

117TH CONGRESS
1ST SESSION

H. R. 2197

To encourage the research and use of innovative materials and associated techniques in the construction and preservation of the domestic transportation and water infrastructure system, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

MARCH 26, 2021

Mr. CICILLINE (for himself, Mr. LARSEN of Washington, and Mr. RODNEY DAVIS of Illinois) introduced the following bill; which was referred to the Committee on Transportation and Infrastructure, and in addition to the Committees on Science, Space, and Technology, and Energy and Commerce, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

A BILL

To encourage the research and use of innovative materials and associated techniques in the construction and preservation of the domestic transportation and water infrastructure system, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Innovative Materials
5 for America’s Growth and Infrastructure Newly Expanded
6 Act of 2021” or the “IMAGINE Act”.

1 **SEC. 2. PURPOSES.**

2 The purposes of this Act are—

3 (1) to encourage the research and use of inno-
4 vative materials, in concert with traditional mate-
5 rials, and associated techniques in the construction
6 and preservation of the domestic infrastructure net-
7 work;

8 (2) to accelerate the deployment and extend the
9 service life, improve the performance, and reduce the
10 cost of infrastructure projects; and

11 (3) to improve the economy, resilience, main-
12 tainability, sustainability, and safety of the domestic
13 infrastructure network.

14 **SEC. 3. INTERAGENCY INNOVATIVE MATERIALS STAND-**
15 **ARDS TASK FORCE.**

16 (a) DEFINITION OF INNOVATIVE MATERIAL.—In this
17 section, the term “innovative material”, with respect to
18 an infrastructure project, includes a material, or a com-
19 bination or process for use of materials, that, as deter-
20 mined by the appropriate Secretary or agency head—

21 (1) enhances the overall service life, sustain-
22 ability, and resiliency of the project; or

23 (2) provides ancillary benefits relative to widely
24 adopted state of practice technologies.

25 (b) PURPOSES.—The purposes of this section are—

1 (1) to encourage the research, design, and use
2 of innovative materials, in concert with traditional
3 materials, and associated techniques in the construc-
4 tion and preservation of the domestic infrastructure
5 network;

6 (2) to accelerate the deployment, extend the
7 service life, improve the performance, and reduce the
8 cost of infrastructure projects; and

9 (3) to improve the economy, resilience, main-
10 tainability, sustainability, and safety of the domestic
11 infrastructure network.

12 (c) ESTABLISHMENT.—

13 (1) IN GENERAL.—Not later than 180 days
14 after the date of enactment of this Act, the Director
15 of the National Institute of Standards and Tech-
16 nology shall establish an Interagency Innovative Ma-
17 terials Standards Task Force (referred to in this
18 section as the “Task Force”) composed of the heads
19 of Federal agencies responsible for significant civil
20 infrastructure projects, including the Administrator
21 of the Federal Highway Administration.

22 (2) CHAIRPERSON.—The Director of the Na-
23 tional Institute of Standards and Technology shall
24 serve as Chairperson of the Task Force.

1 (d) DUTIES.—The Task Force shall coordinate and
2 improve, with respect to infrastructure construction, retro-
3 fitting, rehabilitation, and other improvements—

4 (1) Federal testing standards;

5 (2) Federal design and use guidelines;

6 (3) Federal regulations; and

7 (4) other applicable standards and performance
8 and sustainability metrics.

9 (e) REPORT.—

10 (1) IN GENERAL.—Not later than 18 months
11 after the date of enactment of this Act, the Task
12 Force shall conduct, and submit to the appropriate
13 committees of Congress a report that describes the
14 results of, a study—

15 (A) to assess the standards and perform-
16 ance metrics for the use of innovative materials
17 in infrastructure projects;

18 (B) to identify any barriers, regulatory or
19 otherwise, relating to the standards described in
20 subparagraph (A) that preclude the use of cer-
21 tain products or associated techniques; and

22 (C) to identify opportunities for the devel-
23 opment of standardized designs and materials
24 genome approaches that design and use innova-
25 tive materials to reduce costs, improve perform-

1 ance and sustainability, and extend the service
2 life of infrastructure assets.

3 (2) REPORT.—The report under paragraph (1)
4 shall—

5 (A) identify any non-Federal entities or
6 other organizations, including the American As-
7 sociation of State Highway and Transportation
8 Officials, that develop relevant standards; and

9 (B) outline a strategy to improve coordina-
10 tion and information sharing between the enti-
11 ties described in subparagraph (A) and any rel-
12 evant Federal agencies.

13 (f) IMPROVED COORDINATION.—Not later than 2
14 years after the date of enactment of this Act, the Task
15 Force shall collaborate with any non-Federal entity identi-
16 fied under subsection (e)(2)(A)—

17 (1) to identify and carry out appropriate re-
18 search, testing methods, and processes relating to
19 the development and use of innovative materials;

20 (2) to develop new methods and processes relat-
21 ing to the development and use of innovative mate-
22 rials, as the applicable agency head determines to be
23 necessary;

24 (3) to contribute to the development of stand-
25 ards, performance metrics, and guidelines for the

1 use of innovative materials and approaches in civil
2 infrastructure projects;

3 (4) to develop a plan for addressing potential
4 barriers, regulatory or otherwise, identified in sub-
5 section (e)(1)(B); and

6 (5) to develop a plan for the development of
7 standardized designs that use innovative materials to
8 reduce costs, improve performance and sustain-
9 ability, and extend the service life of infrastructure
10 assets.

11 **SEC. 4. INNOVATIVE MATERIAL INNOVATION HUBS.**

12 (a) DEFINITIONS.—In this section:

13 (1) HUB.—The term “Hub” means an Innova-
14 tive Material Innovation Hub established under this
15 section.

16 (2) INNOVATIVE MATERIAL.—The term “inno-
17 vative material”, with respect to an infrastructure
18 project, includes a material, or a combination or
19 process for use of materials, that, as determined by
20 the Secretary—

21 (A) enhances the overall service life, sus-
22 tainability, and resiliency of the project; or

23 (B) provides ancillary benefits relative to
24 widely adopted state of practice technologies.

1 (3) QUALIFYING ENTITY.—The term “quali-
2 fying entity” means—

3 (A) an institution of higher education (as
4 defined in section 101(a) of the Higher Edu-
5 cation Act of 1965 (20 U.S.C. 1001(a)));

6 (B) an appropriate Federal or State entity,
7 including a federally-funded research and devel-
8 opment center of the Department of Transpor-
9 tation;

10 (C) a university transportation center
11 under section 5505 of title 49, United States
12 Code; and

13 (D) a research and development entity in
14 existence on the date of enactment of this Act
15 focused on innovative materials that the Sec-
16 retary determines to be similar in scope and in-
17 tent to a Hub.

18 (4) SECRETARY.—The term “Secretary” means
19 the Secretary of Transportation.

20 (b) ESTABLISHMENT.—

21 (1) IN GENERAL.—The Secretary shall carry
22 out a program to enhance the development of inno-
23 vative materials in the United States by making
24 awards to consortia for establishing and operating
25 Innovative Material Innovation Hubs to conduct and

1 support multidisciplinary, collaborative research, de-
2 velopment, demonstration, standardized design de-
3 velopment, and commercial application of innovative
4 materials.

5 (2) COORDINATION.—The Secretary shall en-
6 sure the coordination of, and avoid duplication of,
7 the activities of each Hub with the activities of—

8 (A) other research entities of the Depart-
9 ment of Transportation, including the Federal
10 Highway Administration; and

11 (B) research entities of other Federal
12 agencies, as appropriate.

13 (c) COMPETITIVE SELECTION PROCESS.—

14 (1) ELIGIBILITY.—To be eligible to receive an
15 award for the establishment and operation of a Hub
16 under subsection (b)(1), a consortium shall—

17 (A) be composed of not fewer than 2 quali-
18 fying entities;

19 (B) operate subject to a binding agree-
20 ment, entered into by each member of the con-
21 sortium, that documents—

22 (i) the proposed partnership agree-
23 ment, including the governance and man-
24 agement structure of the Hub;

(ii) measures the consortium will undertake to enable cost-effective implementation of activities under the program described in subsection (b)(1); and

(iii) a proposed budget, including financial contributions from non-Federal sources; and

(C) operate as a nonprofit organization.

(2) APPLICATION.—

(A) IN GENERAL.—A consortium seeking to establish and operate a Hub under subsection (b)(1) shall submit to the Secretary an application at such time, in such manner, and containing such information as the Secretary may require, including a detailed description of—

(i) each element of the consortium agreement required under paragraph (1)(B); and

(ii) any existing facilities the consortium intends to use for Hub activities.

(B) REQUIREMENT.—If the consortium members will not be located at 1 centralized location, the application under subparagraph (A) shall include a communications plan that en-

1 sures close coordination and integration of Hub
2 activities.

3 (3) SELECTION.—

4 (A) IN GENERAL.—The Secretary shall se-
5 lect consortia for awards for the establishment
6 and operation of Hubs through a competitive
7 selection process.

8 (B) CONSIDERATIONS.—In selecting con-
9 sortia under subparagraph (A), the Secretary
10 shall consider—

11 (i) any existing facilities a consortium
12 has identified to be used for Hub activities;

13 (ii) maintaining geographic diversity
14 in locations of selected Hubs;

15 (iii) the demonstrated ability of the
16 recipient to conduct and support multi-
17 disciplinary, collaborative research, devel-
18 opment, demonstration, standardized de-
19 sign development, and commercial applica-
20 tion of innovative materials;

21 (iv) the demonstrated research, tech-
22 nology transfer, and education resources
23 available to the recipient to carry out this
24 section;

1 (v) the ability of the recipient to pro-
2 vide leadership in solving immediate and
3 long-range national and regional transpor-
4 tation problems related to innovative mate-
5 rials;

6 (vi) the demonstrated ability of the re-
7 cipient to disseminate results and spur the
8 implementation of transportation research
9 and education programs through national
10 or statewide continuing education pro-
11 grams;

12 (vii) the demonstrated commitment of
13 the recipient to the use of peer review prin-
14 ciples and other research best practices in
15 the selection, management, and dissemina-
16 tion of research projects;

17 (viii) the performance metrics to be
18 used in assessing the performance of the
19 recipient in meeting the stated research,
20 technology transfer, education, and out-
21 reach goals; and

22 (ix) the ability of the recipient to im-
23 plement the proposed program in a cost-ef-
24 ficient manner, including through cost

1 sharing and overall reduced overhead, fa-
2 cilities, and administrative costs.

3 (4) TRANSPARENCY.—

4 (A) IN GENERAL.—The Secretary shall
5 provide to each applicant, on request, any mate-
6 rials, including copies of reviews (with any in-
7 formation that would identify a reviewer re-
8 dacted), used in the evaluation process of the
9 proposal of the applicant.

10 (B) REPORTS.—The Secretary shall sub-
11 mit to the Committee on Transportation and
12 Infrastructure of the House of Representatives
13 and the Committee on Environment and Public
14 Works of the Senate a report that describes the
15 overall review process under paragraph (2),
16 given the considerations under paragraph
17 (3)(B), that includes—

18 (i) specific criteria of evaluation used
19 in the review;

20 (ii) descriptions of the review process;
21 and

22 (iii) explanations of the selected
23 awards.

24 (d) AUTHORIZATION OF APPROPRIATIONS.—

1 (1) IN GENERAL.—There are authorized to be
2 appropriated to carry out this section such sums as
3 are necessary.

4 (2) AVAILABILITY.—Amounts made available to
5 carry out this section shall remain available for a pe-
6 riod of 3 years after the last day of the fiscal year
7 in which the amounts were made available.

8 (e) HUB OPERATIONS.—

9 (1) IN GENERAL.—Each Hub shall conduct, or
10 provide for, multidisciplinary, collaborative research,
11 development, demonstration, and commercial appli-
12 cation of innovative materials.

13 (2) ACTIVITIES.—Each Hub shall—

14 (A) encourage collaboration and commu-
15 nication among the member qualifying entities
16 of the consortium, as described in subsection
17 (c)(1), and awardees;

18 (B) develop and publish proposed plans
19 and programs on a publicly accessible website;

20 (C) submit to the Department of Trans-
21 portation an annual report summarizing the ac-
22 tivities of the Hub, including information—

23 (i) detailing organizational expendi-
24 tures; and

1 (ii) describing each project under-
2 taken by the Hub, as it relates to con-
3 ducting and supporting multidisciplinary,
4 collaborative research, development, dem-
5 onstration, standardized design develop-
6 ment, and commercial application of inno-
7 vative materials; and

8 (D) monitor project implementation and
9 coordination.

10 (3) CONFLICTS OF INTEREST.—Each Hub shall
11 maintain conflict of interest procedures, consistent
12 with the conflict of interest procedures of the De-
13 partment of Transportation.

14 (4) PROHIBITION ON CONSTRUCTION AND REN-
15 OVATION.—

16 (A) IN GENERAL.—No funds provided
17 under this section may be used for construction
18 or renovation of new buildings, test beds, or ad-
19 ditional facilities for Hubs.

20 (B) NON-FEDERAL SHARE.—Construction
21 of new buildings or facilities shall not be consid-
22 ered as part of the non-Federal share of a Hub
23 cost-sharing agreement.

1 (f) APPLICABILITY.—The Secretary shall administer
2 this section in accordance with section 330 of title 49,
3 United States Code.

4 **SEC. 5. TURNER-FAIRBANK HIGHWAY RESEARCH CENTER.**

5 Section 503(b)(7) of title 23, United States Code, is
6 amended by adding at the end the following:

7 “(C) INNOVATIVE MATERIALS.—

8 “(i) DEFINITION OF INNOVATIVE MA-
9 TERIAL.—In this subparagraph, the term
10 ‘innovative material’, with respect to an in-
11 frastructure project, includes high perform-
12 ance asphalt mixtures and concrete formu-
13 lations, geosynthetic materials, advanced
14 insulating materials, advanced alloys and
15 metals, reinforced polymer composites, ad-
16 vanced polymers, nanocellulose and wood-
17 based composites, coatings, highly func-
18 tional adhesives, or other corrosion preven-
19 tion methods used in conjunction with
20 those materials, and any other material or
21 aggregate materials, as determined by the
22 appropriate agency or department head.

23 “(ii) COLLABORATION WITH STATES
24 AND TRIBES.—The Secretary shall expand
25 the capacity of the Turner-Fairbank High-

1 way Research Center to collaborate with
2 relevant State and Tribal agencies—

3 “(I) with respect to the use of in-
4 novative materials in construction
5 projects carried out by the State and
6 Tribal agencies; and

7 “(II) to understand and iden-
8 tify—

9 “(aa) the needs of the State
10 and Tribal agencies; and

11 “(bb) innovative materials
12 that may be further researched,
13 developed, and used to meet
14 those needs.

15 “(iii) ACTIVITIES.—The collaboration
16 described in clause (ii) may include—

17 “(I) the development of new
18 training for State and Tribal agencies;
19 and

20 “(II) the expansion of technical
21 training that involves State or Tribal
22 departments of transportation in the
23 development of new construction de-
24 signs for innovative materials at the

1 Turner-Fairbank Highway Research
2 Center.

3 “(iv) PRIORITY RESEARCH.—The Tur-
4 ner-Fairbank Highway Research Center
5 shall prioritize research relating to—

6 “(I) the use of innovative mate-
7 rials in—

8 “(aa) bridges with a span
9 equal to or greater than 50 feet;

10 “(bb) highway reconstruc-
11 tion and rehabilitation; and

12 “(cc) rural road infrastruc-
13 ture;

14 “(II) the development of stand-
15 ardized designs using innovative mate-
16 rials; and

17 “(III) coastal resiliency.

18 “(v) AUTHORIZATION OF APPROPRIA-
19 TIONS.—There is authorized to be appro-
20 priated to carry out this subparagraph
21 \$8,000,000 for each of fiscal years 2022
22 through 2026.”.

1 **SEC. 6. INNOVATIVE BRIDGE PROGRAM.**

2 (a) DEFINITION OF ADMINISTRATOR.—In this sec-
3 tion, the term “Administrator” means the Administrator
4 of the Federal Highway Administration.

5 (b) ESTABLISHMENT.—The Administrator shall es-
6 tablish a grant program, to be known as the “Innovative
7 Bridge Program”, to provide grants to State departments
8 of transportation, Tribal governments, public toll authori-
9 ties, and units of local government for—

10 (1) coastal or rural infrastructure bridge
11 projects; and

12 (2) value engineering projects under subsection
13 (g).

14 (c) APPLICATIONS.—To be eligible to receive a grant
15 under subsection (b), a State department of transpor-
16 tation, a unit of Tribal government, a public toll authority,
17 or a unit of local government shall submit to the Adminis-
18 trator an application at such time, in such manner, and
19 containing such information as the Administrator may re-
20 quire.

21 (d) ELIGIBLE PROJECTS.—To be eligible to receive
22 a grant under this section, a coastal or rural infrastruc-
23 ture bridge project or a value engineering project shall—

24 (1) be for the purpose of construction, preserva-
25 tion, rehabilitation, or reconstruction of a bridge
26 with a span equal to or greater than 50 feet;

1 (2) be carried out in a manner so as to reduce
2 traffic impact;

3 (3) include multimodal transportation compo-
4 nents, such as bicycle and pedestrian paths; and

5 (4) use innovative materials that—

6 (A) are resistant to corrosion; and

7 (B) extend the service life of the bridge.

8 (e) PREFERENCES.—In providing grants under this
9 section, the Administrator shall give preference to pro-
10 posed projects that—

11 (1) use materials that are domestically pro-
12 duced and sourced;

13 (2) use nontraditional production techniques,
14 such as factory prefabrication;

15 (3) include multimodal transportation compo-
16 nents, such as bicycle and pedestrian paths; and

17 (4) retrofit a bridge.

18 (f) SPECIAL CONSIDERATION FOR AT-RISK AREAS.—

19 In providing grants under this section, the Administrator
20 shall give special consideration to projects located in rural
21 areas or areas prone to coastal or inland flooding due to
22 severe storms (such as hurricanes or rain bursts), storm
23 surges, or projected sea level rise during the projected life-
24 time of the project.

1 (g) VALUE ENGINEERING USING INNOVATIVE MATE-
2 RIALS.—Of the amounts made available to carry out this
3 section, the Administrator shall set aside \$10,000,000 for
4 each of fiscal years 2022 through 2026 to provide funding
5 to 1 or more State departments of transportation or units
6 of Tribal or local government that submit to the Adminis-
7 trator an application to carry out value engineering of a
8 standard bridge design to enhance the performance of the
9 bridge (including extending the service life of the bridge,
10 increasing resistance to corrosion, and reducing construc-
11 tion and preservation costs) through the use of innovative
12 materials.

13 (h) RECORDKEEPING; REPORTS.—

14 (1) RECORDKEEPING.—Not later than 1 year
15 after the date of enactment of this Act, the Adminis-
16 trator shall develop a project recordkeeping system
17 that maintains comprehensive, current, and accurate
18 information on each grant provided under this sec-
19 tion.

20 (2) REPORTS.—Not later than 2 years after the
21 development of the recordkeeping system described
22 in paragraph (1), and every 2 years thereafter, the
23 Administrator shall submit to the Committee on
24 Transportation and Infrastructure of the House of
25 Representatives and the Committee on Environment

1 and Public Works of the Senate, and make publicly
2 available, a report that describes, with respect to
3 each project that receives a grant under this sec-
4 tion—

5 (A) the status of the project;

6 (B) the location of the project;

7 (C) for each bridge involved in the project,
8 the inventory number of the bridge in the Na-
9 tional Bridge Inventory pursuant to section 144
10 of title 23, United States Code;

11 (D) a detailed description of the scope of
12 the project;

13 (E) the amount of project costs paid by
14 funds provided under this section and the total
15 project costs;

16 (F) for each bridge involved in the project,
17 the bridge condition, operations, and perform-
18 ance of the bridge; and

19 (G) in every third report submitted under
20 this paragraph, the results of the regular moni-
21 toring and evaluation of the maintenance de-
22 mands, projects, needs, and costs of each bridge
23 in the project during the previous 6 years.

24 (i) AUTHORIZATION OF APPROPRIATIONS.—There is
25 authorized to be appropriated to the Administrator to

1 carry out this section \$65,000,000 for each of fiscal years
2 2022 through 2026.

3 **SEC. 7. WATER INFRASTRUCTURE INNOVATION PROGRAM.**

4 (a) ESTABLISHMENT.—The Administrator of the En-
5 vironmental Protection Agency (referred to in this section
6 as the “Administrator”) shall establish a grant program,
7 to be known as the “Water Infrastructure Innovation Pro-
8 gram”, to provide grants for the design and installation
9 of water infrastructure projects, including wastewater
10 transport and treatment systems and drinking water
11 treatment and distribution systems, that use innovative
12 materials to reduce total costs, including operation and
13 preservation expenses, and extend the service life of in-
14 stalled structures.

15 (b) APPLICATIONS.—To be eligible to receive a grant
16 under this section, an applicant shall submit to the Admin-
17 istrator an application at such time, in such manner, and
18 containing such information as the Administrator may re-
19 quire.

20 (c) ELIGIBLE PROJECTS.—To be eligible to receive
21 a grant under this section, a water infrastructure project
22 shall—

23 (1) serve a community with a population be-
24 tween 3,301 and 99,999; and

25 (2) use innovative materials that—

- 1 (A) are resistant to degradation;
2 (B) extend service life; or
3 (C) provide long-term protection of water
4 facilities and systems.

5 (d) PREFERENCE.—In providing grants under this
6 section, the Administrator shall give preference to pro-
7 posed projects that use materials that are domestically
8 produced and sourced.

9 (e) SPECIAL CONSIDERATION FOR AT-RISK
10 AREAS.—In providing grants under this section, the Ad-
11 ministrator shall give special consideration to projects lo-
12 cated in areas that are prone to saltwater intrusion or
13 flooding due to severe storms, rain bursts, storm surges,
14 or projected sea level rise during the projected lifetime of
15 the project.

16 (f) RECORDKEEPING; REPORTS.—

17 (1) RECORDKEEPING.—Not later than 1 year
18 after the date of enactment of this Act, the Adminis-
19 trator shall develop a project recordkeeping system
20 that maintains comprehensive, current, and accurate
21 information on each grant provided under this sec-
22 tion.

23 (2) REPORTS.—Not later than 2 years after the
24 development of the recordkeeping system described
25 in paragraph (1), and every 2 years thereafter, the

1 Administrator shall submit to the appropriate com-
2 mittees of Congress, including the Committee on
3 Environment and Public Works of the Senate, and
4 make publicly available a report describing, with re-
5 spect to each project that receives a grant under this
6 section—

7 (A) the status of the project;

8 (B) the location of the project;

9 (C) a detailed description of the scope of
10 the project;

11 (D) the amount of project costs paid by
12 funds provided under this section and the total
13 project costs;

14 (E) the condition, operations, and perform-
15 ance of the project; and

16 (F) in every third report submitted under
17 this paragraph, the results of the regular moni-
18 toring and evaluation of the maintenance de-
19 mands, projects, needs, and costs of the project
20 during the previous 6 years.

21 (g) AUTHORIZATION OF APPROPRIATIONS.—There is
22 authorized to be appropriated to the Administrator to
23 carry out this section \$65,000,000 for each of fiscal years
24 2022 through 2026.

1 **SEC. 8. INNOVATIVE PROJECT DELIVERY FEDERAL SHARE.**

2 (a) IN GENERAL.—Section 120(c)(3)(B) of title 23,
3 United States Code, is amended—

4 (1) by striking clauses (i) and (ii) and inserting
5 the following:

6 “(i) prefabricated bridge elements and
7 systems, innovative materials, and other
8 technologies to reduce bridge construction
9 time, extend service life, and reduce preser-
10 vation costs, as compared to conventionally
11 designed and constructed bridges;

12 “(ii) innovative construction equip-
13 ment, materials, techniques, or practices,
14 including the use of in-place recycling tech-
15 nology, digital 3-dimensional modeling
16 technologies, and advanced digital con-
17 struction management systems;”;

18 (2) in clause (v), by striking “or” at the end;

19 (3) by redesignating clause (vi) as clause (vii);

20 and

21 (4) by inserting after clause (v) the following:

22 “(vi) innovative pavement materials
23 that demonstrate reductions in greenhouse
24 gas emissions through sequestration or in-
25 novative manufacturing processes; or”.

1 (b) TECHNICAL AMENDMENT.—Section 107(a)(2) of
2 title 23, United States Code, is amended by striking “sub-
3 section (c) of”.

○