

**BOARD OF PUBLIC WORKS AND SAFETY
Agenda Request Form**

(Form B-01-2012)

Organizations and individuals are asked to submit a request form and supporting documents to be placed on the agenda. You will be contacted by the City confirming the date of the meeting in which your request will be heard. Please make sure that your contact information is accurate in case we need to get in touch with you. The Board of Works meets on the 1st and 3rd Monday of each month at 5:00 p.m. in City Hall located at 70 E. Monroe Street.

Date Submitted:	October 29, 2019	Meeting Date:	November 4, 2019
Contact Information:			
Requested by:	Mark Richards		
On Behalf of Organization or Individual: Department of Planning & Engineering			
Telephone:	317-736-3631		
Email address:	mrichards@franklin.in.gov		
Mailing Address:	70 E. Monroe Street, Franklin, IN 46131		
Describe Request:			
Request approval of design contract Supplement No. 1 with CrossRoad Engineers, PC, to expand scope for full design services.			
List Supporting Documentation Provided:			
Supplement No. 1			
Who will present the request?			
Name:	Mark Richards	Telephone:	317-736-3631

In order for an individual and/or agency to be considered for new business on the Board of Works agenda, this reservation form and supporting documents must be received in the Mayor's office no later than 4:00 p.m. on the Wednesday before the meeting.

SUPPLEMENTAL AGREEMENT NO. 1

This supplemental agreement is made and entered into _____, _____
by and between the CITY OF FRANKLIN, INDIANA, acting by and through its proper officials
(hereinafter referred to as "LPA") and CROSSROAD ENGINEERS, PC (hereinafter referred to as the
"CONSULTANT").

WITNESSETH

WHEREAS, LPA and the CONSULTANT did, on October 2, 2018, enter into a contract for specific professional services for US 31 Improvements from S. Main Street to Israel Lane (“Project”).

WHEREAS, LPA desires the CONSULTANT to provide additional professional services necessary to continue the development of the Project as delineated in the amended Appendix "A", which is attached as EXHIBIT "A".

WHEREAS, in order to provide for this additional work, it is necessary to amend and supplement the contract.

NOW, THEREFORE, it is agreed by and between the parties as follows:

1. SECTION IV COMPENSATION is amended to read as follows:

The LPA shall pay the CONSULTANT for the Services performed under this Contract as set forth in Appendix "D" which is herein attached to and made an integral part of this Contract. The original contract amount of \$100,000.00 is being increased through this Supplemental Agreement No. 1 by \$3,178,340.00. Therefore, the maximum amount payable under this Contract shall not exceed \$ 3,278,340.00.

2. Appendix "D" is amended as attached EXHIBIT "B".
- 3 Except as herein modified, changed and supplemented, all terms of the original contract dated October 2, 2018 shall continue in full force and effect.

Non Collusion - The undersigned attests, subject to the penalties for perjury, that he/she is the contracting party, or that he/she is the representative, agent, member or officer of the contracting party, that he/she has not, nor has any other member, employee, representative, agent or officer of the firm, company, corporation or partnership represented by him/her, directly or indirectly, to the best of his/her knowledge, entered into or offered to enter into any combination, collusion or agreement to receive or pay, and that he/she has not received or paid any sum of money or other consideration for the execution of this agreement other than that which appears upon the face of the agreement.

In Witness Whereof, the CONSULTANT and the OWNER have, through duly authorized representatives, entered into this Contract. The parties having read and understand the forgoing terms of this Contract do by their respective signatures dated below hereby agree to the terms thereof.

CROSSROAD ENGINEERS, PC
(CONSULTANT)



Trent E. Newport, President

CITY OF FRANKLIN, INDIANA
Board of Public Works
(OWNER)

Steve Barnett, Mayor

Bob Swinehamer, Member

Lisa Jones, Member

Attest:



Walter E. Charles, CEO

Jayne W. Rhoades, Clerk-Treasurer

EXHIBIT "A"

APPENDIX "A"

SERVICES BY CONSULTANT

In fulfillment of this Contract, the CONSULTANT shall comply with the requirements of the appropriate regulations and requirements of the Indiana Department of Transportation and Federal Highway Administration.

The description of the proposed project is as follows:

Intersection and corridor improvements on US 31 in Johnson County from South Main Street, located 1.1 miles south of SR 44 / SR 144 / Jefferson Street, to Israel Lane, located 0.67 miles south of CR 500 N / Whiteland Road, for a distance of approximately 5.5 miles.

The CONSULTANT shall be responsible for the following:

Topographic Survey & Route Survey – A Topographic Survey of the project limits will be performed in order to produce a topographic base map in accordance with applicable Indiana Code. Upon the completion of the field work, we will establish right-of-way lines, and property lines per deeds and platted subdivisions with minimal deed analysis; complete all survey line work; generate the TIN surface model and also create one foot interval contours; and add all relative survey notes to the drawings. ESP Associates, Inc. will perform Mobile LiDAR to collect topography on most of the hard surface areas and in other areas as applicable. Mobile LiDAR is being utilized for multiple reasons including safety and timeline. Baker-Peterson, LLC (B-P) will perform independent company utility locates for this project. B-P's services will include locating the public and private utilities including service lines except for sanitary laterals. B-P will conduct non-destructive investigations, utilizing ground penetrating radar and electromagnetic locating to identify underground infrastructures and anomalies. Their findings will be incorporated within the topographic survey and into the design plans. A Route Survey will be prepared for the project area since it will involve right of way parcels. This work will follow INDOT procedures current as of the date of this agreement.

Environmental Documentation (CE & Section 106) – Utilizing a subconsultant for the Section 106 Documentation, the Archaeological Report and Phase 1a Archaeological Reconnaissance, and preparation of the Categorical Exclusion Documentation, we will perform Environmental Services work in compliance with National Environmental Policy Act (NEPA) and related regulations and guidelines. The services will follow the Federal Highway Administration (FHWA) / Indiana Department of Transportation (INDOT) Streamlining Process and comply with INDOT's Procedural Manual for Preparing Environmental Studies and Categorical Exclusion Manual. Additionally, based on initial investigations of cultural and historical resources, there are no sites or structures within the preliminarily defined Area of Potential Effects (APE) for the proposed project, except for the Greenlawn Cemetery which is listed in the National Register of Historic Places. Therefore, additional or more advanced studies and reports are not included, except for the Cemetery Development Plan which will be included in the Part II contract. See the attached fee proposal from Green 3, LLC dated August 20, 2018 for more detailed explanation of the services that will be included. Note that the subconsultant's fee has been increased by about 10% to account for task coordination and administrative efforts.

EXHIBIT "A"

Cemetery Development Plan – The Greenlawn Cemetery, listed on the National Register of Historic Places in 2013, is located within 100 feet of US 31 along the project alignment. CONSULTANT will utilize the services of a subconsultant, Green 3, LLC, for the preparation of the Cemetery Development Plan in compliance with the Federal Highway Administration (FHWA) and Indiana Department of Transportation (INDOT) procedures and guidelines. Additional or more advanced studies and reports are not included. See the attached fee proposal from Green 3, LLC dated August 20, 2018 for more detailed explanation of the services that will be included. Note that the subconsultant's fee has been increased by about 10% to account for task coordination and administrative efforts.

Road Design and Plan Preparation – In general, this task involves the preparation of design plans and bidding documents to allow the proposed project to be constructed. CONSULTANT shall prepare plans, specifications, and estimates of cost, which shall be in accordance with the accepted standards for such work and in general accordance with the following documents in effect as of the Effective Date of this Agreement: American Association of State Highway and Transportation Officials' "A Policy on Geometric Design of Highways and Streets"; Indiana Manual on Uniform Traffic Control Devices; and, Indiana Design Manual.

Traffic Signal Design and Plan Preparation – CONSULTANT shall utilize the services of a subconsultant, Crawford, Murphy & Tilly, Inc. (CMT) to provide Traffic Signal Design. This task will result in the development of construction plans for 29 signal locations – 20 locations will be new signals and 9 locations will be rehabilitation, modification or modernization of existing signal equipment. This work will be in conjunction with impacts due to intersection upgrades and modifications, and will be in accordance with FHWA, INDOT and the City of Franklin guidelines, standards, and procedures. Traffic data collection, signal warrant analysis, and other such services were previously performed, and therefore, are not included. Additionally, CONSULTANT will coordinate with suppliers to provide technical specifications for these construction items.

Signing & Pavement Marking Design and Plan Preparation – CONSULTANT shall utilize the services of a subconsultant, CMT to provide signing and pavement marking design and plan preparation. This will include a separate plan set with existing signage, proposed signage, and pavement markings for the entire project length. This work will conform to INDOT standards.

Landscape Design and Plan Preparation – CONSULTANT shall utilize the services of a subconsultant, Shrewsberry & Associates, LLC (Shrewsberry), to prepare schematic design and construction plans. These services are more fully described in Shrewsberry's proposal dated November 8, 2018, which is attached. Note that the subconsultant's fee has been increased by about 10% to account for task coordination and administrative efforts.

Utility Coordination – Per Indiana 811, there could be as many as 14 different utility companies that have facilities located within the project area. CONSULTANT shall coordinate with the representatives from each of these companies. CONSULTANT shall communicate any relocation of facilities that may be needed and then review the relocation plans that the utility companies prepare. CONSULTANT shall review any reimbursable claims by the utilities and coordinate as necessary. This task does not include work associated with field locating the vertical depth of

EXHIBIT "A"

any utilities. Although no 'potholing' of facilities is anticipated to be required, it is assumed that the utility companies will be responsible for performing this work on their own facilities. This work shall be in general accordance with INDOT policy and procedures in effect as of the Effective Date of this Agreement. This scope of work only addresses utility coordination through the design process. Utility coordination services during the construction phase will be provided as needed on an hourly basis.

Public Hearing Requirements / Public Information Meetings – CONSULTANT shall prepare display materials for and present the proposed project at an official Public Hearing, if one is required, or at a Public Information Meeting. If a Public Hearing, this shall be in accordance with INDOT procedures.

Permit Applications – This task includes the coordination efforts with the applicable regulatory agencies. These agencies include the City of Franklin and Johnson County Surveyor's Office for local drainage review and approval. It also includes the preparation of the necessary applications for submittal, review, and approval of permits needed for the construction of the project. It is anticipated that an IDEM Section 401 Water Quality Certification permit (WQC), an Army Corps Section 404 Permit, an IDEM Rule 5 permit, and an IDNR Construction in a Floodway permit will be required. In addition to IDEM and IDNR, other reviewing agencies include the Johnson County Soil and Water Conservation District for Storm Water Pollution Prevention Plan (SWPPP) review and approval, and the Johnson County Surveyor's Office and the Johnson County Drainage Board for Regulated Drain Access Permit. Along with the SWPPP, CONSULTANT shall prepare the public notice and permit application forms. Also included in this task is the determination of wetlands and the preparation of the Waters of the US Report. See the attached fee proposal from Green 3, LLC, dated October 8, 2018, for a more detailed explanation of the services to be performed. No other permits are anticipated to be required.

Geotechnical Investigation and Pavement Design – CONSULTANT shall utilize the services of a subconsultant, Earth Exploration, Inc. (EEI) to provide a geotechnical engineering investigation and pavement design. This work shall be in accordance with the Indiana Department of Transportation's policy as of the Effective Date of this Agreement. See the attached fee proposal from EEI dated October 12, 2018 and attached to this proposal for a more detailed scope of services.

R/W Engineering – CONSULTANT shall, utilizing various subconsultants for the title research and appraisal problem analyses, perform Right of Way Engineering work consisting of a 20 year title research for the permanent right of way to be acquired, and preparing right of way plans, property plats, and legal descriptions for all right of way parcels that need to be acquired for the project, and an appraisal problem analysis. All of this work will be completed in accordance with the Right of Way Engineering Procedure Manual, hereinafter called the MANUAL, 865 I.A.C. 1-12.

Post Design Services – CONSULTANT shall prepare for and attend the pre-construction meeting, respond to construction questions from the contractor, make plan revisions as requested to accommodate on-site construction decisions made or approved by OWNER's representatives, and reviewing and approving shop drawings submitted by the contractor. CONSULTANT may utilize CMT as necessary to perform these services.

EXHIBIT "B"

APPENDIX "D"

COMPENSATION

A. Amount of Payment

1. The CONSULTANT shall receive as payment for the work performed under this Agreement the total fee not to exceed **\$ 3,278,340.00** (Section A. 2. - \$2,817,890; Section A. 3. - \$435,450; Section A. 4. - \$25,000) unless a modification of the Agreement is approved in writing by LPA.

2. The CONSULTANT shall be paid for the following work tasks performed under this Agreement on a lump sum basis in accordance with the following schedules:

TASK DESCRIPTION	TOTALS
A. Topographic Survey & Route Survey	\$344,000
B. Environmental Documentation (CE & Section 106)	49,800
C. Cemetery Development Plan	3,900
D. Road Design & Plan Preparation	1,799,000
E. Traffic Signal Design and Plan Preparation	282,400
F. Signing & Pavement Marking Design and Plan Preparation	112,840
G. Landscape Design and Plan Preparation	43,450
H. Utility Coordination	77,000
I. Public Hearing Requirements / Public Information Meetings ¹	18,700
J. Permit Applications	86,800
TOTAL Section A.2.	\$2,817,890

¹ Fee stated includes a maximum of two meetings.

3. CONSULTANT shall be paid for the following work tasks performed under this Agreement on a unit price basis as estimated below and in accordance with the attached fee schedules.

EXHIBIT "B"

TASK DESCRIPTION	TOTALS
K. Geotechnical Investigation and Pavement Design	\$192,140
L. R/W Engineering (Estimate 66 parcels)	
a. Preliminary T&E Reports -- Residential (16 @ \$450 each)	7,200
b. Preliminary T&E Reports -- Commercial (50 @ \$770 each)	38,500
c. Right of Way Engineering (66 @ \$1,350 each)	89,100
d. Right of Way Plats (66 @ \$525 each)	34,650
e. Right of Way Legal Descriptions (108 @ \$525 each)	56,700
f. Appraisal Problem Analysis (66 @ \$260 each)	17,160
TOTAL Section A.3.	\$435,450

4. CONSULTANT shall be paid for actual hours of work performed exclusively on Post Design Services performed under this Agreement in accordance with the attached schedule of Hourly Billing Rates. The not-to-exceed maximum for Section A. 4. is \$25,000 unless a modification of the Agreement is approved in writing by LPA.

5. The CONSULTANT shall not be paid for any services performed by LPA or INDOT, or not required to develop this project. Costs for routine photocopy and paper reproduction, cellular phone costs, and computer time costs will not be paid as a reimbursable as these are included in the above fees and overhead costs.

B. Method of Payment

1. The CONSULTANT may submit a maximum of one invoice per calendar month for work covered under this Contract. The invoices shall be submitted to:

City Engineer
City of Franklin
70 E. Monroe Street
Franklin, Indiana 46131

The invoices shall represent the value to the LPA of the partially completed work as of the date of the invoice. The CONSULTANT shall attach thereto a summary of each pay item in Section A of this Appendix "D", including percentage complete and prior payments.

EXHIBIT "B"

2. The LPA, for and in consideration of the rendering of the engineering services provided for in **Section A. 2.** of this Appendix "D", agrees to pay to the CONSULTANT for rendering such services the fees established above in the following manner:

a. For each pay item, and upon receipt of invoices from the CONSULTANT and the approval thereof by the LPA, payments covering the work performed shall be due and payable to the CONSULTANT, such payments to be equal to an amount arrived at by multiplying the percentage of the specified work performed by the fee heretofore set forth. From the partial payment thus computed, there shall be deducted all previous partial fee payments made to the CONSULTANT.

b. Upon approval by the LPA, after submittal of the completed work, a sum of money equal to the fees heretofore set forth, less the total of the amounts of the partial payments previously paid to the CONSULTANT under **Section B. 2.** of this Appendix "D", shall be due and payable to the CONSULTANT.

c. The lump sum fees shown for the services in **Section A. 2. I.** are established assuming the LPA will provide the location for the meetings as well as a taped recording of the proceedings in the event that an official Public Hearing is required.

d. The lump sum fees shown for the services in **Section A. 2.** do not include the payment of any fees to procure permits from the variously affected agencies such as Rule 5 permit application fees, NOI Advertisements, or DNR permit application fees. Any fees paid by CONSULTANT for permit applications and any activities such as public advertisements will be invoiced to the LPA at the actual cost plus a 10% mark-up for task coordination and administrative.

3. The services provided for in **Section A. 3. K.** will be performed by Subconsultants. The CONSULTANT will be reimbursed for the actual invoice for the services performed by Subconsultants, provided that each such invoice shall be subject to approval as reasonable by the LPA prior to any reimbursement thereof.

EXHIBIT "B"

4. The services provided for in **Section A. 3. L. a., b., and f.** will be performed by Subconsultants. The CONSULTANT will be reimbursed for the actual invoice for these services performed by Subconsultants, plus a 10% mark-up for task coordination and administrative efforts, provided that each such invoice shall be subject to approval as reasonable by the LPA prior to any reimbursement thereof. For the other services provided for in **Section A. 3. L.**, the CONSULTANT shall be paid the stated cost per unit multiplied by the actual units of work performed.

5. The services provided for in **Section A. 4.** will be performed by the CONSULTANT on an hourly basis. Some of the services may be performed by Subconsultants, also on an hourly basis. When submitting an invoice for these services, the CONSULTANT shall furnish a copy of records showing the individuals who worked on this task during the month, their classification, the number of hours worked since the last invoice was submitted, and the hourly rate. For the services provided by Subconsultants, CONSULTANT will be reimbursed for the actual invoice for the services performed by Subconsultant, which invoice shall similarly contain a copy of records showing the individuals who worked on this task during the month, their classification, the number of hours worked since the last invoice was submitted, and the hourly rate, provided that each such invoice shall be subject to approval as reasonable by the LPA prior to any reimbursement thereof.

6. If the LPA does not agree with the amount claimed by the CONSULTANT on an invoice voucher, it will send the CONSULTANT a letter by regular mail and list the differences between actual and claimed progress. The letter will be sent to the CONSULTANT's address on page 12 of this Contract or the CONSULTANT's last known address.

Name of Project: City of Franklin US 31 Reconstruction Project

Job Type: CE Level 4/Section 106

CrossRoad Engineers
 Attention: Mark Beck
 3417 Sherman Drive
 Beech Grove, IN 46107



Green 3, LLC
 Historic Fountain Square
 1104 Prospect Street
 Indianapolis IN 46203

Date: August 20, 2018**Fee Justification**

Task Description	Principal	Env. Tech	Totals
CE Tasks completed in 2018			
Project Administration	2.0	3.0	5.0
Client Coordination	2.0	2.0	4.0
CE Field Check/Site Photos/Field Inventory Forms	0.5	16.0	16.5
Bat policy inspection, documentation & coordination	0.0	4.0	4.0
CE Maps & Exhibit Development	0.0	16.0	16.0
Early Coordination with Regulatory Agencies	0.5	20.0	20.5
Environmental Justice Analysis Report & Submission	1.0	8.0	9.0
2018 Subtotal- Hours	6.0	69.0	75.0
2018 Subtotal- CE cost	\$780.00	\$5,865.00	\$6,645.00
CE Tasks completed in 2019-2020			
Project Administration	1.0	2.0	3.0
Red Flag Investigation documentation & submittal	1.0	20.0	21.0
CE Form Development	2.0	44.0	46.0
INDOT CE Submissions	1.0	20.0	21.0
Public Involvement Certification	1.0	8.0	9.0
INDOT Submissions/Final Sign Off/Commitments	1.0	10.0	11.0
2019-2020 Subtotal- Hours	7.0	104.0	108.0
2019-2020 Subtotal- CE cost	\$910.00	\$8,840.00	\$9,750.00
Total Hours	13.0	173.0	186.0
Rates	<u>\$130.00</u>	<u>\$85.00</u>	
CE Subtotal- All Tasks	\$1,690.00	\$14,705.00	\$16,395.00
<i>Expenses: Printing</i>			\$10.00
<i>Mileage (50 mi x 0.38/mi)</i>			\$19.00
Total Fee For CE			\$16,424.00
Total Fee For Section 106 (full Section 106 review)			\$28,819.00
TOTAL FEE FOR CE & SECTION 106			\$45,243.00

See Attached Notes for the CE and Section 106 Fee Justifications.

Name of Project: City of Franklin US 31 Reconstruction Project

Job Type: Full Section 106 review & Archaeology

Contact Information:

CrossRoad Engineers
 Attention: Mark Beck
 3417 Sherman Drive
 Beech Grove, IN 46107



Green 3, LLC
 Historic Fountain Square
 1104 Prospect Street
 Indianapolis IN 46203

Date: August 20, 2018**Fee Justification**

Task Description	Principal / QP	Field Dir. of Archaeology	Historian	Total Hours
Section 106 & Archaeology Tasks completed in 2018				
Project Administration	3.0	3.0	3.0	9.0
Client Coordination	3.0	3.0	3.0	9.0
Site Inspection & Photo Documentation	10.0	0.0	14.0	24.0
Map Development	0.0	0.0	10.0	10.0
Draft Early Coordination Letter (ECL)	1.0	0.0	4.0	5.0
Historic Structure Review & Exhibit Prep	2.0	0.0	36.0	38.0
Preparation of Historic Property Report (HPR)	2.0	0.0	32.0	34.0
HPR/ECL Revisions per INDOR CRO	0.0	0.0	6.0	6.0
Distribution of ECL & HPR to identified Consulting Parties (CP)	0.0	0.0	5.0	5.0
Literature Review	0.0	8.0	0.0	8.0
Reconnaissance Survey	0.0	72.0	0.0	72.0
Analysis and Report Preparation	2.0	64.0	8.0	74.0
Prepare 800. 11(e) Documentation and legal notice	1.0	0.0	16.0	17.0
Consultation with INDOT CRO for Cemetery Development Plan	2.0	0.0	0.0	2.0
2018 Subtotal-Hours	27.0	151.0	142.0	320.0
2018 Subtotal- Full 106 & Archaeology cost	\$3,510.00	\$11,325.00	\$12,070.00	\$26,905.00
Section 106 & Archaeology Tasks completed in 2019-2020				
Project Administration	1.0	1.0	1.0	3.0
800. 11(e) Documentation Revisions per INDOT CRO	1.0	0.0	4.0	5.0
Distribution of 800. 11(e) Documentation to CPs	0.0	0.0	5.0	5.0
Publish Legal Notice for 800. 11(e) Documentation	0.0	0.0	2.0	2.0
2019-2020 Subtotal- Hours	2.0	1.0	12.0	15.0
2019-2020- Section 106 & Archaeology cost	\$260.00	\$75.00	\$1,020.00	\$1,355.00
Total Hours	29.0	152.0	154.0	335.0
Rates	\$130.00	\$75.00	\$85.00	
Section 106 & Archaeology- All Tasks	\$3,770.00	\$11,400.00	\$13,090.00	\$28,260.00
<i>Expenses:</i>				
Printing, postage, and Sec. 106 legal notice (required)				\$150.00
GIS Analysis				\$200.00
Mileage (50 mi x 0.38/mi) for above-ground investigation				\$19.00
Mileage (50 mi x 0.38/mi) x 10 for archaeological investigation				\$190.00
Total Fee for Section 106 Documentation - Full 106 Review & Archaeology				\$28,819.00

See next page for both CE and 106 Notes

See Notes for the CE Fee Justification:**Notes:**

1. This proposal is based off of project information received on 08.16.2018, and assumes that only roadway work as shown in the preliminary schematics will be included, and bridge/culvert replacements and/or rehabilitations are not a part of the project. It is assumed that a Waters of the U.S. report will be conducted and provided for inclusion in the environmental document for this project.
2. It is anticipated that more than 1/2 acre of right-of-way will be needed for this project. Due to the anticipated community and traffic related impacts, it is assumed that one or more public meetings and/or hearings will be conducted by others; therefore, this proposal includes only submission of public involvement documentation to INDOT Public Hearings for certification and the incorporation of public involvement activities into the environmental documentation. Coordination, attendance, and documentation of a public hearing is not included in this proposal.
3. This proposal does not include any special studies such as noise/air analyses, hazardous materials testing, waterways coordination & permitting, etc. An Environmental Justice Analysis will be completed and submitted to INDOT ES for review and concurrence; this proposal assumes no disproportionate impacts to minority and/or low-income populations, and therefore no mitigation or additional coordination/documentation will be required. If additional studies are requested by INDOT, the associated fees would be in addition to this proposal.
4. This proposal assumes a Categorical Exclusion (CE) Level 4 based on the most current INDOT guidance. If the project results in substantial impacts on environmental, cultural, or social resources, and an Environmental Assessment or Environmental Impact Statement is required, supplemental fees will be necessary to complete the additional documentation.
5. This proposal assumes that no property will be acquired from parks or schools and therefore there will be no Section 4(f) impacts. If the project requires any Section 4(f) impacts and related evaluations/coordination, supplemental fees may be required.
6. Notice of entry mailings are not included in this proposal.

See Notes for the Section 106 Fee Justification:**Notes:**

1. This proposal includes completing Section 106 documentation up to a Historic Properties Report based on preliminary information provided by CrossRoad Engineers dated August 16, 2018. The project area consists of several previously surveyed resources and un-surveyed mid-century resources and includes one resource listed on the National Register of Historic Places: Greenlawn Cemetery, NR-2278, listed in 2013.
2. This proposal includes the archaeological records review, fieldwork, and write-up of the results. If a site is recorded and will require additional work (i.e., laboratory analysis of the artifacts and a complete technical report) then a supplemental fee will be in addition to this proposal.
3. This proposal does not include 4f evaluations, Memorandum of Agreement (MOA), National Register nominations, or other special studies, such as a cemetery development plan for Greenlawn Cemetery. If these are requested by INDOT CRO/SHPO, then additional fees would be provided as a supplemental to this proposal.

Name of Project: City of Franklin US 31 Reconstruction Project

Job Type: Cemetery Development Plan

Contact Information:

CrossRoad Engineers
Attention: Mark Beck
3417 Sherman Drive
Beech Grove, IN 46107



Green 3, LLC
Historic Fountain Square
1104 Prospect Street
Indianapolis IN 46203

Date: August 20, 2018**Fee Justification**

Task Description	QP	Historian	Totals
CDP Task completed in 2019-2020			
Project Administration	2.0	2.0	4.0
Site Inspection & Photo Documentation	10.0	2.0	12.0
Historic Research	1.0	8.0	9.0
Report Preparation	1.0	6.0	7.0
Coordination/submittal - INDOT Cultural Resources & SHPC	1.0	0.0	1.0
Total Hours	15.0	18.0	33.0
Rates	<u>\$130.00</u>	<u>\$85.00</u>	
Fee	\$1,950.00	\$1,530.00	\$3,480.00
<i>Expenses: Printing, binding, postage</i>			\$20.00
<i>Mileage (50 miles roundtrip x 0.38/mile)</i>			\$19.00
Total Fee			\$3,519.00

Notes:

1. Greenlawn Cemetery, NR-2278, listed on the National Register of Historic Places in 2013, is located within 100 feet to US 31 along the project alignment. Thus, a Cemetery Development Plan is required per IC 14-21-1-26.5. This proposal includes the research required to compile the plan as well as submittal to INDOT CRO for review and approval prior to mailing to the IDNR DHPA State Historic Preservation Officer.



November 8, 2018

Trent Newport, PE LS
Crossroads Engineers, PC
3417 Sherman Drive
Beech Grove, Indiana 46107

RE: US31 Landscape Improvements, Franklin, IN

Dear Trent,

Shrewsberry & Associates, LLC (Shrewsberry) is pleased to submit to Crossroads Engineers (Client) this scope and fee proposal for Landscape Architecture and Gateway Design for US31 in Franklin, IN. The Shrewsberry scope of services will include coordination with other team members, and preparation of conceptual engineering design plans as requested. A detailed list of tasks and associated fees is outlined below.

PROJECT INFORMATION

Project Description: The City of Franklin and INDOT are considering a project to improve traffic flow along US31 in Johnson County, Indiana. The proposed project will add J-Turns that will prevent vehicular left turns and improve safety. In addition, curbed medians, multi-use paths on both sides of the road, landscaping, and two gateway monuments will be added. It is the City's goal to secure project funding through a TIGER grant and notification on the grant award is expected in November or December 2018. If the grant is not successful, the City plans to still complete the project with a bond issuance utilizing TIF dollars. Crossroad will be the design engineer and Shrewsberry's landscape architects will support the design team providing planting suggestions, landscape treatments at the four key intersections, and design options of gateway signage at two locations.

Project Location & Boundaries: The proposed project will extend along US 31 within the right-of-way from the northern city limits of Franklin, Indiana in Johnson County. The intersection boundaries will be at the northern edge of the City limits, and South Main Street to the south.

Project Schedule: We understand funding may determine when the project may start but Shrewsberry is ready to begin upon notice to proceed. Shrewsberry will provide design submittals to Crossroad as needed to meet the City of Franklin's requirements.

Project Team: Shrewsberry shall receive all project direction from the Client. The Shrewsberry project team will include Nola Albrecht as Principal-in-Charge, Doug Decker as Project Manager & Landscape Architect, and other staff members as necessary.

SCOPE OF WORK

Task I: Research and Site Analysis: Shrewsberry will participate in a kick-off meeting and project discovery with the Client and design team. During this phase the team will gather all site information, field verify the provided site survey (if available) and collect any applicable data or reports.

Task II: Preliminary Design: Shrewsberry will develop preliminary landscape design plans and supporting drawings that will depict location of plant materials adjacent to the J-Turn intersection areas, relationship of right-of-way boundary where the proposed gateway elements will be located, and label areas for seeding/sodding. Site visibility, sight triangles and obstructions will be considered along with integration of pedestrian areas such as crosswalks and ADA ramps. These items will be coordinated with Indiana Department of Transportation (INDOT) and City of Franklin requirements. Potential utility conflicts will be noted in coordination with Crossroad and the City of Franklin.

Two to three gateway concept options will be provided for review and approval by the City of Franklin. The gateway elements will be provided around the South Street and Commerce Drive intersections. Color rendered elevations will be provided for each gateway concept and the preliminary intersection landscape plans. It is assumed each gateway element will be similar in character and design.

A preliminary planting plan will be prepared for the following J-Turn intersections of US31:

- South Street
- Jefferson Street
- North Main Street
- Commerce Drive

Gateway signage design options and preliminary details will be prepared in a format for communicating the design intent with the City:

- At the northern City limit of the City of Franklin
- To the south at the intersection of US31 and South Main Street

Deliverables: The materials produced will be in a compatible format intended to communicate the design intent with the Client and the City to assist in making informed decisions. Color rendered landscape plans and gateway concept renderings will be provided. A preliminary Cost opinion will be prepared for the landscape and gateway elements.

Meetings: Shrewsberry has included up to two (2) team meetings during the preliminary design phase to assure the proposed plans are consistent with the Client and the City's vision.

Task III: Final Design and Construction Documents:

Upon acceptance of the preliminary design, comments will be incorporated to prepare the final planting plan design for the J-Turn intersections of US31, and the Gateway elements to include at a minimum:

- Planting plans and labels

- Plant schedules
- Gateway element elevations and details
- Construction details
- Final cost estimate and quantity take-offs
- Unique special provisions

Deliverables: The materials produced will be in a compatible format intended to be incorporated into the Crossroad design plan documents.

Meetings: Shrewsberry has included up to two (2) team meetings during the final design phase to assure the proposed plans are consistent with the Client and the City's vision.

Task IV: Bidding and CA:

Shrewsberry will provide assistance to the Client with bidding

- Answer contractor questions that pertain to Shrewsberry tasks]
- Review shop drawings that pertain to Shrewsberry tasks

Meetings: Shrewsberry has included up to three (3) construction progress meetings during the final to assure the design intent and City's vision are being incorporated in the completed construction.

ASSUMPTIONS:

- Site Survey and Geotech if needed, will be prepared and provided by others
- Client will produce road and multiuse path alignments, cross sections, and grading and drainage plans. Upon acceptance of the alignments, Shrewsberry will incorporate final plant material design plans, and other landscape scope elements.
- Completed bidding documents and bidding and construction process will be consistent with INDOT requirements.

EXCLUSIONS: Services described below are considered an additional service and have not been included in the Scope of Services and would be subject to a contract addendum:

- Meetings in addition to those noted above in the Scope of Services.

FEE: Shrewsberry proposes to complete the Scope of Services described above for a lump sum fee including project related expenses of **\$39,500**.

Task I: Research and Site Analysis		\$2,500
Task II: Preliminary Design Development		\$15,500
Task III: Final Design and CD's		\$18,000
Task IV: Bidding and CA		\$3,000
Reimbursable Expenses		\$500
TOTAL		\$39,500

TERMS AND CONDITIONS

Payment Terms: Payment shall be rendered as follows:

- Payment shall be due thirty (30) days from date of invoice upon receipt of the invoice. Invoices not contested in writing within ten (10) business days of receipt are considered accepted by Client and are payable in full.
- Interest at 1½% per month, effective rate of 18% per annum, will be due and payable on amounts not paid within thirty (30) days.
- Shrewsberry shall be entitled to attorney's fees and other costs incurred by us in collecting delinquent accounts.
- By executing this Engagement Contract for Services, Client waives any limitation on the period in which Shrewsberry may file notice of intention to hold a lien against the owner's property to secure payment of our fees.

Reimbursable Expenses: Costs for reimbursables including but not limited to, blueprints, photography, equipment charges, courier fees and mileage are excluded from the fee. Reimbursable expenses will be charged based on actual direct costs.

Invoices: Unless otherwise agreed upon, Shrewsberry will submit monthly invoices to the Client for services performed and advances to date. Our invoice will be sent to:

Trent Newport, PE LS
Crossroads Engineers, PC
3417 Sherman Drive
Beech Grove, Indiana 46107

Additional Services: Services resulting from significant changes in the scope, extent or character of the portion of the Project designed or specified by Shrewsberry or its design requirements including, but not limited to, changes in size, complexity, client's schedule, character of construction or method of financing; and revising previously accepted studies, reports, drawings, specifications or contract documents when such revisions are required by changes in laws, rules, regulations, ordinances, codes or orders enacted subsequent to the preparation of such studies, reports, drawings, specifications or contract documents, unforeseen conditions or are due to any other causes beyond Shrewsberry's control. Change in Services shall entitle Shrewsberry to an adjustment in compensation. Shrewsberry shall notify the Client of these changes prior to providing such services.

Limit of Liability: Client acknowledges and agrees that our total aggregate liability to Client or any third party arising from negligent professional acts, errors, omissions or breach of the above described standard of care and warranty, shall not exceed the amounts, limits, coverage or conditions of Shrewsberry's professional liability insurance or our total fee, whichever is less.

Safety Responsibility: Client shall assign responsibility to contractor for all construction site safety procedures and Shrewsberry shall have no responsibility for enforcement of said procedures or liability resulting therefrom.

Consent of Owner: The undersigned is the owner of the property or the authorized agent of the owner on which Service described above is to be performed and hereby consents to

performance of the Service. The parties to this contract agree that this letter agreement may be executed simultaneously or in two or more counterparts each of which shall be deemed an original but all of which together shall constitute one and the same document.

Indemnification: Shrewsberry and the Client each agree to indemnify, defend and hold harmless each other from all claims and suits, including court costs, attorneys' fees, and other expenses, caused by its negligent acts or omissions under the performance of its professional services under this Agreement.

Termination: The obligation to provide further services under this Engagement Contract for Services may be terminated by either party upon seven (7) days' written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof through no fault of the terminating party. In the event of any termination, Shrewsberry will be paid for all services rendered to the date of termination, reimbursables and termination expenses.

Delays: Shrewsberry shall not be responsible for delays in its work occasioned by fires, floods, explosions, riots, strikes, errors, acts of God or change in government regulations. Should a delay occur for a reason outlined herein, the term of this agreement shall automatically be extended for a period equal to the delay.

Instruments of Service: Drawings, specifications and other documents, including those in electronic format, prepared by Shrewsberry and its consultants, are Instruments of Service for use solely with respect to this project. Shrewsberry and its consultants shall be deemed the authors and owners of their respective Instruments of Service and shall retain all common law, statutory and other reserved rights, including copyrights. Upon execution of this Engagement Contract for Services and upon all monies due and owing to Shrewsberry from Client, Shrewsberry grants to Client a nonexclusive license to reproduce Shrewsberry's Instrument of Service. Client shall not use the Instruments of Service for future additions or alterations to the Project without the prior written consent of Shrewsberry. Any unauthorized use of the Instruments of Service shall be at Client's sole risk and without liability to Shrewsberry and/or Shrewsberry's consultants.

Provided Documentation: Shrewsberry shall be entitled to rely on the accuracy and completeness of services and information furnished by the Client. Shrewsberry shall provide prompt written notice to the Client if Shrewsberry becomes aware of any errors, omissions or inconsistencies in such services or information and it shall be the responsibility of Client to correct any errors, omissions or inconsistencies.

Governing Law: The laws of the State of Indiana shall govern as to all questions arising under this Engagement Contract for Services.

Please advise Shrewsberry immediately in writing if any of the terms of this engagement contract are incorrect. Upon receipt of all pages of this executed contract, Shrewsberry will proceed with this order as written. Shrewsberry appreciates this opportunity to be of service to Crossroads Engineers.

This Agreement accepted this _____ day of _____, _____

Month *Year*

CROSSROADS ENGINEERS

SHREWSBERRY & ASSOCIATES, LLC

Authorized Signature

D. Blake Wilson

Print

Cc: Blake Wilson, Shrewsberry
 Carol Taylor, Shrewsberry

Name of Project: City of Franklin US 31 Reconstruction Project

Job Type: Wetland Determination/Waters of the US Report

CrossRoad Engineers
 Attention: Mark Beck
 3417 Sherman Drive
 Beech Grove, IN 46107



Green 3 Studio
 Historic Fountain Square
 1104 Prospect Street
 Indianapolis IN 46203

Date: October 8, 2018**Fee Justification**

Task Description	Principal of Env. Planning	Wetland Ecologist	Wetland Ecologist	Totals
Task 1 - Administration				
Contract Administration & Client Coordination	2.0	2.0	1.0	5.0
Task 2 - Exhibits				
Prepare Base Maps	0.0	14.0	1.0	15.0
Task 3 - Field Reconnaissance				
Conduct Field Work, Acquire Data, QA/QC	1.0	26.0	26.0	53.0
Task 4 - Mapping				
Produce Exhibits & Photodocumentation	0.0	20.0	2.0	22.0
Task 5 - Prepare Reports				
Prepare Waters Report	2.0	18.0	2.0	22.0
Task 6 - INDOT Coordination				
Submissions, Revisions, & Approvals	1.0	14.0	2.0	17.0
Task 7 - Onsite Meeting with Agencies				
Review of Report Findings	0.0	6.0	6.0	12.0
Total Hours	6.0	100.0	40.0	146.0
Rates	<u>\$130.00</u>	<u>\$85.00</u>	<u>\$85.00</u>	
Subtotal Fee	\$780.00	\$8,500.00	\$3,400.00	\$12,680.00
Expenses:				
Printing				\$20.00
Mileage (55 mi roundtrip x 0.38/mile; 3 field days, one onsite meeting)				\$83.60
Total Fee				\$12,783.60

Notes:

1. This proposal is based off of project information received in August 2017 and updated information received in October 2018. Due to the proposed widening of the roadway footprint and the associated impacts to adjacent roadside ditches, which may contain wetland features, both sides of the roadway for the entire project length (approx. 5.4 miles, except for sections where no work will occur) will be investigated for water resources. It is anticipated that three days of field work will be required.
2. It is assumed that because the project involves a state highway, INDOT Ecology and Waterway Permitting specialists will review and approve the Waters of the U.S. Report.
3. Due to the length of the project and potential impacts to water resources, this proposal includes one onsite meeting with agencies and project representatives to discuss findings and permitting requirements.
4. Any wetlands that will be delineated will be provided to Crossroads as KMZ files.
5. All determinations of jurisdictional status of any water resources are made by the appropriate regulatory staff of USACE and IDEM.

October 12, 2018

Mr. Chip Charles, P.E.
CrossRoad Engineers, PC
3417 South Sherman Drive
Beech Grove, IN 46107



7770 West New York Street
Indianapolis, IN 46214
(317) 273 1690
(317) 273 2250 (FAX)

Re: Proposal for Professional Services
US 31 Improvements
Franklin, Johnson County, Indiana
EEI Proposal No. P1-17-619

Dear Chip:

Earth Exploration, Inc. (EEI) is pleased to submit the following proposal to perform professional services for the referenced project. This proposal is in response to your request via electronic mail on October 4th.

PROJECT DESCRIPTION

We understand that INDOT is planning to make improvements to US 31. Based on our previous correspondence and conceptual information that was provided with the request, the improvements are expected from just south of the intersection with Main Street to just north of the intersection with Israel Lane for a total length of about 5½ mi. The improvements are scoped to consist of limiting left turn movements. To accommodate the changed traffic movements, new HMA turn lanes and blisters are planned in areas that currently exist as grass. In addition, a mill and overlay is planned for the length of the project. Also, we understand that a culvert will be replaced at Canary Creek, and two retaining walls with approximate lengths of 400 ft and heights of about 15 ft are planned. The type of structure being considered was not known. Additional information is not known.

SCOPE OF SERVICES

We will complete a geotechnical evaluation to conform to the requirements of INDOT Office of Geotechnical Services and prepare a pavement analysis and design report for INDOT review and concurrence. Our evaluation will assess the impacts of the soil conditions on the proposed design and construction. Based on our review of publicly-available geologic information and experience in the area, the subsurface conditions within the depth of interest are anticipated to consist of cohesive-type soils of low to moderate plasticity. In addition, fill is expected due to the presence of utilities.

Our scope of services will include:

1. Performing up to 96 test borings for the roadway improvements, traffic signals, culvert, and walls for a total of about 1,735 ft of drilling. This value includes a contingency of 350 ft of drilling and sampling to account for elements added to the project as the design

matures. The borings are planned to extend to depths of about 7 ft up to 40 ft. Standard Penetration Test (SPT) sampling will be performed in the borings at 2½-ft intervals. The borings will be performed with truck- and ATV-mounted equipment with traffic control consisting of lane closures where necessary. In addition, bulk and Shelby tube samples are planned to be obtained for evaluation of pavement design parameters (i.e., resilient modulus). Additionally, up to 86 pavement cores are planned to obtain information on the pavement structure in the travel lanes, shoulders, and turn lanes for use in the overlay design. The borings will be backfilled at completion of the field work with auger cuttings and bentonite chips, and the pavement will be patched. EEI will locate the test borings using measurements from existing site features shown on plans to be provided. Furthermore, we will contact Indiana 811 to arrange an underground utility line location check;

2. Performing appropriate laboratory tests including visual soil classification, hand penetrometer readings, moisture content, grain size analysis, soil pH, soluble sulfate, Atterberg limit determinations, unit weight, unconfined compression, topsoil testing, moisture-density relations, and resilient modulus;
3. Preparing a technical report which will include a summary of our findings and recommendations for geotechnical considerations regarding:
 - a. Subgrade preparation and improvement, as necessary, for support of the culvert, walls, and pavement;
 - b. Pavement and wingwall design parameters, as well as commentary on the use of standard drawings for foundations for signal poles, and design parameters for the signal poles if necessary;
 - c. Placement and compaction of embankment fill and backfill for the culvert, wingwalls, and retaining walls; and
 - d. Potential construction problems due to the subsurface conditions encountered (e.g., soft subgrade difficulties, dewatering, etc.);
4. Pavement design for the roadway improvements. Though the area of new pavement is expected to be above 10,000 sq yds, we will only evaluate HMA sections to match the existing pavement type. We will document existing pavement distresses and prepare patch table(s) for the overlay. Our analyses will be performed using the MEPDG approach (AASHTOWare PavementME) in accordance with Ch. 304 of the INDOT Design Manual and applicable memoranda. We anticipate the MOT for the project will include shifting traffic onto the shoulders and, as such, temporary pavement is not included in our design. In addition, we understand that any improvements to the intersecting roadways will be less than 100 ft in length; and
5. Geotechnical review of the final check prints.

COST

We propose to provide our geotechnical services on a unit rate basis in accordance with the attached Cost Estimate, and we estimate that cost to be up to \$173,740 considering INDOT requirements. Please recognize that the fee is approximate because it is based on estimated quantities. If any significant variations develop during the course of our evaluation, we will advise you so that our efforts can be effectively directed.

We propose to provide the pavement design for a unit rate basis in accordance with the attached Fee Justification, and we estimate that cost to be up to \$18,400. We will notify you of any services performed beyond the scope identified above as a result of an INDOT change in policy. We will prepare the design to be reviewed by you and the city and then submitted by you through ERMS. We will coordinate with INDOT through the review process. We understand this may require additional analyses pending their comments.

For your planning purposes, the geotechnical evaluation will likely require 120 days to complete. The pavement design can be completed in about eight weeks after approval of the geotechnical report and assuming the plans have progressed sufficiently for the relevant details to be known. Once the pavement design is submitted to ERMS, review and concurrence by INDOT is out of our direct control.

CLOSURE

We anticipate that you will prepare an agreement outlining the terms and conditions. We look forward to providing our services on this project. Should you have any questions about this information, please feel free to contact us.

Sincerely,

EARTH EXPLORATION, INC.

A handwritten signature in black ink, appearing to read "Kellen P. Heavin", written in a cursive style.

Kellen P. Heavin, P.E.
Project Engineer

Enclosure: Geotechnical Cost Estimate
Pavement Design Fee Justification

Geotechnical Cost Estimate
US 31 Pavement Improvements
Johnson County, Indiana

	<u>Unit</u>	<u>Unit Price</u>	<u>Total</u>
<u>GEOTECHNICAL FIELD</u>			
1. Mobilization and Field Coordination			
a. SPT Rig	2 ea	\$270.00	\$540.00
b. CPT	ea	\$450.00	
c. Field and utility coordination	1 LS	\$5,000.00	\$5,000.00
d. Field coordination with property owners			
i. 1 - 10	1 LS	\$800.00	\$800.00
ii. 11 - 25	LS	\$510.00	
iii. Over 25	LS	\$710.00	
e. Mileage	140 mi	\$3.50	\$490.00
2. Truck mounted borings with split spoon sampling			
a. Standard	154 ft	\$19.00	\$2,926.00
b. Night time	ft	\$22.42	
3. Truck mounted borings with drilling fluid			
a. Standard	ft	\$19.00	
b. Night time	ft	\$22.42	
4. Truck mounted core drilling			
a. Standard	ft	\$39.00	
b. Night time	ft	\$46.02	
5. Truck mounted borings			
a. Truck mounted borings through bedrock or boulders or concrete pavement			
i. Standard	ft	\$39.00	
ii. Night time	ft	\$46.02	
b. Bridge deck coring and restoration			
i. Standard	ea	\$350.00	
ii. Night time	ea	\$413.00	
6. Cone penetrometer testing			
a. Set up			
i. Standard	ea	\$80.00	
ii. Night time	ea	\$94.40	
b. Subsurface profiling			
i. Standard	ft	\$12.25	
ii. Night time	ft	\$14.46	
c. Profiling with pore pressure measurement			
i. Piezometric Saturation			
a. Standard	ea	\$93.00	
b. Night time	ea	\$109.74	
ii . Penetration			
a. Standard	ft	\$14.50	
b. Night time	ft	\$17.11	

	<u>Unit</u>	<u>Unit Price</u>	<u>Total</u>
iii. Pore water dissipation test			
a. Standard	hr	\$190.00	
b. Night time	hr	\$224.20	
iv. Hydraulic conductivity and consolidation			
a. Standard	ea	\$75.00	
b. Night time	ea	\$88.50	
d. Profiling with Shearwave Velocity Measurement			
i. Standard	ft	\$15.75	
ii. Night time	ft	\$18.59	
e. Sample			
i. Standard	ea	\$24.00	
ii. Night time	ea	\$28.32	
7. Hand or truck soundings			
a. Standard	100 ft	\$12.50	\$1,250.00
b. Night time	ft	\$14.75	
8. Hand auger drilling			
a. Standard	ft	\$13.00	
b. Night time	ft	\$15.34	
9. Skid mounted borings with split spoon sampling			
a. Standard	1580 ft	\$30.00	\$47,400.00
b. Night time	ft	\$35.40	
10. Skid mounted borings using drilling fluid			
a. Standard	ft	\$30.00	
b. Night time	ft	\$35.40	
11. Skid mounted core drilling			
a. Standard	ft	\$43.00	
b. Night time	ft	\$50.74	
12. Skid mounted boring through bedrock or boulders			
a. Standard	ft	\$45.00	
b. Night time	ft	\$53.10	
13. Skid mounted soundings			
a. Standard	ft	\$17.50	
b. Night time	ft	\$20.65	
14. Skid Mounted Cone Penetrometer Testing (CPT)			
a. Set up			
i. Standard	ea	\$115.00	
ii. Night time	ea	\$135.70	
b. Subsurface profiling			
i. Standard	ft	\$17.75	
ii. Night time	ft	\$20.95	
c. Profiling with pore pressure measurement			
i. Piezometric Saturation			
a. Standard	ea	\$110.00	

	<u>Unit</u>	<u>Unit Price</u>	<u>Total</u>
b. Night time	ea	\$129.80	
ii. Penetration			
a. Standard	ft	\$20.50	
b. Night time	ft	\$24.19	
iii. Pore Water Dissipation Test			
a. Standard	hr	\$220.00	
b. Night time	hr	\$259.60	
iv. Hydraulic Conductivity and Consolidation			
a. Standard	ea	\$85.00	
b. Night time	ea	\$100.30	
d. Profiling with Shearwave Velocity Measurement			
i. Standard	ft	\$25.00	
ii. Night time	ft	\$29.50	
e. Sample			
i. Standard	ea	\$32.00	
ii. Night time	ea	\$37.76	
15. Furnishing of a boat	Actual Cost		
16. Barge set-up expenses			
a. Navigable water			
i. Barge set-up	ea	\$6,000.00	
ii. Rental of support equipment and/or boat	Actual Cost		
iii. Drill rig down time	hr	\$150.00	
b. Non-navigable water barge set-up	ea	\$5,000.00	
17. Additional disassembly and reassembly			
a. Navigable water	ea	\$2,100.00	
b. Non-navigable water	ea	\$1,900.00	
18. Barge mounted borings with split spoon sampling	ft	\$33.00	
19. Barge mounted core drilling	ft	\$45.00	
20. Barge mounted boring through bedrock or boulders	ft	\$45.00	
21. Barge mounted soundings	ft	\$20.00	
22. Casing through water	ft	\$8.50	
23. Uncased sounding through water	ft	\$5.50	
24. Set up for borings and machine soundings			
a. Borings and machine soundings less than 20 ft deep	52 ea	\$70.00	\$3,640.00
b. Rock core borings	ea	\$120.00	
25. Additional 2-in. split spoon sampling	142 ea	\$21.00	\$2,982.00
26. 3-in. split spoon samples	ea	\$23.00	
27. 3-in. Shelby tube samples	20 ea	\$63.00	\$1,260.00
28. Bag samples			
a. 25-lb sample	5 ea	\$51.00	\$255.00
b. 5-lb sample	5 ea	\$33.00	\$165.00
29. Field vane shear test			
a. Standard	ea	\$115.00	
b. Night time	ea	\$135.70	

	<u>Unit</u>	<u>Unit Price</u>	<u>Total</u>
30. 4½-in. cased hole	ft	\$12.50	
31. Installation of Geotechnical Instruments			
a. Inclinometer casing installation			
i. Standard	ft	\$15.00	
ii. Night time	ft	\$17.70	
b. Piezometer installation up to 25 ft below surface	ea	\$270.00	
c. Piezometer installation deeper than 25 ft below surface	ea	\$300.00	
d. Metal protective outer cover for inclinometer and piezometer casings	ea	\$125.00	
32. Geotechnical engineer	16 hr	\$120.00	\$1,920.00
33. Railroad expenses	Actual Cost		
34. Twenty-four hour water levels			
a. Field measurements per borehole			
i. Standard	48 ea	\$38.00	\$1,824.00
ii. Night time	ea	\$44.84	
b. PVC slotted pipe	ft	\$6.00	
35. Special borehole backfilling			
a. 0 to 30 ft			
i. SPT			
a. Standard	96 ea	\$110.00	\$10,560.00
b. Night time	ea	\$129.80	
ii . CPT			
a. Standard	ea	\$46.00	
b. Night time	ea	\$54.28	
b. More than 30 ft			
i. SPT			
a. Standard	ft	\$6.50	
b. Night time	ft	\$7.67	
ii . CPT			
a. Standard	ea	\$1.90	
b. Night time	ea	\$2.24	
c. Pavement restoration			
i. Standard	86 ea	\$60.00	\$5,160.00
ii. Night time	ea	\$70.80	
36. Dozer rental	Actual Cost		
37. Traffic control			
a. Flag crew	day	\$750.00	
b. Equipment Rental	Actual Cost		\$40,000.00
c. Flag crew with equipment	day	\$850.00	
d. Traffic coordination with subcontractor	1 LS	\$600.00	\$600.00
38. Centerline surveying	Actual Cost		
Subtotal (Geotechnical Field) \$126,772.00			

GEOTECHNICAL LABORATORY

39. Sieve analysis for soils	12 ea	\$49.00	\$588.00
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	<u>Unit</u>	<u>Unit Price</u>	<u>Total</u>
40. Hydrometer analysis	12 ea	\$58.00	\$696.00
41. Sieve analysis for Aggregates			
a. Analysis by Washing (AASHTO T-11)	ea	\$77.00	
b. Analysis by Using (AASHTO T-27)	ea	\$135.00	
42. Liquid limit	12 ea	\$39.00	\$468.00
43. Plastic limit & plasticity index	12 ea	\$28.00	\$336.00
44. Liquid Limit Ratio	ea	\$75.00	
45. pH test	12 ea	\$15.50	\$186.00
46. Loss on Ignition Test			
a. Loss on Ignition Test (Conventional)	15 ea	\$24.00	\$360.00
b. Loss on Ignition Test (Sequential)	ea	\$52.00	
c. Organic content based on Clorimeter	ea	\$24.00	
47 Topsoil Tests			
a. Phosphorus tests	5 ea	\$21.00	\$105.00
b. Potassium tests	5 ea	\$21.00	\$105.00
48 Moisture Content Test			
a. Moisture Content Test (Conventional)	1000 ea	\$6.75	\$6,750.00
b. Moisture Content Test (Microwave)	ea	\$8.20	
49 Expansion Index of Soils	ea	\$235.00	
50 Specific Gravity Test	ea	\$36.00	
51 Unit weight determination	20 ea	\$17.50	\$350.00
52 Hydraulic Conductivity Test			
a. Constant Head	ea	\$235.00	
b. Falling Head	ea	\$285.00	
53 Unconfined Compression Test on Soils & Rocks			
a. Unconfined Compression Test (Soils)	40 ea	\$45.00	\$1,800.00
b. Remolding of soil samples with chemical admixtures in chemical soil modification/stabilization (3 samples is equal to 1 unit)	ea	\$115.00	
c. Point Load Strength Index of Rock	ea	\$43.00	
54 Compressive Strength and Elastic Moduli of Intact Rock			
a. Compressive Strength of Intact Rock	ea	\$110.00	
b. Elastic Moduli of Intact Rock	ea	\$430.00	
55 Consolidation Test	ea	\$450.00	
56 Triaxial test			
a. Unconsolidated - Undrained (UU)	ea	\$350.00	
b. Consolidated - Undrained (CU)	ea	\$520.00	
c. Consolidated - Drained (CD)	ea	\$725.00	
d. Pore Pressure measurement with a. or b. and use of back pressure for saturation	ea	\$250.00	
57 Direct Shear Test	ea	\$530.00	
58 Moisture-Density Relationship Test			
a. Standard Proctor	5 ea	\$140.00	\$700.00

		<u>Unit</u>	<u>Unit Price</u>	<u>Total</u>
	b. Modified Proctor	ea	\$155.00	
59	Soil Support Testing			
	a. California Bearing Ratio Test	ea	\$525.00	
	b. Subgrade Resilient Modulus on Remoulded Soils	ea	\$620.00	
	c. Resilient modulus on Shelby tube	5 ea	\$400.00	\$2,000.00
60	Collapse Potential Evaluation Test			
	a. Silty Soil (Loess)	ea	\$380.00	
	b. Cohesive or Expansive Soils	ea	\$450.00	
61	Water Soluble Sulfate Test	12 ea	\$105.00	\$1,260.00
62	Water Soluble Chloride Test	ea	\$105.00	
63	Soil Resistivity Test	ea	\$135.00	
64	Shale Durability Tests			
	a. Slake Durability Index Test	ea	\$125.00	
	b. Jar Slake Test	ea	\$13.25	

Subtotal (Geotechnical Laboratory) \$15,704.00

GEOTECHNICAL ENGINEERING

65	Geotechnical report			
	a. Without soil subgrade investigation			
	i. First mile	1 LS	\$2,000.00	\$2,000.00
	ii. Each additional mile	4.5 mi	\$750.00	\$3,375.00
	b. With soil subgrade investigation			
	i. First mile	LS	\$2,000.00	
	ii. Each additional mile	mi	\$850.00	
	c. Soil subgrade investigation (only)			
	i. First mile	LS	\$650.00	
	ii. Each additional mile	mi	\$400.00	
	d. Soil profile drawing			
	i. First mile	LS	\$1,265.00	
	ii. Each additional mile	mi	\$600.00	
66	a. Geotechnical Data Report for Design Build Projects			
	i. First mile	LS	\$900.00	
	ii. Each additional mile	mi	\$400.00	
	b. Technical Memo			
	i. First mile	LS	\$600.00	
	ii. Each additional mile	mi	\$300.00	
67	Settlement analysis and recommendations for embankment			
	a. Proposed embankment	ea	\$510.00	
	b. Proposed and existing embankment	ea	\$570.00	
68	Ground modification design	ea	\$1,500.00	
69	Slope stability analysis			
	a. C, ϕ or C & ϕ analysis	ea	\$800.00	
	b. Corrective measures	ea	\$800.00	
	c. Stage construction corrective method	ea	\$1,400.00	

		<u>Unit</u>	<u>Unit Price</u>	<u>Total</u>
70	Bridge foundation analysis and recommendations			
	a. Shallow foundation	ea	\$500.00	
	b. Deep foundation			
	i. Deep foundation analyses	4 ea	\$875.00	\$3,500.00
	ii. Wave equation analyses	ea	\$335.00	
	iii. Liquefaction analysis	ea	\$270.00	
	iv. Group - 3D analysis	ea	\$430.00	
	c. Settlement analysis for bridge pier foundation			
	i. Bridge pier	ea	\$400.00	
	ii. Embankment plus pier	ea	\$440.00	
	iii. Embankment plus pier plus all other loads	ea	\$510.00	
	d. Foundation on bedrock	ea	\$380.00	
71	Retaining structure analysis recommendations			
	a. Conventional retaining structures and other types such as MSE Walls and Bin walls			
	i. Shallow foundation	1 ea	\$880.00	\$880.00
	ii. Deep foundation	ea	\$1,160.00	
	iii. Settlement analysis for retaining wall foundation	ea	\$380.00	
	b. Pile retaining structure analysis and recommendations			
	i. Free standing structure	ea	\$1,050.00	
	ii. Retaining structure with tie-back system	ea	\$1,500.00	
	c. Drilled-in-pier retaining structure analysis			
	i. Free standing structure	ea	\$1,050.00	
	ii. Retaining structure with tie-back system	ea	\$1,500.00	
	d. Soil nailing wall analysis	ea	\$1,000.00	
72	Seepage analysis	ea	\$1,450.00	
73	Deep dynamic compaction analysis	ea	\$1,450.00	

Subtotal (Geotechnical Engineering) \$9,755.00

CONSTRUCTION INSPECTION AND MONITORING

74	Pressuremeter Testing services	day	\$1,650.00	
75	Mobilization of testing equipment	LS	\$165.00	
76	a. Monitoring geotechnical instrumentation	hr	\$80.00	
	b. Filed Inspector	hr	\$80.00	
77	Integrity testing	Actual Cost		
78	Field Compaction Testing			
	a. Dynamic Cone Penetration Test (DCPT)	hr	\$80.00	
	b. Light Weight Deflectometer Test (LWD)	hr	\$80.00	
79	Dynamic pile analysis	ea	\$1,050.00	
80	Static load test	ea	\$1,050.00	
81	Dynamic pile load test	Actual Cost		
82	CAPWAP-C analysis	ea	\$550.00	
83	Final construction inspection report	ea	\$1,000.00	

Subtotal (Construction Inspection and Monitoring)

FOUNDATION EVALUATION BY NON-DESTRUCTIVE METHODS

	<u>Unit</u>	<u>Unit Price</u>	<u>Total</u>
84 a. Surface test/Pier or foundation	Actual Cost		
b. Borehole test/Pier or foundation	Actual Cost		

GEOPHYSICAL INVESTIGATION

85 Geophysical Investigations	Invoice Cost		
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GEOTECHNICAL PROJECT MANAGEMENT

86 Project Management			
a. Project Coordination	mi	\$1,650.00	
b. Project Website	LS	\$3,500.00	
87 Geotechnical Review			
a. Structure Report	ea	\$350.00	
b. Roadway Report	mi	\$290.00	

PAVEMENT INVESTIGATION

1. Mobilization of coring equipment	LS	\$210.00	
2. Mobilization mileage for coring equipment	mi	\$1.90	
3. Pavement core (partial depth)	ea	\$130.00	
4. Pavement core (full depth)			
a. Standard	86 ea	\$200.00	\$17,200.00
b. Night time	ea	\$230.00	
5. Sub-base sample	ea	\$62.00	
6. Cement concrete pavement core density determination	ea	\$34.00	
7. Cement concrete core compressive strength test	ea	\$33.00	
8. Bituminous extraction test	ea	\$86.00	
9. Sieve analysis of extracted aggregate test	ea	\$58.00	
10. Recovery of asphalt from solution by Abson method	ea	\$360.00	
11. Theoretical maximum specific gravity test	ea	\$72.00	
12. Bulk specific gravity test	ea	\$32.00	
13. Air voids calculation	ea	\$29.00	
14. Core report for partial depth core	ea	\$50.00	
15. Core report for full depth core	86 ea	\$50.00	\$4,300.00
16. Pavement analysis and report	ea	\$800.00	

Subtotal (Pavement Investigation) \$21,500.00

Summary of Fees

Geotechnical Field	\$126,772.00
Geotechnical Laboratory	\$15,704.00
Geotechnical Engineering	\$9,755.00
Construction Inspection and Monitoring	
Pavement Investigation	\$21,500.00
Estimated Total for Geotechnical	\$173,731.00

PAVEMENT DESIGN FEE JUSTIFICATION

US 31 Pavement Improvements

Johnson County, Indiana

		PROJECT TEAM HOURS				Reimbursable Expenses	Totals
TASK	Hourly Rate>	Principal Engineer	Senior Project Engineer	Project Engineer	Staff Engineer		
PRELIMINARY ENGINEERING TASKS							\$5,587
Review plans, existing information, prepare scope		1	4		4		\$1,095
Interpreting FWD data, review geotech			1		1		\$223
Prepare for site walk, traffic control signs			1		1		\$223
Site visit - document pavement distresses			14		14	\$335	\$3,460
Compiling field observations, patch table(s)					6		\$585
DESIGN TASKS							\$12,804
Analysis			10		35		\$4,671
Prepare report		1.5	10		45		\$5,950
Correspondence with INDOT, address review comments			8		8		\$1,786
Finalize analysis, report, closeout		1			2		\$398
BIDDING SERVICES							\$0
							\$0
CONSTRUCTION SUPPORT TASKS							\$0
							\$0
							\$0
Total Hours:		4	48	0	116	\$335	TOTAL
Fee by Classification:		\$709	\$6,031	\$0	\$11,316	\$335	\$18,391

HOURLY BILLING RATES

US 31 Corridor



PERSONNEL CLASSIFICATION

HOURLY RATE

CROSSROAD ENGINEERS STAFF

Director	\$175.00
Senior Project Manager	155.00
Project Manager	135.00
Project Engineer	115.00
Assistant Project Engineer	100.00
CADD Manager	115.00
CADD Technician	100.00
Assistant CADD Technician	85.00
Survey Manager	145.00
Assistant Survey Manager	105.00
Survey Crew – 1 Man	125.00
Crew Chief	105.00
Field Man	80.00
Survey Technician	100.00
R/W Buyer	170.00

CRAWFORD, MURPHY & TILLY STAFF



Project Engineer Manager	\$200.00
Senior Engineer	160.00
Engineer	140.00

MISCELLANEOUS

Mileage (per mile)	Current IRS Rate
Other Direct Costs	at cost +15%

Rates for Post Design Services

For

Construction Scheduled to Begin 2024

CROSSROAD ENGINEERS, PC

3417 SHERMAN DR, BEECH GROVE, IN 46107 // 317.780.1555 // CROSSROADENGINEERS.COM