NEW MEXICO TECH
SCIENCE • ENGINEERING • RESEARCH • UNIVERSITY

New Mexico Institute of Mining & Technology Student Government Association

Research Presentation Grant

To the proposing Individual(s):

Please attach the travel plans for your trip as well as the abstract for the research that you are presenting at the conference. Include names of ALL individuals planning on attending the conference, starting with the team lead. However, only the team lead's phone number, email, and signature are required in the "information" section.

Proposing Individual(s) Information:

Name(s): Austin Starnes

Phone: 214-551-5259 Email: Austin.starnes@student.nmt.edu

Signature: _____

Information Regarding Research:

Title of Research: Collaborative Framework to Create a Culvert Asset Management System for NMDOT

Location & Date of Conference: Seattle, WA May 31-June 3

Club/Dept. Proposing: N/A

Amount Requested*: $613.28 Date Submitted: 3/17/2021

_____ _____
Signature of SGA Vice President Date

Approvals:

Amount Approved: _____

Index Number: _____ Account Code: _____

_____ _____
Signature of CFO Date

_____ _____
Signature of SGA President Date

***If the requested amount exceeds $1000, approval through Budget Analysis is required.**

_____ _____
Signature of Budget Analysis Date

Austin Starnes ICTD Cover Letter

Over the summer of 2021, New Mexico Tech participated in implementation of a Culvert Asset Management Program (CAMP) for the New Mexico Department of Transportation (NMDOT). A comprehensive survey of 8,502 culverts was completed by five pairs of student interns yielding valuable information on the state of culverts in New Mexico. I am the primary author for "Collaborative Framework to Create a Culvert Asset Management System for NMDOT", a paper that presents the methodology, findings, and implications of the first phase of the project. The paper has been accepted by the American Society of Civil Engineers (ASCE) for inclusion in the 2022 International Conference on Transportation and Development (ICTD) and will be published in the conference proceedings. The conference is in Seattle, Washington this May 31st-June 3rd. The purpose of this proposed research grant is to request funding for registration, travel, and lodging to represent NMT at this conference and present our research to an international audience.

In the interest of conservation of funds, I have reserved an Airbnb at the cheapest rate available near the location, a total of $313.28 for a 3-night stay near downtown Seattle (the discounted rate for the conference hotel was $220/night plus taxes and fees). The research and poster will be presented at the SRS and will be printed cost-free through attendance of SRS workshops. The conference registration costs $390, and the flight is expected to cost $400-500. Uber will also be necessary to and from the airport, with an estimated cost of $50 each way as shown in the attached documents. The Civil and Environmental Engineering (CEE) department at Tech has some funds available and is able to contribute $500 towards my attendance of the conference. I am financially able to contribute $500, which will partially go towards meals and other uncovered costs (estimated around $200) and cover $300 towards lodging and transportation. This leaves a difference of $613, which I am requesting through the SGA.

Funding from the SGA will make this trip possible and allow me to represent New Mexico Tech at the ICTD. Participation in this conference will award recognition of NMT and the CEE department and may result in establishing relationships, furthering our research, and collaboration with other entities such as state DOTs, researchers, and educational institutions. I will be honored to represent NMT at this conference and will continue to commit to excellence throughout this research and presentation.

Thank you for your consideration,

Austin Starnes

Collaborative Framework to Create a Culvert Asset Management System for NMDOT

Austin L. Starnes[1], Isabel Morris, Ph.D., A.M. ASCE[2], Claudia Mara D. Wilson, Ph.D., A.M. ASCE[3], Wesley Cook, Ph.D.[4], P.E., Clinton P. Richardson, Ph.D., PE, BCEE[5], David Trujillo, Jr., P.E., M. ASCE[6], Todd Howell, BS[7], Douglas D. Cortes, Ph.D.[8], Daniel Dugas, Ph.D.[9], David Jauregui, Ph.D.[10]

ABSTRACT

The New Mexico Department of Transportation (NMDOT) is in the process of developing an asset management program for small culverts, which are not required to be included in biennial bridge inspections and can lead to catastrophic road failures if unmaintained. Aside from a partial statewide inventory in 2004, culverts in New Mexico have not been comprehensively inspected or had their condition assessed. The NMDOT initiated a Culvert Asset Management Program (CAMP) in 2021 to create an inventory of the state's projected 70,000 culverts, which will be regularly updated and used statewide to prioritize and plan maintenance and improve road safety. Student interns from New Mexico Tech (NMT) and New Mexico State University (NMSU) completed the first of six seasons of CAMP inspections in the Summer of 2021. This paper will review the data collected by NMT and make suggestions for future work. Researchers used Trimble devices with Terraflex GIS software to compile GPS points and photos for each culvert, along with entries for size, material, and condition. The condition was recorded by visual inspection, describing corrosion, concrete spalling and cracking, other structural damage, and blockage of flow by silting or other means. Researchers examined data for completeness and accuracy by comparing photos with reported data and holding team discussions to improve uniformity at weekly QA/QC Meetings. Five teams from NMT surveyed 8,502 culverts, averaging 53 culverts per team per day. A total of 1,480 (17%) may warrant immediate intervention (e.g., severe corrosion, spalling, or silting). This paper summarizes the contributions of CAMP from NMT, makes suggestions for improved survey efficiency, and assesses the program's utility in future applications. This research proposes a methodology that can be utilized by other entities for culvert asset management and produces a database useful in other analyses.

BILLING ADDRESS:

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Socorro, NM 87801-4447

SUMMARY:

REFERENCE NUMBER: 1045271405

	Quantity	Unit Price	Total
International Conference on Transportation and Development 5/31/2022 – 6/3/2022 Add to Calendar			
test 2	1	$390.00	$390.00

QUESTIONS/ANSWERS

SubTotal:	**$390.00**
Tax:	**$0.00**
Order Total:	**$390.00**

The Organization I work for is:
Education

Paid on 02/28/22 with Visa ending in 4352 for $390.00

Balance:	**$0.00**
Amount Due:	**$0.00**

My Position is:
Student

How many previous ASCE conferences have you attended, including this one?
1

My Age Group is:
25-34

Gender:
Male

Please specify your ethnicity
White

I have reviewed ASCE's COVID-19 policy and understand I will not be permitted to attend without providing proof of vaccination or a recent negative COVID-19 test:
YES

← To Itinerary

Your payment details

Seattle

3 nights in Seattle

Tue, May 31, 2022 → Fri, Jun 3, 2022

Entire home/apt · 1 bed · 1 guest

Confirmation code: HMH8E3RYDR

Payments

Payment 1 of 2 $62.66

Feb 28, 2022 · 10:40PM CST
VISA ···· 4352
Get receipt

Amount paid (USD) **$62.66**

Scheduled Payments

Payment 2 of 2 $250.62

Scheduled for May 18, 2022
VISA ···· 4352
Update payment details

Balance due (USD) **$250.62**

Google

Share

Round trip · 1

Dallas ⇄ Seattle

Total price from

$513

This airline may be offering additional flexibility for bookings. More details

Selected flights

Track prices

Departing flight · May 31

6:15 AM → 8:32 AM
DFW SEA
Nonstop · 4 hr 17 min · Alaska

Returning flight · Jun 3

6:05 PM → 11:59 PM
SEA DFW
Nonstop · 3 hr 54 min · Alaska

Fare options

Departing flight | Returning flight

Main	+$0	First	+$280
$513		$793	
Free seat selection		Free seat selection	
Standard seat		Premium seat	
Standard boarding		Priority boarding	
Free change, possible fare difference		Free change, possible fare difference	
1 free carry-on		1 free carry-on	
1st checked bag: $30		2 free checked bags	

Alaska bag policy

Booking options

Book with Alaska Separate tickets · The 2 tickets in your itinerary must be booked individually		$513	Select
Book on Google with Alaska AS 287, AS 372	Fare details unavailable	$538	Select
Book with Alaska AS 287, AS 372	Fare details unavailable	$538	Select

Screenshot of Uber Estimate from Airport