

***Notice of Funding Opportunity  
Summary Information***

**Federal Agency Name:** U.S. Department of Transportation (US DOT)  
Federal Highway Administration (FHWA)  
Center for Transportation Workforce Development  
1310 North Courthouse Road, Suite 300  
Arlington, VA 22201

**Attn:** Ewa Flom, HIN-CWD

**Funding Opportunity Title:** “Dwight David Eisenhower Transportation Fellowship Program (DDETFP) Grants for Research Fellowship (GRF)”

**Announcement Type:** This is the initial announcement of this funding opportunity.

**Funding Opportunity Number:** 693JJ318NF5229

**Catalog of Federal Domestic Assistance (CFDA) Number:** 20.215 Highway Training & Education

**Key Dates:** Notice Issue Date is June 1, 2018  
Question Due Date/Time is June 8, 2018 at 11:59pm Eastern Time  
Electronic Application Due Date/Time for

- Fiscal year (FY) 2018 is July 16, 2018 at 11:59pm Eastern Time.
- Subsequent assignment opportunities will specify due dates in the Attachment 1 posted with this Notice.

**Primary Point of Contact:** Ewa Flom, [ewa.flom@dot.gov](mailto:ewa.flom@dot.gov), 703-235-0532

**Secondary Point of Contact:** Universities and Grants Program Staff,  
[transportationedu@dot.gov](mailto:transportationedu@dot.gov), 703-235-0538

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## Pertinent Links:

- <https://www.grants.gov/>
- General terms, conditions, and governing regulations (Effective March 6, 2015) that will apply to the Agreement are available online at [www.fhwa.dot.gov/cfo/contractor\\_recip/gtandc\\_generaltermsconditions.cfm](http://www.fhwa.dot.gov/cfo/contractor_recip/gtandc_generaltermsconditions.cfm)

## Attachments:

1. DDETFP GRF Assignment Announcement

## SECTION A - PROGRAM DESCRIPTION

The U.S. Department of Transportation (DOT), Federal Highway Administration (FHWA), hereby requests applications for assistance to result in the award of up to four new Grant Agreements, supporting the ***“Dwight David Eisenhower Transportation Fellowship Program (DDETFP) Grants for Research Fellowship (GRF).”***

### 1. STATEMENT OF PURPOSE

The purpose of these proposed Agreements is to provide DDETFP GRF funding for students to pursue master's or doctoral degrees in transportation-related disciplines. The program objectives are: 1) to attract the Nation's brightest minds to the field of transportation; 2) to enhance the careers of transportation professionals by encouraging them to seek advanced degrees; and 3) to retain top talent in the transportation industry of the United States. The DDETFP is intended to enhance the breadth and scope of knowledge of the entire transportation community in the United States. The DDETFP GRF encompasses all modes of transportation.

### 2. LEGISLATIVE AUTHORITY

The current legislation governing the program is found in the Fixing America's Surface Transportation (FAST) Act, Section 6002(a)(3) (Pub. L. 114-94). Authority is also found in Title 23, United States Code (USC), Section 504(c) and 502 (b)(3).

### 3. BACKGROUND

The objective of the DDETFP GRF is to acquaint graduate students with transportation research, development, and technology transfer activities at U.S. Department of Transportation (USDOT) facilities.

Individual students apply for the DDETFP GRF. The FHWA makes awards to the Institution of Higher Education (IHE) (“Recipient”) on behalf of the student (“Student Designee”). The IHE must be accredited by a federally-recognized accrediting agency and must be located within the United States or its territories. If a student is selected to receive a fellowship, the student, their faculty advisor, and the IHE will be responsible for completing and submitting all required paperwork to execute the Agreement. Students must be prepared to submit a copy of their application package and this Notice of Funding Opportunity (NOFO) to their IHE. The Recipient will be responsible for allocating funds to the Student Designee as outlined in the Budget of the Agreement. The IHE will also be responsible for submitting all required federal financial reports to FHWA.

### 4. GOALS

The goals of these Grants are to provide DDETFP to 1) attract the nation's brightest minds to the field of transportation, 2) enhance the careers of transportation professionals by encouraging them to seek advanced degrees, and 3) bring and retain top talent in the transportation industry of the United States.

## 5. STATEMENT OF WORK

The DDETFP GRF stimulates interest among students to conduct transportation-related research, to pursue transportation-related degrees, and to enter the transportation workforce. The DDETFP GRF is structured to provide opportunities with USDOT Program Offices which are interested in attracting workforce ready students. **The proposed projects that are available for student applications are listed in Attachment 1 *DDETFP GRF Assignment Announcement*.**

The DDETFP GRF provides funding for the pursuit of advanced degrees in a transportation-related field at an accredited IHE. The grant may cover a combination of the following:

- Tuition and fees
- Monthly stipend
- Transportation Research Board (TRB) Annual Meeting travel

Tuition and fees and stipend are paid only for the time period the Student Designee is registered in a full-time academic program at the Recipient institution. TRB Annual Meeting travel expenses (e.g. conference registration fee, transportation, lodging, meals, etc.) are provided for Student Designee to attend the event in Washington, DC.

Recipients are required to provide:

- Upon request, an abstract of Student Designee's research project for presentation consideration for the DDETFP Research Showcase at the TRB Annual Meeting.
- Within 90 days of the end of the Agreement, a copy of the Project Report (i.e. Student Designee's research project, thesis, or dissertation), final Performance Progress Report (SF-PPR), and Federal Financial Report (SF 425).

## **SECTION B – FEDERAL AWARD INFORMATION**

### **1. FUNDING AND NUMBER OF AWARDS**

The FHWA expects approximately \$240,000 to be made available for the DDETFP GRF in each fiscal year (FY) 2018 through 2020 from amounts authorized under section 6002 of the FAST Act.

The FHWA anticipates making up to four awards as a result of this Notice of Funding Opportunity in each FY 2018 through 2020.

The FHWA anticipates Federal funding up to a total amount of \$720,000 may be made available for these Agreements, subject to the availability of funds. Funding for each award can range from a minimum of \$15,000 to a maximum of \$60,000.

Note: The Government reserves the right to award less than the anticipated number of awards and less than the maximum amount per award.

### **2. TYPE OF AWARD**

The planned award type is a Grant Agreement.

### **3. PERIOD OF PERFORMANCE**

The period of performance for each Agreement will be for up to one year from the effective date of the Agreement.

### **4. DEGREE OF FEDERAL INVOLVEMENT**

The FHWA anticipates Federal involvement between it and the Recipient during the course of this project. The anticipated Federal involvement will include:

- Technical assistance and guidance to the Recipient;
- Close monitoring of performance; and
- Involvement in technical decisions.

The FHWA shall have the right to visit the Recipient institution and examine all material relevant to this fellowship grant, including books, records, documents, accounting procedures, bookkeeping practices, and other evidence. The material shall be of sufficient detail to reflect properly all direct costs of whatever nature claimed to have been incurred for the performance of the grant.

## SECTION C – ELIGIBILITY INFORMATION

### 1. ELIGIBLE APPLICANTS

This funding opportunity is open to students that are U.S. citizens and non-U.S. citizens. The students must be enrolled in an IHE which must be accredited by a federally-recognized accrediting agency<sup>1</sup> and must be located within the United States or its territories, both administratively as well as the campus the student is attending.

Current U.S. Department of Transportation employees are not eligible for the DDETFP.

In addition to the Program Office prerequisites stated in the assignment announcement, all student applicants of the DDETFP GRF must:

- Possess a baccalaureate degree from an accredited IHE within the U.S or its territories;
- Demonstrate confirmation of acceptance in a graduate degree program at an accredited IHE in the U.S. or its territories;
- Be enrolled in an accredited IHE within the U.S. or its territories;
- Be pursuing a graduate degree in a full-time program in a transportation-related discipline **identified in the assignment announcement**;
- Have at least one full academic year remaining in program of study;
- Conduct ongoing research in one or more transportation-related disciplines; and
- Plan to enter the transportation profession after completing their higher-level education.

Non-U.S. citizens must also submit a valid copy of their Student and Exchange Visitor Information System Form issued by the IHE the student is enrolled in, or the Form I-20<sup>2</sup> “Certificate of Eligibility for Nonimmigrant Status”, or the Form I-551 “Permanent Resident Card” issued by the U.S. Citizenship & Immigration Service.

### 2. COST SHARING OR MATCHING

Cost sharing or matching is not required. Although this program does not require cost sharing or matching, IHEs are encouraged to contribute resources to help leverage Fellowship funding.

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<sup>1</sup> The U.S. Department of Education publishes a list of nationally recognized accrediting agencies on <https://www.ed.gov/accreditation>

<sup>2</sup> Student and Exchange Visitor Information System (SEVIS) Form I-20 is a Certificate of Eligibility for Nonimmigrant Student Status for foreign exchange students who attend an educational program in the United States. Educational institutions issue Form I-20.

## SECTION D - APPLICATION AND SUBMISSION INFORMATION

### 1. ADDRESS TO REQUEST APPLICATION PACKAGE

Applicants may obtain application forms at [grants.gov](https://www.grants.gov) under the Notice of Funding Opportunity (NOFO) number cited herein.

The Applicant must complete and submit all forms included in the application package for this Notice as contained at [www.grants.gov](https://www.grants.gov).

### 2. CONTENT AND FORM OF APPLICATION SUBMISSION

The DDETFP GRF requires the submission of a complete Application Package through [www.grants.gov](https://www.grants.gov) in response to one of the assignments posted in the *DDETFP GRF Assignment Announcement*.

**General Instructions:** Please read Attachment 1 *DDETFP GRF Assignment Announcement* and this NOFO in their entirety before preparing the application materials.

**A complete DDETFP GRF application package includes the following:**

- SF 424 Individual
- Completed Student File Information Sheet
- Personal Statement (Relevant Background and Future Goals)
- Project Experience (Relevant Project-Specific Information)
- Official transcripts
- Endorsement letter from the applicant's Faculty Advisor
- Resume / Curriculum Vitae (Not to exceed two pages)
- Citizenship status
  - Non-U.S. citizens must provide a **valid** copy of current Student and Exchange Visitor Information System (SEVIS) Form I-20 issued by the educational institution attending or Form I-20 "Certificate of Eligibility for Nonimmigrant Status", or Permanent Resident Card Form I-551 issued by the USCIS.

**Incorrect, missing documents/items, or incomplete applications are grounds for rejecting the application.**

Applicant must certify that they have personally completed the application and that the information they are providing is complete and accurate. Information is subject to verification.

**It is imperative that Applicants provide an accurate and current email address for themselves and their faculty advisor.**

### 3. SUBMISSION DATES AND TIMES

Application Deadline: The DDETFP GRF application must be completely submitted in [www.grants.gov](https://www.grants.gov) Electronic Application due date and time listed on page 1.

The deadlines cited herein are the dates and times by which the agency must receive the complete application package.

A late application will not be reviewed or considered unless the FHWA Universities and Grants (U&GP) Program Manager determines that doing so is in the FHWA's best interest.

In the event of system problems or technical difficulties with the application submittal, Applicants should contact the FHWA point of contact designated on page 1. If Applicants are unable to use the system due to technical difficulties, Applicants must e-mail applications to the FHWA point of contact listed on page 1 no later than the application deadline cited above.

#### **4. UNIQUE ENTITY IDENTIFIER AND SYSTEM FOR AWARD (SAM)**

The Recipient is required to: (i) be registered in SAM before submitting its application; (ii) provide a valid unique entity identifier in its application; and (iii) continue to maintain an active SAM registration with current information at all times during which it has an active Federal award or an application or plan under consideration by a Federal awarding agency.

The Federal awarding agency may not make a Federal award to a Recipient until the Recipient has complied with all applicable unique entity identifier and SAM requirements. If a Recipient has not fully complied with the requirements by the time the Federal awarding agency is ready to make a Federal award, the Federal awarding agency may determine that the Recipient is not qualified to receive a Federal award and use that determination as a basis for making a Federal award to another Recipient.

#### **5. INTERGOVERNMENTAL REVIEW**

An application under this Notice of Funding Opportunity is not subject to the State review under E.O. 12372.

#### **6. FUNDING RESTRICTIONS**

The FHWA will not reimburse any pre-award costs or application preparation costs under this proposed Agreement. Indirect costs and overhead are not allowed under this proposed Agreement.

**Restrictions** on the use of fellowship funds by the Student Designee are as follows:

- No dependency allowances;
- Fellowship Student Designee is eligible for funding only during months of enrollment in full-time program leading to graduate degree;
- Unused funds must be returned to FHWA within 90 days of the termination date of the grant; and
- There is a limitation of \$10,000 in DDETFP funding toward tuition and fees per year.

The IHE has the responsibility of administering the funds and for making periodic payments to the Student Designee.

## 7. TUITION, TRAVEL, STIPEND, AND TAXES

Fellowship awards may not provide a full award (i.e. tuition, stipend, and travel to the Transportation Research Board (TRB) Annual Meeting in Washington, DC). Fellowship awards will be based on selection for an assignment and may include tuition, stipend, and TRB Annual Meeting travel funding.

Fellowship recipients should be advised that **the stipend portion of the fellowship is subject to taxation** in accordance with the U.S. Internal Revenue Service (IRS) regulations (Publication 970, dated Jan 31, 2018 available at <https://www.irs.gov/pub/irs-pdf/p970.pdf>).

The anticipated stipends for the DDETFP GRF are based on academic level. **Actual stipend level may vary based upon IHE formal policy** and available funding. Additional stipend amounts may be added by the IHE or other sources.

## SECTION E - APPLICATION REVIEW INFORMATION

### 1. CRITERIA

The Government will evaluate applications on following criteria:

**MERIT:** FHWA will evaluate and rank the applications against the following technical evaluation criteria. These criteria are distinct from eligibility criteria (see Section C) that are addressed before an application is accepted for review.

The DDETFP GRF will be awarded on the basis of merit. Merit includes (in descending order of importance with the top three criteria being equal in importance):

- Experience in research area identified in the project announcement\*
- Unique qualifications for the project in the announcement\*
- Academic record\*
- Recommendation regarding the applicant's qualifications\*
- Potential for outstanding career in transportation\*

After applying the above preferences, the FHWA will take into account the following key Departmental objectives:

- (A) Supporting economic vitality at the national and regional level;
- (B) Utilizing alternative funding sources and innovative financing models to attract non-Federal sources of infrastructure investment;
- (C) Accounting for the life-cycle costs of the project to promote the state of good repair;
- (D) Using innovative approaches to improve safety and expedite project delivery; and
- (E) Holding grant recipients accountable for their performance and achieving specific, measurable outcomes identified by grant applicants.

Funding availability will also be considered in the award decision.

\* more detail provided in Attachment 1 *DDETFP GRF Assignment Announcement*

### 2. REVIEW AND SELECTION PROCESS

FHWA will evaluate all **eligible** applications. FHWA will utilize the following merit review process to evaluate applications:

Complete applications from eligible applicants will be provided to the sponsoring Program Office for transportation professionals to evaluate using the merit criteria listed above. The applications will be evaluated, ranked in merit order, and a recommendation submitted to the U&GP Program Manager. The U&GP Program Manager is the official responsible for final award selections.

It is imperative that applicants provide an accurate and current email address for themselves and their faculty advisor as notification of selection will be by email.

The Government is not obligated to make any award as a result of this announcement.

Agency personnel from the FHWA will conduct a risk assessment of the Recipient (i.e. the IHE the applicant is attending) prior to award as described below.

The Government will accept the application(s) that is (are) considered the most advantageous to the Government using the criteria cited above, and subject to the results of a Recipient risk assessment. Applications selected for possible award using the criteria cited above, will undergo the following risk assessment prior to award. The Government reserves the right to not make an award to a Recipient based on the results of the risk assessment.

The Agreement Officer (AO) is the official responsible for final award selection. The Government is not obligated to make any award as a result of this notice.

### **Risk Assessment**

The Government will assess the risks posed by a Recipient before they receive an award. This Risk Assessment will include evaluation of some or all of the following items relative to the Recipient and/or sub-applicants as applicable:

- (1) Recipient's financial stability;
- (2) Recipient's quality of management systems and ability to meet the management standards prescribed in 2 CFR Part 200;
- (3) Recipient's history of performance;

Note: History of performance includes the Recipient's record in managing Federal awards, if it is a prior Recipient of Federal awards, including timeliness of compliance with applicable reporting requirements, conformance to the terms and conditions of previous Federal awards, and if applicable, the extent to which any previously awarded amounts will be expended prior to future awards. The Government will evaluate the relevant merits of the Recipient's history of performance based on its reputation and record with its current and/or former customers with respect to quality, timeliness and cost control. The history of performance will be reviewed to assure that the Recipient has relevant and successful experience and will be considered in the risk assessment. In evaluating history of performance, the Government may consider both written information provided in the application, as well as any other information available to the Government through outside sources.

- (4) Recipient's audit reports and findings from audits performed on the Recipient pursuant to 2 CFR Part 200 Subpart F—Audit Requirements or the reports and findings of any other available audits;
- (5) Recipient's ability to effectively implement statutory, regulatory, or other requirements imposed on non-Federal entities;

(6) Recipient's potential for conflict of interest if applicable;<sup>3</sup> and

(7) Recipient's eligibility to receive Federal funding. Per the guidelines on government-wide suspension and debarment in 2 CFR Part 180, the Government will confirm that the Recipient and any named sub-applicants are not debarred, suspended or otherwise excluded from or ineligible for participation in Federal programs or activities.

Pursuant to 2 CFR Part 200.205, prior to making a Federal award, the Federal awarding agency is required to review information available through any OMB-designated repositories of government-wide eligibility qualification or financial integrity information, such as Federal Awardee Performance and Integrity Information System (FAPIIS), Dun and Bradstreet, and "Do Not Pay." At a minimum, the information in the system for a prior Federal award recipient must demonstrate a satisfactory record of executing programs or activities under Federal grants, cooperative agreements, or procurement awards; and integrity and business ethics.

If FHWA does not make a Federal award to a non-Federal entity because the official determines that the non-Federal entity does not meet either or both of the minimum qualification standards as described in 2 CFR 200.205, the FHWA will report that determination in FAPIIS.

### **3. ANTICIPATED ANNOUNCEMENT AND FEDERAL AWARD DATES**

The FHWA anticipates making award on or about **September 14, 2018**.

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<sup>3</sup> Note: The FHWA will review information provided by the Recipient, and any other relevant information known to DOT, to determine whether an award to the Recipient may create an actual or potential conflict of interest. If any such conflict of interest is found to exist, the AO may (a) disqualify the Recipient, or (b) determine that it is otherwise in the best interest of the United States to award to the Recipient and include appropriate provisions to mitigate or avoid such conflict in the Agreement pursuant to 2 CFR 200.112.

## **SECTION F – FEDERAL AWARD ADMINISTRATION INFORMATION**

### **1. FEDERAL AWARD NOTICES**

If you are selected for award, FHWA will notify you, your faculty advisor, and the identified IHE by email. FHWA will send award documents to the IHE for signature. Applicants not selected for award will be notified by FHWA by email.

Only the Agreement Officer (AO) can commit the FHWA. The award document, signed by the AO, is the authorizing document. Only the AO can bind the Federal Government to the expenditure of funds.

Notice that an Applicant has been selected as a fellow does not constitute approval of the application as submitted. Before the actual award, FHWA will enter into negotiations with the IHE concerning such items as program components, staffing, funding levels, and administrative systems, if necessary. If the negotiations do not result in an acceptable submittal, the FHWA reserves the right to terminate the negotiation and decline to fund the Applicant.

### **2. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS**

General terms, conditions, and governing regulations (Effective March 6, 2015) that will apply to the grant Agreement are available online at

[www.fhwa.dot.gov/cfo/contractor\\_recip/gtandc\\_generaltermsconditions.cfm](http://www.fhwa.dot.gov/cfo/contractor_recip/gtandc_generaltermsconditions.cfm)

Special terms and conditions follow:

#### **A. PUBLIC ACCESS TO DOCUMENTS**

The Applicant agrees that the resulting deliverables/documentation submitted to the FHWA under the grant Agreement may be posted online for public access and/or shared by FHWA with other interested parties. The FHWA anticipates the documents cited herein may be posted on an FHWA website or other appropriate website.

#### **B. INDIRECT COSTS**

Indirect costs are not allowable under the grant Agreement

#### **C. DATA RIGHTS**

The Recipient must make available to the FHWA copies of all work developed in performance with the grant Agreement, including but not limited to software and data. Data rights under the grant agreement shall be in accordance with 2 CFR 200.315, Intangible property.

#### **D. PERSONALLY IDENTIFIABLE INFORMATION (PII)**

Personally Identifiable Information (PII) as defined at CFR Part 200.79 and 2 CFR 200.82 at will not be requested unless necessary and only with prior written approval of the AO with concurrence from the AOR.

**E. AVAILABLE FUNDING**

The total estimated amount of Federal funding that may be provided under the grant Agreement is listed on page 1 of the award document for the entire period of performance, subject to the limitations shown below:

(1) Currently, Federal funds identified on page 1 of the award document, are obligated to the grant agreement.

(2) Subject to availability of funds, and an executed document by the AO, the difference between the current funding and the total estimated amount of Federal funding may be obligated to the grant Agreement.

(3) The FHWA's liability to make payments to the Recipient is limited to those funds obligated under the grant Agreement as indicated above and any subsequent amendments.

**F. KEY PERSONNEL**

Pursuant to 2 CFR 200.308(c)(2), the Recipient must request prior written approval from the AO for any change in Key Personnel specified in the award. The following person(s) are/have been identified as Key Personnel:

| Name                                 | Title/Position |
|--------------------------------------|----------------|
| [student designee]                   |                |
| [faculty advisor]                    |                |
| (***) to be filled in at award (***) |                |
|                                      |                |

**G. ORDER OF PRECEDENCE**

The Applicant's technical application is accepted, approved, and incorporated herein as Attachment A. In the event of any conflict between the grant agreement document and the Applicant's proposal and/or application, the grant Agreement document shall prevail.

**H. DESIGNATION AS RESEARCH OR NON-RESEARCH AGREEMENT**

The grant agreement is designated as: NON-RESEARCH

**I. DISPUTES**

The parties to the grant Agreement will communicate with one another in good faith and in a timely and cooperative manner when raising issues under this provision. Any dispute, which for the purposes of this provision includes any disagreement or claim, between the FHWA and the Recipient concerning questions of fact or law arising from or in connection with the grant Agreement and whether or not involving alleged breach of the grant Agreement, may be raised only under this Disputes provision.

Whenever a dispute arises, the parties will attempt to resolve the issues involved by discussion and mutual agreement as soon as practical. In no event will a dispute which arose more than three months prior to the notification made under the following paragraph of this provision constitute the basis for relief under this article unless FHWA waives this requirement.

Failing resolution by mutual agreement, the aggrieved party will document the dispute by notifying the other party in writing of the relevant facts, identify unresolved issues and specify the clarification or remedy sought. Within five working days after providing written notice to the other party, the aggrieved party may, in writing, request a decision from one level above the AO. The AO will conduct a review of the matters in dispute and render a decision in writing within thirty calendar days of receipt of such written request. Any decision of the AO is final and binding unless a party will, within thirty calendar days, request further review as provided below.

Upon written request to the FHWA Director, Office of Acquisition and Grants Management or designee, made within thirty calendar days after the AO's written decision or upon unavailability of a decision within the stated time frame under the preceding paragraph, the dispute will be further reviewed. This review will be conducted by the Director, Office of Acquisition and Grants Management. Following the review, the Director, Office of Acquisition and Grants Management, will resolve the issues and notify the parties in writing. Such resolution is not subject to further administrative review and to the extent permitted by law, will be final and binding. Nothing in the grant Agreement is intended to prevent the parties from pursuing disputes in a United States Federal Court of competent jurisdiction.

### 3. REPORTING

The Recipient must submit the following electronically to the FHWA U&GP Program Manager at [FHWA\\_UGP@dot.gov](mailto:FHWA_UGP@dot.gov):

- Upon request, an abstract of Student Designee's research project for presentation consideration for the DDETFP Research Showcase at the TRB Annual Meeting
- Within 90 days after the end of the grant Agreement period of performance, the Recipient must submit an electronic copy of:
  - Project Report (i.e. Student Designee's research project, thesis, or dissertation)
  - Final Performance Progress Report (SF-PPR):
    - To fulfill Block 10, Performance Narrative requirement, the Recipient can provide summary of Student Designees project report and confirmation that the report was submitted in electronic format to the U&GP Program Manager.
    - In Block 11, Other Attachments, include the information as attached pages for Federal Financial Report (SF-425)
  - Federal Financial Report (SF-425)

## **SECTION G – FEDERAL AWARDING AGENCY CONTACTS**

Address any questions to:

Universities and Grants Programs Staff  
Federal Highway Administration  
Center for Transportation Workforce Development  
[TRANSPORTATIONEDU@DOT.GOV](mailto:TRANSPORTATIONEDU@DOT.GOV)  
(703) 235-0538

**DWIGHT DAVID EISENHOWER  
TRANSPORTATION FELLOWSHIP PROGRAM (DDETFP)**



**GRANTS FOR RESEARCH FELLOWSHIP (GRF)**

**SECOND ASSIGNMENT ANNOUNCEMENT**

2020 AWARD CYCLE (JULY 2020)

*These guidelines are in effect until further notice and were prepared for participation in the DDETFP GRF. Earlier versions do not apply for this award cycle.*

**DWIGHT DAVID EISENHOWER TRANSPORTATION FELLOWSHIP PROGRAM  
(DDETFP)**

**Grants or Research Fellowship (GRF)**

**Second Assignment Announcement for Fiscal Year 2020**

**Attachment to Notice of Funding Opportunity number 693JJ318NF5229-2020B**

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## IMPORTANT INFORMATION

- Applicants are students seeking a DDETFP GRF. If selected:
  - Students will be referred to as “Student Designees” and “Fellows”
  - The Institution of Higher Education (IHE) the student is attending will be referred to as the “Recipient”
  - Applicants will be required to provide necessary documents for a background check before starting proposed project assignment at a USDOT facility. Applicants will not be selected for award if they do not pass the background check.
- **Electronic Application Due Date/Time** for Fiscal year (FY) 2020 is **September 14, 2020 at 4:00pm Eastern Time.**
- The DDETFP GRF requires online submission through [www.grants.gov](http://www.grants.gov).
- Paper applications will not be accepted.
- By submitting an application, applicants certify that they have read and meet eligibility criteria defined in the Notice of Funding Opportunity (NOFO) and the respective annual DDETFP GRF Assignment Announcement.
- Endorsement letter from Faculty Advisor is required.
- The IHE in which the student is enrolled in must be accredited by a federally-recognized accrediting agency and must be located within the United States or its territories, both administratively as well as the campus the student is attending.
- Reimbursements of IHE administrative or overhead costs are prohibited.
- Applicants should print a copy of their application and the NOFO for their files. The IHE may request these items if Fellowship is awarded.
- The proposed projects that are available for student applications are listed in this assignment announcement.
- Only one type of DDETFP Fellowship may be awarded to a Student Designee in each award cycle.

## STUDENT ELIGIBILITY REQUIREMENTS

This funding opportunity is open to students that are U.S. citizens and non-U.S. citizens. The students must be enrolled in an IHE which must be accredited by a federally-recognized accrediting agency<sup>1</sup> and must be located within the United States or its territories, both administratively as well as the campus the student is attending.

Current U.S. Department of Transportation employees are not eligible for the DDETFP.

In addition to the Program Office prerequisites stated in the assignment announcement, all student applicants of the DDETFP GRF must:

- Possess a baccalaureate degree from an accredited IHE within the U.S. or its territories;
- Demonstrate confirmation of acceptance in a graduate degree program at an accredited IHE in the U.S. or its territories;
- Be enrolled in an accredited IHE within the U.S. or its territories;

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<sup>1</sup> The U.S. Department of Education publishes a list of nationally recognized accrediting agencies on <https://www.ed.gov/accreditation>

- Be pursuing a graduate degree in a full-time program in a transportation-related discipline **identified in the assignment announcement**;
- Have at least one full academic year remaining in program of study;
- Conduct ongoing research in one or more transportation-related disciplines; and
- Plan to enter the transportation profession after completing their higher-level education.

Non-U.S. citizens must also submit a valid copy of their Student and Exchange Visitor Information System Form issued by the IHE the student is enrolled in, or the Form I-202 “Certificate of Eligibility for Nonimmigrant Status”, or the Form I-551 “Permanent Resident Card” issued by the U.S. Citizenship & Immigration Service.

Applications without this information will not be considered complete.

### **DDETFP GRF APPLICATION PACKAGE**

The DDETFP GRF requires the submission of a complete Application Package through [www.grants.gov](http://www.grants.gov) in response to one of the assignments posted this announcement.

**General Instructions:** Please read the NOFO and this announcement in their entirety before preparing the application materials.

#### **A complete DDETFP GRF application package includes the following:**

- Individual SF 424 (available through [www.grants.gov](http://www.grants.gov))
- Completed Student File Information Sheet
- Personal statement: Narrative of relevant background and future goals
- Project experience: Narrative of relevant personal project specific experience
- Transcripts are required from all institutions in which a degree was obtained
  - Applicant must provide official transcripts from institutions
  - Applicant must certify that the electronic transcripts have not been modified
- Endorsement letter from the applicant’s Faculty Advisor regarding the applicant's qualifications for the project specific assignment
- Resume / Curriculum Vitae (Not to exceed two pages)
- Citizenship status
  - Non-U.S. citizens must provide a **valid** copy of current Student and Exchange Visitor Information System (SEVIS) Form I-20 issued by the educational institution attending or Form I-20 “Certificate of Eligibility for Nonimmigrant Status”, or Permanent Resident Card Form I-551 issued by the USCIS.

**Incorrect, missing documents/items, or incomplete applications are grounds for rejecting the application.**

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<sup>2</sup> Student and Exchange Visitor Information System (SEVIS) Form I-20 is a Certificate of Eligibility for Nonimmigrant Student Status for foreign exchange students who attend an educational program in the United States. Educational institutions issue Form I-20.

## EVALUATION CRITERIA

The DDETFP GRF applications will be reviewed by the sponsoring Program Office.

Fellowships will be awarded on the basis of merit. Merit includes (in descending order of importance with the top three criteria being equal in importance):

- Experience in research area identified in the proposed project announcement
- Unique qualifications for the proposed project described in the announcement
- Academic record: Class standing and grade point average
- Recommendation regarding the applicant's qualifications: Caliber of Faculty Advisor endorsement of applicant's qualifications related to project requirements in the announcement
- Potential for outstanding career in transportation: Demonstration of applicant's potential through personal statements summarizing long-range professional goals in transportation, including transportation work experience (if applicable).

## TENURE

- The length of assignment (“Period of Performance”) may range from 3 to 12 months depending on the project
- Student Designees are eligible for funding only during the months of **full-time** enrollment in graduate degree programs and during on-site research projects or internships with approved transportation agencies.
- During the tenure of the award, the Student Designee must maintain satisfactory academic performance as established by the IHE.

## FUNDING

The fellowship, if applicable, may cover tuition, fees, and/or program-related expenses. All student designees may not receive a full award (i.e. tuition, stipend, and travel to the Transportation Research Board (TRB) Annual Meeting). Fellowship awards will be based on selection for assignment and available funding.

The anticipated stipends for the DDETFP GRF are based on academic level and shall be calculated as follows:

|                | <u>Monthly Stipend</u> |
|----------------|------------------------|
| Master’s Level | Up to \$2,000          |
| Doctoral Level | Up to \$2,500          |

**Actual stipend level may vary based upon IHE formal policy and available funding.**

Additional stipend amounts may be added by the IHE or other sources.

- Student designees are advised that the stipend portion of the award is taxable<sup>3</sup>
- All program-related expenses must be supported by receipts/invoices
- All unused funds must be returned to the FHWA within 90 days of the conclusion of the agreement.

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<sup>3</sup> Refer to the Internal Revenue Service Publication 970 – Tax Benefits For Education

## TRANSPORTATION RESEARCH BOARD (TRB) ANNUAL MEETING

Student Designees will be provided a **one-time** expenditure (up to \$1,500) for travel to Washington, D.C. to attend the TRB Annual Meeting held January. **Attendance at the TRB Annual Meeting is mandatory. Failure to meet this requirement will result in loss of funding designated for this activity.**

The Student Designees are responsible for arranging travel and hotel accommodations following IHE travel policy to obtain the most cost-efficient rates. Registration is to be completed by logging on to [www.trb.org](http://www.trb.org). In addition to attendance at TRB, it is also required that students attend **ALL** DDETFP Research Showcase events. All students should plan to arrive by Sunday morning, and leave **after** the Networking Reception on Tuesday evening. If students have other commitments (i.e., presentations or poster sessions) during TRB they **must** notify the FHWA U&GP staff in advance to be excused from the Showcase session that conflicts with the event they would like to attend. **Faculty Advisors are responsible for students securing per diem for their trip.**

Student Designees may be requested, regardless of funding level, to submit an abstract of their research (or proposed research) for review and consideration for presentation at TRB. The abstract shall be submitted by the Student Designees (with a copy to their Faculty Advisor) to FHWA U&PG at [FHWA\\_UGP@dot.gov](mailto:FHWA_UGP@dot.gov) as indicated in the request. The FHWA U&GP will notify Student Designees if their abstract was selected for presentation. Student Designees selected for TRB presentation will be required to deliver a 10 to 15-minute presentation describing their research project at the TRB Annual Meeting.

## PROJECT REQUIREMENTS

- Student Designee shall prepare project specific assignment deliverables as indicated in the proposed project announcement.
- The results of all research will be the property of FHWA and a copy must be made available to FHWA and can be used on an unlimited, royalty-free basis.
- **GRF Student Designee shall prepare a thesis/dissertation or research paper for submission to the Program Office and the U&GP Program Manager.** The Program Office will work with the IHE to ensure a year-end report is submitted.

## PRIVACY ACT STATEMENT

The information is required under the authority of the Privacy Act of 1974, as amended and Title 49 U.S.C. 332(b) (3) (4) (5). Your request cannot be processed unless all required data is submitted. Disclosure of your race and ethnicity are optional. Refusal to furnish your race and/or ethnicity will not result in the denial of any right, benefit or privilege provided by law. Records maintained in the system are routinely used to determine eligibility/qualifications for fellowships, and for program evaluation and analysis purposes.

## U&GP CONTACT INFORMATION



Universities and Grants Programs  
Center for Transportation Workforce Development  
Federal Highway Administration  
1310 North Courthouse Road, Suite 300  
Arlington, VA 22201

Web Site:

[https://www.fhwa.dot.gov/innovativeprograms/centers/workforce\\_dev/](https://www.fhwa.dot.gov/innovativeprograms/centers/workforce_dev/)

E-mail: [FHWA\\_UGP@dot.gov](mailto:FHWA_UGP@dot.gov)

**DWIGHT DAVID EISENHOWER TRANSPORTATION FELLOWSHIP PROGRAM  
2020 GRANTS FOR RESEARCH FELLOWSHIP (GRF)**

**STUDENT FILE INFORMATION SHEET**

*Information **MUST** be typed and included as an attachment through [www.grants.gov](http://www.grants.gov)*

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                  |                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------------|
| <b>STUDENT NAME</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                  |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <i>First Name</i>                                                                | <i>Last Name</i> |
| <b>ANNOUNCEMENT PROJECT TITLE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <i>[NOTE: please indicate the project from those listed in the Announcement]</i> |                  |
| <div style="display: flex; justify-content: space-between;"> <div> <b>RACE (optional)</b><br/> <input type="checkbox"/> American Indian<br/> <input type="checkbox"/> Alaskan Native<br/> <input type="checkbox"/> Asian<br/> <input type="checkbox"/> African/African American<br/> <input type="checkbox"/> Native Hawaiian/Other Pacific Islander<br/> <input type="checkbox"/> White<br/> <input type="checkbox"/> Other </div> <div> <b>ETHNICITY (optional)</b><br/> <input type="checkbox"/> Hispanic or Latino<br/> <input type="checkbox"/> Not Hispanic or Latino<br/> <input type="checkbox"/> Hispanic or Latino in Puerto Rico<br/> <input type="checkbox"/> Not Hispanic or Latino in Puerto Rico </div> </div> |                                                                                  |                  |
| <b>Check one box and place X to indicate your status as of September 1<sup>st</sup> of the application year:</b><br><div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> Masters<br/> <input type="checkbox"/> 1<sup>st</sup> Year<br/> <input type="checkbox"/> 2<sup>nd</sup> Year </div> <div> <input type="checkbox"/> Doctoral<br/> <input type="checkbox"/> 1<sup>st</sup> Year<br/> <input type="checkbox"/> 2<sup>nd</sup> Year </div> <div> <input type="checkbox"/> 3<sup>rd</sup> Year<br/> <input type="checkbox"/> 4<sup>th</sup> Year </div> </div>                                                                                                                      |                                                                                  |                  |
| Institution of Higher Education (IHE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Applicant's Major (e.g. Civil Engineering, Urban Planning)                       |                  |
| Academic Department                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Applicant's Field of Study (e.g. Traffic Studies, Physical Planning)             |                  |
| <b><u>Faculty Advisor Name:</u></b><br><br>Title:<br>Telephone No.:<br>E-mail Address:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                  |                  |

**STUDENT APPLICATION CONTENT CHECKLIST**

- ☐ Complete this Student File Information Sheet
- ☐ SF 424 Individual
- ☐ Application Essays
  - ☐ **Personal Statement:** Should include relevant background and future goals. Please outline your educational and professional development plans as well as your career goals. Describe how your education will prepare you for a career in transportation (Limit 8000 characters).
  - ☐ **Project Experience:** Describe your unique qualifications for the project. Incorporate educational, personal and work experiences, and accomplishments that substantiate your qualifications. Please propose how you would obtain the identified project outcome. (Limit 8000 characters).
- ☐ Endorsement Letter from Faculty Advisor
- ☐ Current Resume
- ☐ Official Transcripts

|                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| I am applying for funding to support the following degree:                                                                                                                                                                                                                                                              | I have submitted the following official transcript(s) to complete my application:                                                                                                                                                        |
| <input type="checkbox"/> Master*                                                                                                                                                                                                                                                                                        | <input type="checkbox"/> Transcript from current institution<br><input type="checkbox"/> Transcript from institution that awarded bachelor's degree                                                                                      |
| <input type="checkbox"/> Doctorate*                                                                                                                                                                                                                                                                                     | <input type="checkbox"/> Transcript from current institution<br><input type="checkbox"/> Transcript from institution that awarded bachelor's degree<br><input type="checkbox"/> Transcript from institution that awarded master's degree |
| <i>*Individuals applying must possess a baccalaureate degree from an Institution of Higher Education (IHE) which must be accredited by a federally-recognized accrediting agency and must be located within the United States or its territories, both administratively as well as the campus the student attended.</i> |                                                                                                                                                                                                                                          |

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**NARRATIVE RESPONSE: PERSONAL STATEMENT**

*Application **MUST** be typed and included as attachment through [www.grants.gov](http://www.grants.gov)*

**Personal Statement**

Include relevant background and future goals to outline your educational and professional development plans as well as your career aspirations. Describe how your education will prepare you for a career in transportation.

(Limit 8000 characters)

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**NARRATIVE RESPONSE: PROJECT EXPERIENCE**

*Application **MUST** be typed and included as attachment through [www.grants.gov](http://www.grants.gov)*

**Project Experience**

Please propose how you would obtain the identified proposed project outcome. Describe your unique qualifications for the project. Incorporate educational, personal and work experiences, and accomplishments that substantiate your qualifications. (Limit 8000 characters)

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**PROPOSED PROJECT ASSIGNMENT ANNOUNCEMENTS**

NOTE: For the *Student File Information Sheet* and application narratives, please **include the title** of the Proposed Project Assignment for which you are applying from the list below.

| <b>Project</b> | <b>Title</b>                                                                                                                                                                                         |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A              | <a href="#"><u>Riverine Nature-Based Solutions For Highway Resilience</u></a>                                                                                                                        |
| B              | <a href="#"><u>From School to Work: A Study of Transportation Education and Career Readiness</u></a>                                                                                                 |
| C              | <a href="#"><u>Artificial Intelligence (AI) Application for Transportation System Operations and Management (TSMO) and Cooperative Automation Research Mobility Applications (CARMA) Studies</u></a> |
| D              | <a href="#"><u>Steel Bridge Bearing Stiffener Details to Avoid Constraint-induced Fractures</u></a>                                                                                                  |
| E              | <a href="#"><u>Developing a Tool for Analysis of Risks in Percent Within Limits Acceptance Plans and Specifications</u></a>                                                                          |

**PROJECT A: RIVERINE NATURE-BASED SOLUTIONS FOR HIGHWAY RESILIENCE**

SPONSOR: FHWA, Office of Infrastructure  
LENGTH OF ASSIGNMENT: up to 12 months  
DISCIPLINES: Ecology (River), Environmental Science, Natural Resources,  
Fluvial Geomorphology  
DEGREE SUPPORTED: MS or Ph.D. Candidate

**DESCRIPTION OF ASSIGNMENT:**

Careful assessment and consideration of river processes is paramount for the safe, resilient, and ecologically sensitive design of roads, bridges and culverts in riverine environments. Structures that do not account for the natural movements of waterways, the sediment and wood material they carry, and the aquatic and terrestrial organisms that call them home may fail to meet one or more of these objectives. States including Colorado and Vermont relate that incorporating natural river processes and features in project planning, design, and maintenance activities leads to increased infrastructure flood resilience and may result in lower lifecycle maintenance costs and improved natural habitat and recreation opportunities.

To better assist States with these critical considerations, FHWA initiated the Rivers and Roads (R&R) Connection Program in 2020 to develop and deploy visually engaging, intuitive training and river assessment “toolkits” to a broad spectrum of transportation professionals that work on projects within river and stream corridors. Through R&R, FHWA intends to:

- 1) Demonstrate the importance and practical application of river processes and features for transportation projects to a national audience of Federal, State, and Local transportation agency professionals;
- 2) Exemplify how transportation projects in river environments can successfully meet multiple design objectives including public safety, preservation/enhancement of natural ecosystem functions, and resilience;
- 3) Emphasize the importance of clear communication and collaboration among DOT, regulatory, and resource agency staff working in transportation project teams; and
- 4) Increase interest and excitement in natural sciences and engineering at all levels of education.

FHWA recognizes that nature-based solutions (NBS) can be important components of infrastructure projects. Recently, the FHWA Office of the Natural Environment completed a multi-faceted NBS

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development and deployment effort focusing on coastal highway resilience. R&R Connection Program developers recognize that a parallel effort focused on roads in river environments is necessary, although it has yet to be planned and initiated. Some State agencies lead efforts to incorporate natural river processes and solutions in transportation project development and delivery. Vermont provides an example of interagency collaboration to this end.

**The goal of this project** is to support the NBS effort for roads in river environments by conducting research in this area and establishing a strategy and framework (i.e. roadmap) for a FHWA-led development and deployment effort. Results of this and future NBS efforts will target Federal, State, and Local transportation professionals and their project partners in agencies responsible for natural resources management and project permitting. Results of this effort should identify transportation agency missions, goals, and constraints (as established by transportation laws and policies) and best/innovative practices for leveraging inter-agency and inter-disciplinary collaborations to develop and implement NBS in transportation projects.

It is anticipated that the selectee for this effort will work remotely from their current location and will collaborate with the technical panel through virtual meetings. However, if practical, the selectee may be afforded the opportunity to meet with collaborators and stakeholders in the FHWA headquarters office in Washington, DC.

**References:**

- FHWA's Nature-Based Solutions for Coastal Highway Resilience Resources:  
[https://www.fhwa.dot.gov/environment/sustainability/resilience/ongoing\\_and\\_current\\_research/green\\_infrastructure/](https://www.fhwa.dot.gov/environment/sustainability/resilience/ongoing_and_current_research/green_infrastructure/)
- Vermont Department of Environmental Conservation Watershed and River Resources:  
<https://dec.vermont.gov/watershed/rivers>

**ACADEMIC CREDITS:** To be determined

**OUTPUTS/PRODUCTS:**

Project outcomes and deliverables will be negotiated with the selectee during kickoff. Likely **deliverables** of this project may include:

1. A white paper that: 1) defines nature-based solutions for riverine applications including the potential benefits of such projects to transportation and resource agencies, 2) describes the current state of practice regarding the use of natural and nature-based features for road and river intersections, 3) provides an overview of implementation challenges and knowledge gaps, and 4) presents a case study of inter-agency collaboration to use NBS on a transportation or mitigation project.
2. A framework or strategy for further developing and deploying NBS practices and technologies to transportation and partner agencies.
3. A technical article suitable for a transportation focused publication such as Public Roads Magazine or another journal.
4. A presentation and accompanying brief to present to potential stakeholders including Federal, State, and Local transportation and resource agencies. (The selectee may be responsible for delivering at least two briefings.)

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**PROJECT B: FROM SCHOOL TO WORK: A STUDY OF TRANSPORTATION EDUCATION  
AND CAREER READINESS**

|                       |                                                                                                                                          |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| SPONSOR:              | FHWA, Office of Innovative Program Delivery                                                                                              |
| LENGTH OF ASSIGNMENT: | 12 months                                                                                                                                |
| DISCIPLINES:          | Education, eLearning, Education Specialist, Curriculum<br>Development, Vocational Education, Technical Training, Education<br>Leadership |
| DEGREE SUPPORTED:     | MS or Ph.D. Candidate                                                                                                                    |

**DESCRIPTION OF ASSIGNMENT:**

The FHWA Office of Innovative Program Delivery (OIPD) improves transportation performance by driving innovation into action through partnerships, technology deployment and capacity building. Every Day Counts (EDC) is a State-based model that deploys proven transportation innovations to shorten the project delivery process, enhance roadway safety, reduce traffic congestion, and integrate automation. To better prepare the emerging workforce, OIPD will launch the EDC-Education Connection (EDC-EC) to bridge the state-of-the-art and state-of-the-practice. The EDC-EC will expose the emerging workforce to current innovative tools and practices in use and introduce transportation innovation to new audiences. This is in direct support of the OIPD vision to transform transportation through innovation.

Transportation agencies are increasingly incorporating innovation into transportation projects. FHWA understands the challenges facing academia and seeks to provide relief and assistance. FHWA recognizes that development of materials is not just the answer, so the development and deployment of the EDC-EC engages the education community from start to finish. FHWA intends the EDC-EC to support curriculum renewal at the higher education and secondary education levels. Through the EDC-EC, FHWA intends to:

- 1) Employ an open and inclusive planning process in the development and deployment of the Education Connection.
- 2) Direct input and participation of academia, industry and thought leaders is a critical component for the development of a sustainable program.
- 3) Engage the Transportation Innovation Education Stakeholder Working Group created to support the external input process.
- 4) Model, test and refine new approaches and illustrate use of education aids to spark interest in transportation careers.
- 5) Demonstrate curriculum enhancement opportunities for various audiences.
- 6) Foster opportunities to incorporate transportation innovation in education and respond to changing circumstances.
- 7) Increase opportunities for EDC-EC engagement to foster program sustainability.

Transportation education curriculum must evolve to meet the changing needs of students, institutions, and employers. Curriculum must change to reflect new needs, new audiences and new approaches to learning. The EDC-EC will offer education aids that learning institutions can incorporate into existing curriculum to ensure higher education students are aware of current innovative tools and practices and secondary education institutions incorporate to spark interest in transportation careers.

Transportation education must evolve to meet the changing needs of students, institutions, and employers. Curriculum must change to reflect current needs, modern audiences and unique approaches to learning. The EDC-EC will offer education aids that learning institutions can incorporate into existing curriculum to ensure higher education students are aware of current innovative tools and practices and secondary education institutions incorporate to spark interest in transportation careers.

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**The goal of this project** is to incorporate emerging technologies into education; foster career readiness; creating transportation awareness. To accomplish this, the fellow will: 1) conduct research in this area, 2) establish a framework to support industry acceptance, 3) develop alternative solutions to incorporate transportation innovation into education, 4) communicate with stakeholders to facilitate discussion and collaboration; and 5) identify tools and strategies to enhance the development and deployment of the EDC-EC.

It is anticipated that the selectee for this effort will work remotely from their current location and will collaborate with the technical panel through virtual meetings. However, if practical, the selectee may be afforded the opportunity to meet with collaborators and stakeholders in the FHWA headquarters office in Washington, DC.

**ACADEMIC CREDITS:** To be determined.

**OUTPUTS/PRODUCTS:**

The deliverables of this project may include:

1. A white paper that: 1) explores the incorporation of transportation innovation into education at the higher education and secondary education level, 2) describes the current state of practice, 3) provides an overview of implementation challenges and knowledge gaps, 4) demonstrates framework for evaluation materials, and 5) illustrates a case study of curriculum enhancement at multiple levels and various types of institutions.
2. Materials assessment and framework for evaluating focused transportation education instructional materials for higher education and secondary audiences.
3. Development and demonstration of Material Application Guides for the higher education and secondary education practitioner (i.e. train-the-trainer, EDC-EC Toolkit).
4. A technical article suitable for the education (i.e. The Chronicles of Higher Education) and transportation arena (i.e. Public Roads Magazine) industries.
5. A presentation and accompanying brief for presentation to stakeholders and at education and transportation conferences to create program awareness and demonstrate use.

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**PROJECT C: ARTIFICIAL INTELLIGENCE (AI) APPLICATION FOR TRANSPORTATION SYSTEM OPERATIONS AND MANAGEMENT (TSMO) AND COOPERATIVE AUTOMATION RESEARCH MOBILITY APPLICATIONS (CARMA) STUDIES**

SPONSOR: FHWA, Office of Operations Research and Development  
LENGTH OF ASSIGNMENT: 12 months  
DISCIPLINES: Transportation Engineering, Computer Science  
DEGREE SUPPORTED: Ph.D. Candidate

**DESCRIPTION OF ASSIGNMENT:**

The Office of Operations Research and Development (HRDO) performs transportation operations research and development (R&D) for the Federal Highway Administration (FHWA). On-site R&D is conducted at the Saxton Transportation Operations Laboratory (i.e., the Saxton Lab), established at Turner-Fairbank Highway Research Center (TFHRC). HRDO conducts operations R&D based upon a national perspective of the transportation needs of the United States.

With the fast development of Artificial Intelligence (AI) technology and Cooperation Automation technology, HRDO is the research efforts to apply these technologies to improve transportation system. This assignment will charge the candidates to conduct research on AI applications for TSMO and CARMA studies.

The selectee for this assignment is expected to be on-site at the TFHRC in McLean, VA.

**The goal of this project** is to conduct hardware in the loop (HIL) simulation study for the improvement of intersection signal timing, with emphasis on the adaptive signal timing. One major technical issue in signal timing has been the real-time traffic data collection and analysis, especially the intersection turning movement data collection.

The simulation study would make full use of the data from the advanced data collection technologies developed in TFHRC, including inductive loop signal reidentification data, and the CARMA data. The data analysis using AI deep learning to improve adaptive signal timing performance is expected.

**ACADEMIC CREDITS:** To be determined.

**OUTPUTS/PRODUCTS:**

The deliverables of this project may include:

1. A technical report on HIL study findings, including the simulation codes and simulation results.
2. A case study using the developed simulation model and the field data.
3. An article of the research result, which may be published in the Transportation Research Board (TRB) Meeting proceedings, and/or Transportation Research Part C.

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**PROJECT D: STEEL BRIDGE BEARING STIFFENER DETAILS TO AVOID CONSTRAINT-INDUCED FRACTURES**

|                       |                                                         |
|-----------------------|---------------------------------------------------------|
| SPONSOR:              | FHWA, Office of Infrastructure Research and Development |
| LENGTH OF ASSIGNMENT: | 12 months                                               |
| DISCIPLINES:          | Civil - Structural Engineering                          |
| DEGREE SUPPORTED:     | MS or Ph.D. Candidate                                   |

**DESCRIPTION OF ASSIGNMENT:**

There have been occasional steel bridge fractures attributed to constraint-induced fracture (CIF) when three welded plate elements on mutually orthogonal planes intersect at a common point. At the common point, the steel is subjected to a hydrostatic state of stress because of the constraint from the various plate elements prevent yielding through the thickness of at least one of the plates. In this stress state, the maximum principle stress can exceed that of the tensile strength of the material, resulting in a brittle fracture. Often, the Hoan Bridge fracture is used as an example of this behavior (<https://www.fhwa.dot.gov/bridge/steel/010710.cfm>). This particular bridge fracture originated from the intersection of a gusset plate (for attachment of lateral bracing), a connection plate, and a girder web. The constraint was attributed to welds attaching these plate elements either coming very close to each other, or even intersecting. As a result of this fracture, research based on limited finite element modeling resulted in a recommendation that welds not come within 0.25-inches of each other to prevent constraint-induced fracture (Mahmoud, Connor, Fisher, 2005). While the Hoan Bridge fracture turned attention to this particular detail of a gusset plate, other bridge owners have experienced brittle fractures at bearing stiffener details at interior piers of girders. This has been hypothesized to be constraint-induced fracture, but it has not been proven as it was in the Hoan Bridge fracture.

There is a need to determine if fractures at interior bearing stiffener details are related to constraint-induced fracture. It is unclear if these bearing stiffener fractures are a function of welds almost touching, or if the behavior is more complex. There is a need to find out the relationship of these fractures with the thickness proportions of the plates (girder web, bearing stiffener, and girder flange), and with the particular loading at this detail. Note that the top girder flange at an interior pier is under tension, and this is typically where flange and bearing stiffener plates are their thickest. It has also been reported that brittle fractures at these locations have only occurred when the bearing stiffener is not welded to the top girder flange, therefore out-of-plane distortion may also play a role in this failure mode. The goal of this project is to develop and conduct a nonlinear finite element, parametric modeling study to characterize the triaxiality of stresses at this detail to see if these effects can be decomposed and related to constraint or other causes.

The selectee may be on-site at the Turner-Fairbank Highway Research Center to interact with FHWA staff and use our finite element software (Abaqus), or they may also be off-site using a different software package.

\*Mahmoud, H. N., R. J. Connor, and J. W. Fisher. 2005. "Finite Element Investigation of the Fracture Potential of Highly Constrained Details," Journal of Computer-aided Civil and Infrastructure Engineering. Blackwell Publishing, Inc., Malden, MA, Vol. 20.

**ACADEMIC CREDITS:** To be determined

**OUTPUTS/PRODUCTS:**

The **deliverable** of this project is to develop design or detailing recommendations for steel bridges to prevent CIF at bearing stiffeners at interior pier locations of steel bridges.

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The student is expected to efficiently perform refined finite element analysis and extract the necessary results. Further, report their analysis, findings, and conclusions, preferably in a peer-reviewed journal paper. The conclusions would support recommendations for detailing guidance for bearing stiffeners to prevent constraint-induced fracture in steel bridges.

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**PROJECT E: DEVELOPING A TOOL FOR ANALYSIS OF RISKS IN PERCENT WITHIN LIMITS ACCEPTANCE PLANS AND SPECIFICATIONS**

SPONSOR: FHWA, Resource Center  
LENGTH OF ASSIGNMENT: 9 - 12 months  
DISCIPLINES: Civil Engineering, Data Science, Statistics, Computer Science  
DEGREE SUPPORTED: MS or Ph.D. Candidate

**DESCRIPTION OF ASSIGNMENT:**

Statistically based Quality Assurance (QA) specifications and acceptance procedures have been implemented without fully understanding the risks involved to both the State Departments of Transportation (agency) and the contractors. The two types of risks discussed when developing QA specifications are the seller's (contractor) risk and the buyer's (agency) risk. The acceptable level of seller's and buyer's risks has been a subjective decision that can vary from agency to agency. A properly developed QA acceptance plan takes these risks into consideration in a manner that is fair to both the agency and contractor. A limited number of agencies have developed and evaluated the risk levels associated with their acceptance plans due to the need for an available tool.

The number of samples used by an agency for a pay lot may need to be modified based on an analysis of risks. An attempt should be made to balance the risk between the contractor and agency while holding the overall risk to both at a reasonable level. If the risks cannot be held to a reasonable level for both, the agency or contractor may have to accept a disproportionate level of risk.

For Percent Within Limits (PWL) or Percent Defective (PD) acceptance plans, computer simulation is almost always used to develop seller's and buyer's risks, Operating Characteristic (OC) curves, and Expected Pay (EP) curves. The OCPLLOT computer program, developed as a part of FHWA Demonstration Project No. 89, was one of the first programs created to develop OC and EP curves, run simulations on the effect of the variability of the individual lot pay factors on the final pay factor determination, and create histograms. The software was distributed by report FHWA-SA-96-026, "Quality Assurance Software for the Personal Computer". Copies of the source code for OCPLLOT written using the BASIC programming language as well as an executable version of the OCPLLOT computer program are available from FHWA.

A computer program, SpecRisk, developed through a FHWA contract to conduct similar analysis was completed in 2008. The program has since lived beyond its useful life and needs replacement since it does not run on computers using the more current Windows operating systems. Copies of the software and user manual are available from FHWA; however FHWA does not have the source code for the SpecRisk software.

In addition, a computer program, PWL Risk, was developed internally by FHWA staff in 2005 using Microsoft Excel with visual basic programming.

The following related research on the subject of PWL, specification limits, and the development of payment provisions were conducted and published:

- "Measurement and Specification of Construction Quality" FHWA-RD-98-077
- "Optimal Procedures for Quality Assurance," FHWA-RD-02-095
- "Evaluation of Procedures for Quality Assurance Specifications," FHWA-HRT-04-046
- "Evaluation of State Quality Assurance Program Effectiveness", FHWA-HRT-12-027

**The goal of this project** is to develop a software tool and a user's manual to provide a tool to:

1. Analyze and develop specification and acceptance limits
2. Analyze and develop PWL and PD specifications and acceptance plans

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3. Analyze and develop corresponding payment provisions, and
4. Determine the seller, buyer, and expected payment risks associated with the acceptance plan for all levels of quality and payment.

The software tool must be constructed using a widely-used and FHWA-approved software platform (e.g. Microsoft Excel, etc).

It is anticipated that the selectee for this effort will work remotely from their current location and will collaborate with the technical panel through virtual meetings.

**ACADEMIC CREDITS:** To be determined

**OUTPUTS/PRODUCTS:**

The deliverables of this project may include:

1. Development and testing of software to perform risk analysis of quality assurance specifications.
2. Draft user's manual of the software.
3. Source code for the software.

These efforts will be documented in at least one technical paper suitable for publication in a technical journal. The student would prepare and deliver a presentation to FHWA staff to discuss approach and results of this project. This work will be useful for FHWA to provide technical assistance to agencies when constructing or revising their quality assurance specifications.