5-14-2021

Dr. Habib Dagher testifying before the U.S. Senate

Advanced Structures and Composites Center

Sen. Collins asks Dr. Habib Dagher about sustainable infrastructure solutions

Date: May 14, 2021
Run Time: 00:06:34
https://youtu.be/hPOXtdIxXOs

Dr. Habib Dagher testifying before the Senate, May 2021.

Transcript is machine generated, unedited, in English.

00:00
dr dogger your record
00:03
of transforming research
00:07
into real world applications
00:10
is incredibly impressive and it's
00:13
one of the reasons that i wanted to have
00:16
you here today
00:18
i've been in your lab and i've seen the
00:21
wave pool
00:22
that you developed in order to test
00:25
composite materials simulated
00:28
in etsy conditions
00:32
i joined you when you unveiled i believe
00:34
it was the nation's largest 3d
00:36
printer and you actually printed a
00:39
little
00:40
boat that we went out into the pool
00:44

with so one of the things that
00:48
to me is so important about your
00:50
research
00:51
is that it's practical and you always
00:55
look
00:55
at the world at the real life
00:58
implications of the work that you're
01:00
doing
01:01
could you elaborate on the research that
01:04
you are currently
01:06
conducting particularly through the
01:09
transportation
01:10
infrastructure durability center that
01:13
has
01:14
promise for infrastructure applications
01:18
thank you senator collins um a very
01:20
important question
01:22
i will give you some specific examples
01:24
today that we're working on as you know
01:25
maine is a rural state
01:27
and um and if we lose a bridge it may be
01:30
another 50 or 100 miles before you can
01:32
get to where you want to be
01:33
because because of that and we have a
01:36

lot of bridges we can't really replace
01:37
today
01:38
we just don't have the money to do so
01:40
some of the bridges go on what we call
01:41
the posted bridge list and eventually
01:43
get taken out of service so we have a
01:46
lot of bridges like that in maine so we
01:47
ask ourselves
01:48
can we have a second opinion can we do a
01:50
bit of a better job at going out there
01:52
and looking at these bridges
01:53
and see if we can actually extend their
01:54
life so we started a program under the
01:57
transportation infrastructure the
01:59
durability center where a lot of bridges
02:01
from being posted
02:03
so so the trucks don't have to go
02:04
another 50 miles or 100 miles
02:06
and that's happening as we speak about
02:08
two-thirds of the bridges we've been
02:09
looking at that would have been
02:10
actually posted no longer need to be
02:13
posted and what we do is
02:14
we go out there and actually take a
02:16

bunch of dump trucks full of sand to the
02:18
bridge and put sensors on it
02:20
and load it up to see if it's got more
02:22
life than we think it is and we do some
02:23
numerical simulations and go back to the
02:25
dod it says
02:26
and say hey you can you can actually
02:28
don't have to post this particular
02:29
bridge
02:29
and that's worked out quite a few quite
02:31
a few times some bridges in
02:32
canton in peru maine in jackson in alana
02:35
maine and franklin and unity
02:37
were all saved like that so so so and it
02:40
saved
02:40
millions of dollars for the d.o.t so so
02:43
extending the lives of existing bridges
02:45
is one example that we're doing we're
02:47
also strengthening bridges we're taking
02:48
composite materials to bridges
02:50
and see where they're weak and then
02:52
laminating composites onto the underside
02:54
of these bridges
02:55
the other thing we're doing center
02:56

columns is trying to figure out which
02:58
bridges are really
02:59
are getting worse and faster by having
03:03
better inspection
03:04
techniques so we're developing drone
03:05
technologies right now
03:07
we can take some drones to inspect the
03:09
bridges particularly the ones are easy
03:11
harder to get at and get under the
03:12
bridges with the drones
03:13
using very advanced sensors including
03:15
acoustic sensors
03:17
that can actually identify if there's
03:18
problems in these in these bridges
03:20
so all of those are examples senator
03:22
collins at the transportation center
03:24
and the university of transportation is
03:25
helping us do so we appreciate the
03:27
federal dod support
03:28
and hope we can continue to make those
03:30
kinds of investments at the federal
03:31
level
03:32
i'm sure the secretary's taking notes on
03:35
all of this
03:37

but that's fascinating so i think what
03:40
you're telling me is there are certain
03:42
bridges
03:43
that would have been posted and thus big
03:46
trucks would not have been allowed on
03:48
them
03:49
would have had to do very long detours
03:52
to
03:53
deliver their products or pick up
03:56
their materials and you're able to more
03:59
precisely
04:01
identify which bridges truly need to be
04:04
posted and then in some cases you're
04:06
actually
04:07
strengthening the bridges using
04:11
composite materials to do so
04:14
that's exactly correct senator collins
04:16
so so bridges that otherwise would have
04:17
been gone on a posted list
04:19
now don't have to go on the posted list
04:21
it's almost like going to the doctor and
04:22
saying can you give me a second opinion
04:24
do i really need this operation or not
04:26
and we're able to have we have a second
04:28

opinion team that's working with the dot
04:30
that goes
04:30
uh and and evaluates these bridges and
04:33
and oftentimes they don't have to be
04:34
replaced
04:36
at least for now or posted and then that
04:39
allows us to concentrate
04:41
on the ones that really do need
04:44
to be replaced and are either
04:47
structurally deficient or functionally
04:48
obsolete or both
04:50
and focus our resources there
04:55
and using the new materials that you've
04:58
developed
04:59
is is just extraordinary because
05:03
it's going to extend the life of the new
05:05
bridges
05:06
uh in some cases i'm told over a hundred
05:10
years
05:11
that's exactly right senator collins and
05:13
we're developing designs for materials
05:15
that will last 100 years
05:16
and what's really important is that at
05:19
the at the federal policy level we
05:21

incentivize the state to look at life
05:22
cycle analysis because you may pay a
05:24
little bit more
05:25
but maybe you pay 10 or 20 more to get
05:27
started but if the bridge is going to
05:28
last twice as long
05:29
it makes economic sense but those
05:31
decisions that the fed
05:33
need to be incentivized at the state
05:34
level so we start looking at life cycle
05:36
analysis
05:37
we're starting looking at for example
05:39
lead bridges as well so we have lead
05:41
lead home right i agree there's lead and
05:44
green homes and
05:45
elite gold and so on and so forth could
05:47
we have lead bridges could we start
05:48
looking at transportation infrastructure
05:50
like we look at
05:51
homes today and and look at that all of
05:53
those long-term
05:54
if you wish policy decisions that we
05:56
make help inform
05:58
the the investments we make today and
06:00

and reduce costs in society
06:01
so thank you so much and given the
06:04
amount of money
06:06
that we spend each year on federal
06:09
disaster assistance i think
06:11
ms repco you said it was 524
06:15
billion since 2005
06:18
if we can spend a little more money up
06:20
front and avoid
06:22
that cost as well as looking at the life
06:25
cycle costs
06:26
we may in fact end up spending
06:29
less money thank you very much mr
06:32
chairman
06:33
very good hearing