, etc. The Data Portal is a HTML5 web application which is delivered to the users through any modern web browser (Chrome/Firefox/Safari/Internet Explorer 10 and higher) and a valid username and password. It has been designed to scale to any device/computer assuming adequate internet connection, memory space, and device speed. Our software team updates and adds features to

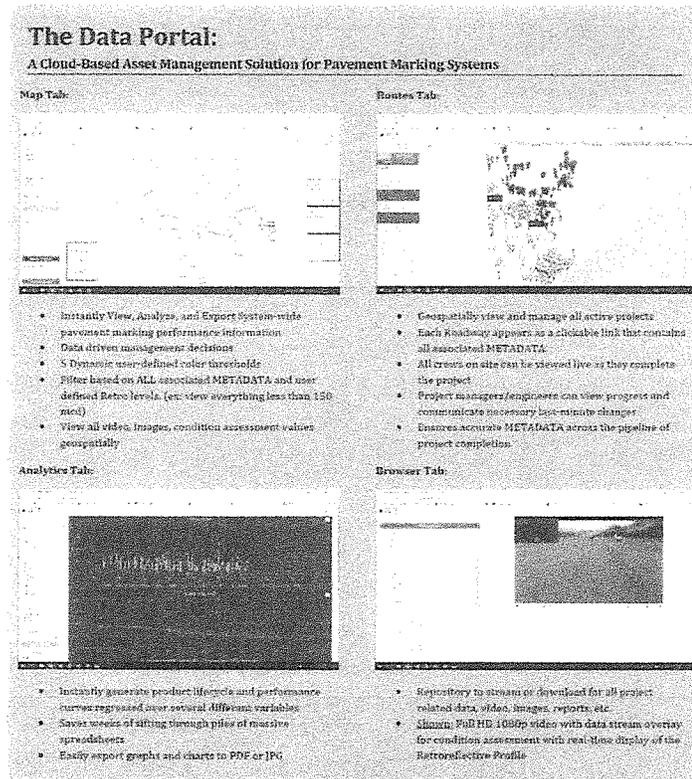
the Data Portal on a continuous basis; with a simple refresh of the page, the user is able to access these updates as they are implemented. Our organization assigns an exceptionally high priority on security. Maintaining the security of personal information as well as any and all data collection results is a top priority. All communications from the device/computer are encrypted over HTTPS using a 2048 bit key. Physical and remote access to the servers and files are strictly maintained via a rigorous internal process. We follow industry best practices and are striving every day to make sure the data is safe and secured while also providing a fast and seamless service to the end users of the Data Portal.

The Data Portal is designed on driving three fundamental principles: data delivery, data visualization, and streamlined analytics. The first principle is to improve the pipeline of data delivery to the customer. We want to ensure that our clients receive the data and information they are looking for in a precise and timely manner. Our crews are now able to upload the data they've collected immediately after the project has been completed. This allows our engineers to generate reports instantly.

The Data Portal will act as a single location where any internal NDDOT user can easily access project level data, video, images, reports, etc. that have been posted by Beck & Co. Engineering. It is important to note that there are certain security protocols set up to where an individual would have to be granted administrative approval by NDDOT to access the Data Portal.

The second principle is to introduce a simplified process of data visualization. It has been our effort to reduce, if not eliminate, time and money spent deciphering, organizing, and analyzing the mass amounts of excel workbooks and spreadsheets that have followed the data collection process. The 'Map' tab of the Data Portal provides a project manager, safety engineer, and/or researcher the capability to present a project level visualization of a products performance in the field. Suddenly, what was once depicted through mounds of spreadsheets is now easily viewed, communicated, and understood between parties that may not be well versed in the subject of retroreflectivity.

The third principle is to provide a single location for any NDDOT employee seeking to access and employ any of the data that has been collected. The Data Portal will streamline the ability



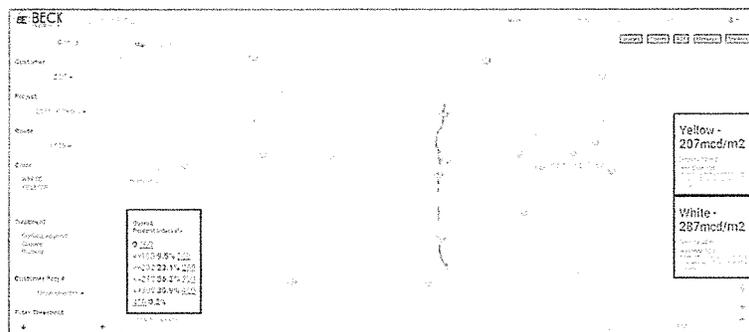
to analyze mounds of data in a relatively short period of time. With this tool, North Dakota can more efficiently and effectively dig into several data sources to achieve objectives such as the development of a product's expected lifecycle while clearly defining the environmental variables and risks that may be associated. The user is able to specify the criteria displayed on the map. This premise is fundamental to the process of turning data into employable information.

Should BCE become the choice for North Dakota on this ITB we will provide the project manager our training manual for the Data Portal. BCE will then proceed to set up and conduct the necessary training for the project manager to become proficient in the use of the data portal. However, because this document is for customers only, we will not make it available as part of this ITB's documentation. Below is a brief description of the Data Portal capabilities.

Map Tab

This area of the Data Portal is where the data is geospatially displayed once it has been collected and uploaded. Once the project is selected from the drop down menu in the upper left, any roads that have had data collected on them will begin to display on the map. The default setting is to display the individual tenth miles as they were collected in the field,

connected by color coded lines, the user can zoom in to any one of these roads as desired. The color of these lines represents individual tenth mile averages as they pertain to specific bins or



thresholds that can be adjusted to fit the user's needs. By adjusting and rendering different thresholds, users can more easily identify problem areas. The colors red, yellow, and green represent a poor, average, and good retroreflectivity reading respectively. Several other filters are also available and very easy to use including the ability to filter by project, district, roadway, material type, lane or line type, and color by simply clicking in the boxes of interest. To further drill into the data, a user can turn on markers to more clearly see where each tenth of a mile begins and ends. These markers too are color coded based on the user set thresholds. Clicking on a specific marker will bring up pertinent information specifically for that point including, the chainage, the average retroreflectivity for that tenth, the highway name, the line type, and an event code denoting anything the operators in the field noticed during data collection.

Browser Tab

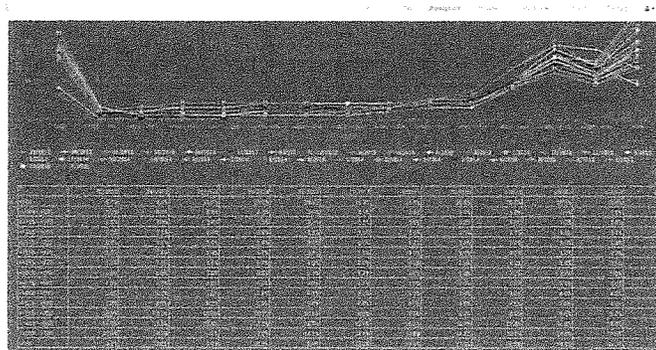
In addition to the map tab and its ability to geospatially display the data, there is what is known as the 'Browser' tab. Here is where the physical excel reports are securely stored and readily available for download. Reports will be split by the highway name and by mile markers if there is more than one section on a given roadway. The reports will also be split into folders for the year in which they were read to make it easy to do comparisons across multiple years. Also,

under the 'Browser' tab, the user will be able to find any videos, images, or other information deemed important to the project. They will be available to view directly from the Data Portal or can be downloaded if preferred.

Analytics Tab

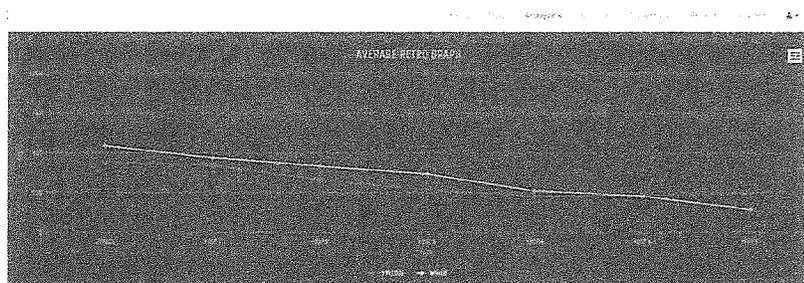
Another way to visually represent data is graphically through charts. The 'Analytics' tab quickly and easily allows users to view the data in a variety of different ways. Selecting multiple

roadways at once the data can be viewed by the overall retroreflectivity for different line types over time, with time on the X-axis and retroreflectivity on the Y-axis. Also, an Average Retro Graph which again displays the overall retroreflectivity (Y-axis) over time (X-axis) of the different colors, white and yellow. Finally, the Percent Retro Breakdowns



graphs every percentage of retro values (Y-axis) that fall within the specified bins (X-axis). By selecting a single road, additional graphs are made available. These graphs plot the individual tenth mile retro

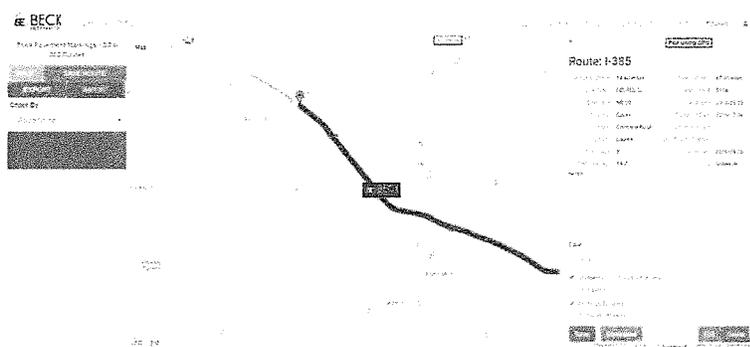
averages (Y-axis) for the whole run with the Chainage on the X-axis. The graphs will split for yellow and white colored lines so that the thresholds set by the user will also



appear making problem areas easily identifiable. Each graph can be downloaded and saved in a variety of different formats or printed directly from the Data Portal for the user's convenience.

Routes Tab

The 'Routes' tab is where all of the roadways for a project are mapped and saved so they can be viewed all together as a project or individually if desired. Once a roadway to be surveyed has been mapped, the information related to that road is entered. The data entered includes: the roadway name, the direction/s it is to be surveyed, the line types to be



tested, the starting and ending point, total distance, and the ability to add any notes or memos if needed. Upon the completion of data collection on a roadway, the operators will mark it as complete by simply checking a box. This can be visually confirmed by the color of the marked route on the map, if the roadway is blue it has not been completed and if it is gray then the roadway has been completed. Additionally, operators and NDDOT employees have the capability of adding to or editing the map at any time. Since this is web based, any changes are nearly instantly available to the crews in the field so there is little to no time lost back tracking to survey missed roads. Along these same lines, the 'Routes' tab allows NDDOT employees to see where the Beck & Co. Engineering crews are when working on their project. This is beneficial because now not only can the NDDOT employees track the progress of the crews, but also if they notice a vehicle in an area of interest, they can quickly add additional routes without slowing down production.

Delivery of Data

According to the specification of this contract, reports must be completed and turned in within 7 days of the completion of the data collection. In order to adhere to this timeframe, BCE plans on producing and uploading the reports as sections of roadways are completed. Through the use of the Data Portal, crews in the field have the ability to upload raw data files to our in-house server as the data is collected. The excel reports can then be run and inspected for quality within a matter of hours. Once the reports are completed, they are uploaded back to the Data Portal where they are geospatially rendered on to the map and ready for NDDOT analysis. The reports are also available for download in excel format should further analysis be needed by NDDOT. This process will allow BCE to stay well inside the one-week period for turning in reports.

Most of our data collection contracts have stringent time frame requirements for both data collection as well as reporting. In most cases, the data is to be collected within a 10-30 day window and reporting has to be completed between a 3-7day turnaround. Therefore, meeting the requirements for NDDOT with respect to 7 days is currently how we handle most if not all of our customers. These turnaround times are one of the reasons we developed and built our cloud-based data portal.

Customer Satisfaction

Our experience with other DOT's over the years has given us great insight into a DOT's expectations as it pertains to the services of the employer. It has always been our goal to meet those expectations to the best of our abilities and we will continue to strive to do so. By having weekly updates and monthly conference calls, Beck & Co. will be able to address any concerns before they have a chance to become major issues. Communication is the key factor to resolving or preventing any problems that may arise. The home office is frequently in contact with the technicians making sure they are remaining efficient while still maintaining the quality of the data. At a minimum, one of Beck & Co.'s home office employees will be available for emergencies or major issues that need an immediate resolution.

BCE thanks NDDOT for the opportunity to provide you with our services.

APPENDIX

Beck CEN-30 V-7 MRU Features

BCE MRU Processes - Updated: January - 2020
 Calibration
 Operations
 QA/QC

Calibration Certificate CEN-30 V7 #205 - Dated: January 8, 2020

Calibration Certificate CEN-30 V7 #206 - Dated: January 8, 2020

Calibration Certificate CEN-30 V7 #207 - Dated: January 9, 2020

Insurance Certificate with Workers Compensation and Employers Liability

**BECK CEN-30 V7 MOBILE RETROREFLECTOMETER
MEETS ASTM E1710**



- HeNe Laser based optical system for laboratory quality and accuracy
- Meets ASTM E1710 – 30 Meter Geometry
- Entrance Angle: 88.76° (per ASTM E1710)
- Observation Angle: 1.05° (per ASTM E1710)
- Measuring aspect of the total angular spread does not exceed 0.33°
- Operating Temperature Range: 0°F to 120°F
- Reflectivity Range: 0 mcd/m²/lux to 1500 mcd/m²/lux
- > 400 Measurements per Second in legacy version
- Provides individual outputs for double lines
- Device also Measures Line Width, Contrast Ratio, Pavement Reflections, etc.
- Measures white and yellow flat and profiled road markings of any type on flat and rough, dry surfaces
- Day or night operation capable eliminates RPM's
- Fully secure USB connection and data storage to avoid annoying wireless drops
- Full HD 1080p @ 30 fps video with data stream overlay for condition assessment
- Retroreflectometer can be mounted on either side of the vehicle or both sides
- GPS accuracy <1m DMI accuracy <5.28ft
- Real-Time programable event codes and condition assessment ratings outputted at each interval
- Windows-based OS with a sampling rate of 1M S/s (1 Million Samples per Second)
- Real-Time Display of the Retroreflective Profile
- Wet Testing capable – ASTM E2177 Wet Recovery – ASTM E2832 Continuous Wetting
- Color ASTM E1347 – Chromaticity readings
- NIST Certified calibration panels with simple calibration process
- Internal proprietary self-calibration check

Beck & Co. Engineering, Inc.

***BECK CEN-30 Meter V7 Mobile Retro Unit
Calibration/Operations/QA/QC Processes/
CEN-30 V7 Standard Features***

-Updated January 2020-

Prepared By:

RICHARD A. BECK, P.E.

*Richard A. Beck, P.E.
Beck & Co Engineering Inc.*

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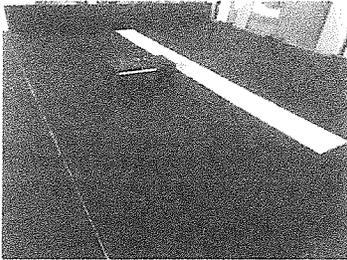
Calibration Process

Beck & Co. Engineering (BCE) owns and operates a fully equipped testing laboratory at our facility in South St. Paul, Minnesota. Our facility is set up with office space, fabrication space and a full-spectrum CEN 30 mobile retro unit testing facility and equipment. Including, but not limited to: Electromagnetic analytics, stand-alone designed testing/distribution enclosures, laser alignment tools, laser calibration equipment, computer networks, fabrication tools, wet testing devices, parts inventory, etc.

Since 2015 Beck Enterprises, LLC has been designing and manufacturing Laser based light source CEN-30 Meter V7 mobile retroreflectometers. We utilize their Cal Process on several calibration panels, ceramic blocks and even rumble stripes that have been supplied by numerous manufacturers.



These panels have been labeled and certified by NIST Certified Laboratories located within the United States. Every year panels are submitted (or new panels) for re-evaluation for their reflective properties so that we can be certain of a traceable calibration source. We also review these panels periodically with hand held devices for in-season QA/QC protocols. There currently is no national calibration laboratory, where all panels and blocks can be sent to be tested and certified. We feel that our process for monitoring reflective properties of our calibration panels goes above and beyond other labs.



Prior to each mobile unit leaving our So. St. Paul facility they are cleaned, aligned, and given a factory preventative maintenance overview. BECK Lasers run at optimum performance when their calibration factors are set as close to 1.0 as possible and are maintained at that factor throughout their use. Therefore, prior to sending any unit out in the field, the lasers, their optical sensors and internal operations are finely tuned on our test

bench and calibrated to 1.0 on our panels and ceramic blocks. These files are documented and kept for our records as well as our customers and can be made available upon request.

When mobile units return back to our facility after a service call, the retroreflectometers are put back on the calibration bench and compared to their documented results prior to their service call. These results are also documented and should be less than $\pm 5\%$ of the testing before the mobile unit's data collection service call. Typically, when a unit returns from a data collection service call the results are within $\pm 1\%$ - 3% of the original mobile unit calibration.

When a mobile unit returns from a data collection project and reflects a greater than 5% difference from when it left the facility, the data is still used and the customer can be notified of that discrepancy. Most agencies require mobile units to fall within a $\pm 10\%$ window for repeatability and reproducibility so this is well within those parameters. However, if a unit returns to our facility with a documented variance greater than 10%, the data is thrown out and the project is immediately re-surveyed. Our technicians conduct a systematic detailed review of the unit to determine why the results are greater than 10%. If necessary, corrective actions on future units will be conducted if the discrepancy warrants.

Calibration testing in the field is checked throughout the day using on board systems, panels, ceramic calibration blocks and/or in place markings with handheld retroreflectometers. However, it should be noted that changing calibration factors by any percentage multiple times a day and every day for a whole trip leads one to question the validity of the data being collected by that unit. Once units have deviated more than 5% from their original setup calibration an operator must consider identifying why the deviation has occurred. If that determination cannot be made the unit must be changed out.

Mobile Retroreflectivity Operator Certification:

Before a mobile retroreflectivity operator is certified, under Beck & Co. Engineering, they first have to spend time in the field working side by side with an experienced operator. Every person's rate of retention is different and therefore some learn faster than others. This on the job training involves not only the day to day operations of a mobile retroreflectivity crew but also gives them hands on training on trouble shooting and fixing issues that can arise in the field with any scientific equipment.

Beck & Co. Engineering utilizes two-person crews on almost 100% of their data collection efforts for two main reasons, safety and accuracy of the data collection. A third by-product of that is the ability to train new operators by constantly using the data collection efforts of experienced operators and the scenarios that arise during day to day data collection to teach new operators.

All potential operators are required to sign a confidentiality agreement before beginning work with Beck & Co. Engineering. During their initial training employees get firsthand knowledge of:

- The principles of retroreflectivity
- The mechanics behind the retroreflectivity equipment (mobile and hand held instruments)
- The data collection process of the laser and hand held units.
- How to properly drive not only during data collection but from site to site
- Defensive driving courses are offered and employees are encouraged to attend.
- All employees have prior highway construction background prior to being hired. Pavement markings are not always part of their experience so layouts of pavement markings are shared for a better understanding of what the data collection efforts are looking at.
- Packing units with the proper equipment for data collection including but not limited to tools for diagnostics, equipment repair and extra parts
- Setting up the equipment, prior to data collection
- Calibrating the equipment
- Detailed step by step overview of the systems and subsystem regarding operating the Beck & Co. of Minnesota software.
- Proper data base protocol for each customer
- Beck Data Portal Cloud Based Web Service
- Ohm Meters, Garmin GPS systems, Video systems
- ASTM E 1710, ASTM E 2832, ASTM E 2177, and ASTM E 1347

Each one of the items above has a subset of items that are very extensive.

Periodically throughout their training period, potential operators are given a series of random questions relating to the list above. When a potential operator has demonstrated their proficiency and understanding of what it takes to become a mobile retroreflectivity operator for Beck & Co. Engineering they have passed the first stage of certification and are given an opportunity to demonstrate that competence.

Beck & Co. Engineering has numerous highway routes that we have been keeping track of for many years on a regular basis. A new operator is given the chance to demonstrate their skill by taking one of several different units and setting up the equipment, including a field calibration and surveying all the markings (including messages) on one of the routes we've maintained a history on.

Those values collected by the new operator are then compared to the data collected by certified operators. After comparing the results from the initial data collection, the new operator is asked to repeat the survey. If the data collected is within 5%, the new operator is given another unit with a different laser and asked to conduct the data collection for a third time. Again the results must be within 5%. Should the data not be within the 5%, we work with the operator to show them what mistakes they made as an operator.

Once a new operator has demonstrated their abilities to repeat and reproduce the correct data collection procedures and values with multiple units, they have passed the second stage of Beck & Co. Engineering's certification process.

The third stage of certification is really the hardest stage to complete. This stage involves learning how to go through a factory calibration on Beck & Co. Engineering's test bench. It also includes trouble shooting and fixing problems that arise in the field. Operators who have shown proficiency in Stages I and II are given potential problems which may arise in the field. It is part of the operator's responsibility to address and work through these potential problems.

Every year during the season, new contracts come on board and old contracts expire. Beck & Co. Engineering provides services in over 30 states and provinces, each state has a slightly different approach to how they want their data collected or processed. Certified operators are familiar with each one of those states' data collection and reporting procedures, unless dedicated to one specific contract. Beck & Co. Engineering spends the time up front with their operators discussing the agency's needs they will be working with.

Once an operator is certified the process does not stop there. This process is ongoing and operators who have been certified are part of the training and testing of new operators so they are continually being tested and evaluated for all three stages. As you can see the process is ever evolving throughout the year and will continue to be in subsequent years.

Quality Control Measurements

All Project calibration data collection and processes must be measured and logged within the established databases of Beck & Co. Engineering. The logs below will be used by the project and quality teams in conducting these measurements and will be maintained for use as supporting documentation for the project's acceptance.

Quality Assurance Log

File #	Date	Panel Average	Block Average	Mobile Average	% Diff	Cal Wht/Yel	Comments or Recommendations	Action Req'd.

Quality Control Log

File #	Date	Beg Mile Point	End Mile Point	Mobile Average	Line Type	Comments or Recommendations	Hand Held Avg. Value

Measuring markings is considered by many to not be an exact science; however, we feel that just shows the lack of understanding by individuals who say that. For instance, take handhelds versus MRU's. In order to compare them you first have to understand that they both measure returned light from a known source, but they are illuminating and averaging different areas of the same marking.

Therefore, it becomes very evident that handhelds are a tool in the whole measurement process and are not always the most accurate of the retroreflectivity readings. Comparing MRU's to other MRU's can be just as misleading. Depending on the algorithm that has been written for the data collection they too can be reading different areas of a marking and a markings width.

We at Beck & Co. Engineering feel that our equipment calibration and maintenance process along with our operator training, custom software and upgraded hardware give us a competitive advantage over any company in the industry. It is our goal to continue to improve our repeatability and reproducibility from both the personnel and equipment aspect in order to provide our customers with the best quality of service.

**APPENDIX A:
BECK CEN-30 V7 Standard Features**

- HeNe Laser based optical system for laboratory quality and accuracy
- Meets ASTM E1710 – 30 Meter Geometry
- Entrance Angle: 88.76° (per ASTM E1710)
- Observation Angle: 1.05° (per ASTM E1710)
- Measuring aspect of the total angular spread does not exceed 0.33°
- Operating Temperature Range: 0°F to 120°F
- Reflectivity Range: 0 mcd/m²/lux to 1500 mcd/m²/lux
- > 400 Measurements per Second in legacy version
- Provides individual outputs for double lines
- Device also Measures Line Width, Contrast Ratio, Pavement Reflections, etc.
- Measures white and yellow flat and profiled road markings of any type on flat and rough, dry surfaces
- Day or night operation capable eliminates RPM's
- Fully secure USB connection and data storage to avoid annoying wireless drops
- Full HD 1080p @ 30 fps video with data stream overlay for condition assessment
- Retroreflectometer can be mounted on either side of the vehicle or both sides
- GPS accuracy <1m DMI accuracy <5.28ft
- Real-Time programable event codes and condition assessment ratings outputted at each interval
- Windows-based OS with a sampling rate of 1M S/s (1 Million Samples per Second)
- Real-Time Display of the Retroreflective Profile
- Wet Testing capable – ASTM E2177 Wet Recovery – ASTM E2832 Continuous Wetting
- Color ASTM E1347 – Chromaticity readings
- NIST Certified calibration panels with simple calibration process
- Internal proprietary self-calibration check

Beck & Co. Engineering, Inc.

January 8, 2020

Client: ALL

To Whom it Concerns:

Verification/Calibration for BECK CEN-30 V7 #205

- BECK CEN-30 V7 #205 has been verified, checked and certified
- The Units have been tested in our lab on several different control panels in a consistent sequential order.

Temperature Report

- Manufacturer: BECK CEN-30 V7
- Technician: Beau Beck
- Test Date: 01/08/2020
- Laser Serial Number #205

- The following table includes the results from our temperature stability test:

External Temperature (C)	Laser Temperature (C)	Correction Factor
5	25.22	0
10	24.93	0
15	25.08	0
20	24.95	0
25	25.22	0
30	25.11	0
35	25.02	0
40	25.13	0

Beck & Co. Engineering, Inc.

Mechanical Report

- Manufacturer: BECK CEN-30 V7
- Technician: Beau Beck
- Test Date: 1/08/2020
- Laser Serial Number #205

- x YES NO Electrical connections are observed with a multimeter
- x YES NO Mirrors are examined and cleaned if need be
- x YES NO Laser intensity is checked
- x YES NO Optical Sensor is inspected
- x YES NO Rotating mirror assembly is checked
- x YES NO Stepper Motor and magnetic position sensor are monitored
- x YES NO Structural housing is checked and secured

Alignment Report

Manufacturer: BECK CEN-30 V7

Technician: Beau Beck

Test Date: 1/08/2020

Laser Serial Number #205

- Laser was going through its normal certification process after returning from data collection in the field
- Old plexi-glass is replaced with new
- The laser is tested in our lab using 30-meter geometry on several different control panels in a consistent sequence specific order
- The test results are entered into our database
- The alignment of the laser, the prism, and all the mirrors are checked and corrected if need be
- The laser is again tested in our lab on the same control panels
- The test results are again entered into our database
- The following table includes the test results from our database:

Beck & Co. Engineering, Inc.

Retroreflectivity Report

Date Tested	Unit Tested	Panel - Block Name	NIST Goniometer Reading	Laser Cert R _L	% Delta
1/08/2020	SN 205-V7	LRR 0161 White	469	489	4.26%
1/08/2020	SN 205-V7	LRR 0161 Yellow	550	524	-4.73%
1/08/2020	SN 205-V7	LRR 0163 Yellow	634	639	0.79%
1/08/2020	SN 205-V7	FHWA	722	735	1.80%
1/08/2020	SN 205-V7	4X36 Yellow	160	147	-8.13%
1/08/2020	SN 205-V7	White 3	415	428	3.13%
1/08/2020	SN 205-V7	White 4	438	449	2.51%
1/08/2020	SN 205-V7	Yellow 5	268	267	-0.37%
1/08/2020	SN 205-V7	Yellow 6	279	263	-5.73%
1/08/2020	SN 205-V7	LRR 0169 White	692	700	1.16%
1/08/2020	SN 205-V7	LRR 0169 Yellow	691	709	2.60%
1/08/2020	SN 205-V7	LRR 0170 Yellow	678	674	-0.59%
1/08/2020	SN 205-V7	380 3M Tape White	1130	1118	-1.06%
1/08/2020	SN 20%-V7	Ceramic Block	156	148	-5.13%
				% Delta =>	-0.68%

Based on BCE Lab and Lab parameters it is our professional opinion, this Units have passed the requirements needed in order to be a certified functioning Retroreflectometer for Beck and Co Engineering.

Sincerely,



Richard A. Beck, P.E.
President

Beck & Co. Engineering, Inc.

January 8, 2020

Client: ALL

To Whom it Concerns:

Verification/Calibration for BECK CEN-30 V7 #206

- BECK CEN-30 V7 #206 has been verified, checked and certified
- The Units have been tested in our lab on several different control panels in a consistent sequential order.

Temperature Report

- Manufacturer: BECK CEN-30 V7
- Technician: Beau Beck
- Test Date: 01/08/2020
- Laser Serial Number #206

- The following table includes the results from our temperature stability test:

External Temperature (C)	Laser Temperature (C)	Correction Factor
5	25.11	0
10	25.03	0
15	25.05	0
20	25.01	0
25	25.21	0
30	25.15	0
35	25.11	0
40	25.08	0

Beck & Co. Engineering, Inc.

Mechanical Report

- Manufacturer: BECK CEN-30 V7
- Technician: Beau Beck
- Test Date: 1/08/2020
- Laser Serial Number #206

- x YES NO Electrical connections are observed with a multimeter
- x YES NO Mirrors are examined and cleaned if need be
- x YES NO Laser intensity is checked
- x YES NO Optical Sensor is inspected
- x YES NO Rotating mirror assembly is checked
- x YES NO Stepper Motor and magnetic position sensor are monitored
- x YES NO Structural housing is checked and secured

Alignment Report

Manufacturer: BECK CEN-30 V7

Technician: Beau Beck

Test Date: 1/08/2020

Laser Serial Number #206

- Laser was going through its normal certification process after returning from data collection in the field
- Old plexi-glass is replaced with new
- The laser is tested in our lab using 30-meter geometry on several different control panels in a consistent sequence specific order
- The test results are entered into our database
- The alignment of the laser, the prism, and all the mirrors are checked and corrected if need be
- The laser is again tested in our lab on the same control panels
- The test results are again entered into our database
- The following table includes the test results from our database:

Beck & Co. Engineering, Inc.

Retroreflectivity Report

Date Tested	Unit Tested	Panel - Block Name	NIST Goniometer Reading	Laser Cert R_L	% Delta
1/08/2020	SN 206-V7	LRR 0161 White	469	490	4.48%
1/08/2020	SN 206-V7	LRR 0161 Yellow	550	541	-1.64%
1/08/2020	SN 206-V7	LRR 0163 Yellow	634	629	-0.79%
1/08/2020	SN 206-V7	FHWA	722	717	-0.69%
1/08/2020	SN 206-V7	4X36 Yellow	160	147	-8.13%
1/08/2020	SN 206-V7	White 3	415	421	1.45%
1/08/2020	SN 206-V7	White 4	438	454	3.65%
1/08/2020	SN 206-V7	Yellow 5	268	262	-2.24%
1/08/2020	SN 206-V7	Yellow 6	279	261	-6.45%
1/08/2020	SN 206-V7	LRR 0169 White	692	702	1.45%
1/08/2020	SN 206-V7	LRR 0169 Yellow	691	722	4.49%
1/08/2020	SN 206-V7	LRR 0170 Yellow	678	681	0.44%
1/08/2020	SN 206-V7	380 3M Tape White	1130	1121	-0.80%
1/08/2020	SN 206-V7	Ceramic Block	156	141	-9.62%
				% Delta =>	-1.03%

Based on BCE Lab and Lab parameters it is our professional opinion, this Units have passed the requirements needed in order to be a certified functioning Retroreflectometer for Beck and Co Engineering.

Sincerely,

Richard A. Beck, P.E.

Richard A. Beck, P.E.

President

*Beck & Co. Engineering, Inc. - 8727 Pheasant Run Circle
Woodbury MN 55125 - Phone: (612) 805-1637 Fax: (651) 501-0015*

Beck & Co. Engineering, Inc.

January 9, 2020

Client: ALL

To Whom it Concerns:

Verification/Calibration for BECK CEN-30 V7 #207

- BECK CEN-30 V7 #207 has been verified, checked and certified
- The Units have been tested in our lab on several different control panels in a consistent sequential order.

Temperature Report

- Manufacturer: BECK CEN-30 V7
- Technician: Beau Beck
- Test Date: 01/9/2020
- Laser Serial Number #207

- The following table includes the results from our temperature stability test:

External Temperature (C)	Laser Temperature (C)	Correction Factor
5	25.20	0
10	24.98	0
15	25.05	0
20	25.09	0
25	25.26	0
30	25.20	0
35	25.20	0
40	25.05	0

Beck & Co. Engineering, Inc.

Mechanical Report

- Manufacturer: BECK CEN-30 V7
- Technician: Beau Beck
- Test Date: 1/9/2020
- Laser Serial Number #207

- x YES NO Electrical connections are observed with a multimeter
- x YES NO Mirrors are examined and cleaned if need be
- x YES NO Laser intensity is checked
- x YES NO Optical Sensor is inspected
- x YES NO Rotating mirror assembly is checked
- x YES NO Stepper Motor and magnetic position sensor are monitored
- x YES NO Structural housing is checked and secured

Alignment Report

Manufacturer: BECK CEN-30 V7

Technician: Beau Beck

Test Date: 1/9/2020

Laser Serial Number #207

- Laser was going through its normal certification process after returning from data collection in the field
- Old plexi-glass is replaced with new
- The laser is tested in our lab using 30-meter geometry on several different control panels in a consistent sequence specific order
- The test results are entered into our database
- The alignment of the laser, the prism, and all the mirrors are checked and corrected if need be
- The laser is again tested in our lab on the same control panels
- The test results are again entered into our database
- The following table includes the test results from our database:

Beck & Co. Engineering, Inc.

Retroreflectivity Report

Date Tested	Unit Tested	Panel - Block Name	NIST Goniometer Reading	Laser Cert R _L	% Delta
1/9/2020	SN 207-V7	LRR 0161 White	469	477	1.71%
1/9/2020	SN 207-V7	LRR 0161 Yellow	550	530	-3.64%
1/9/2020	SN 207-V7	LRR 0163 Yellow	634	628	-0.95%
1/9/2020	SN 207-V7	FHWA	722	731	1.25%
1/9/2020	SN 207-V7	4X36 Yellow	160	167	4.38%
1/9/2020	SN 207-V7	White 3	415	425	2.41%
1/9/2020	SN 207-V7	White 4	438	443	1.14%
1/9/2020	SN 207-V7	Yellow 5	268	268	0.00%
1/9/2020	SN 207-V7	Yellow 6	279	275	-1.43%
1/9/2020	SN 207-V7	LRR 0169 White	692	695	0.43%
1/9/2020	SN 207-V7	LRR 0169 Yellow	691	713	3.18%
1/9/2020	SN 207-V7	LRR 0170 Yellow	678	669	-1.33%
1/9/2020	SN 207-V7	380 3M Tape White	1130	1121	-0.80%
1/9/2020	SN 207-V7	Ceramic Block	156	142	-8.97%
				% Delta =>	-0.19%

Based on BCE Lab and Lab parameters it is our professional opinion, this Units have passed the requirements needed in order to be a certified functioning Retroreflectometer for Beck and Co Engineering.

Sincerely,



Richard A. Beck, P.E.
President



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

07/13/2020

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an **ADDITIONAL INSURED**, the policy(ies) must have **ADDITIONAL INSURED** provisions or be endorsed. If **SUBROGATION IS WAIVED**, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Insurance Brokers of MN, Inc. 1551 28th Ave S Suite M Grand Forks ND 58201		CONTACT NAME: Kristi Veitz PHONE (A/C, No, Ext): FAX (A/C, No): E-MAIL ADDRESS: k.veitz@insurancebrokersmn.com	
INSURED Beck & Company Engineering Inc 8727 Pheasant Run Cir Woodbury MN 55125-8606		INSURER(S) AFFORDING COVERAGE INSURER A: Nationwide Mutual NAIC # 23787 INSURER B: Hartford Accident & Indemnity 22357 INSURER C: INSURER D: INSURER E: INSURER F:	

COVERAGES **CERTIFICATE NUMBER:** 11/30/19-20 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC <input type="checkbox"/> OTHER	Y	Y	ACP7285393182	11/30/2019	11/30/2020	EACH OCCURRENCE	\$ 1,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	\$ 100,000
							MED EXP (Any one person)	\$ 5,000
							PERSONAL & ADV INJURY	\$ 1,000,000
							GENERAL AGGREGATE	\$ 2,000,000
							PRODUCTS - COMP/OP AGG	\$ 2,000,000
								\$
A	AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input checked="" type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS ONLY <input checked="" type="checkbox"/> NON-OWNED AUTOS ONLY	Y	Y	ACP7285393182	11/30/2019	11/30/2020	COMBINED SINGLE LIMIT (Ea accident)	\$ 1,000,000
							BODILY INJURY (Per person)	\$
							BODILY INJURY (Per accident)	\$
							PROPERTY DAMAGE (Per accident)	\$
							Uninsured motorist	\$ 1,000,000
A	<input checked="" type="checkbox"/> UMBRELLA LIAB <input type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> DED <input type="checkbox"/> RETENTION \$	Y	Y	ACP7285393182	11/30/2019	11/30/2020	COMBINED SINGLE LIMIT EACH OCCURRENCE	\$
							AGGREGATE	\$ 2,000,000
								\$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A	41WECAG9MAE	07/10/2020	07/10/2021	PER STATUTE	OTHER
							E.L. EACH ACCIDENT	\$ 1,000,000
							E.L. DISEASE - EA EMPLOYEE	\$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	\$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER**CANCELLATION**

North Dakota Department of Transportation 608 East Blvd Ave Bismarck ND 58505-0700	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE 
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