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PAYDIRT

New SGA President: Dallin Sobers
p. 3/4

Goodie Bag
April 26th, 2021



In This Issue:

General

SGA Rundown 2

Skyler Matteson

Campus Life

Dallin Sobers: New SGA President. 3/4

Getting their hands dirty: Miners Rugby 5/6

Skyler Matteson

Isaiah Padilla

Science and Research

Filling in the Cracks: Retrofitting Deteriorating Structures. 7/8

Emotional Support Animals 9/10

Pet Photo Gallery! 11/12

Isaiah Padilla

Alexandra Sartori

Samuel Baca

Relax and Unwind

Photo Gallery 13

Sudoku 14

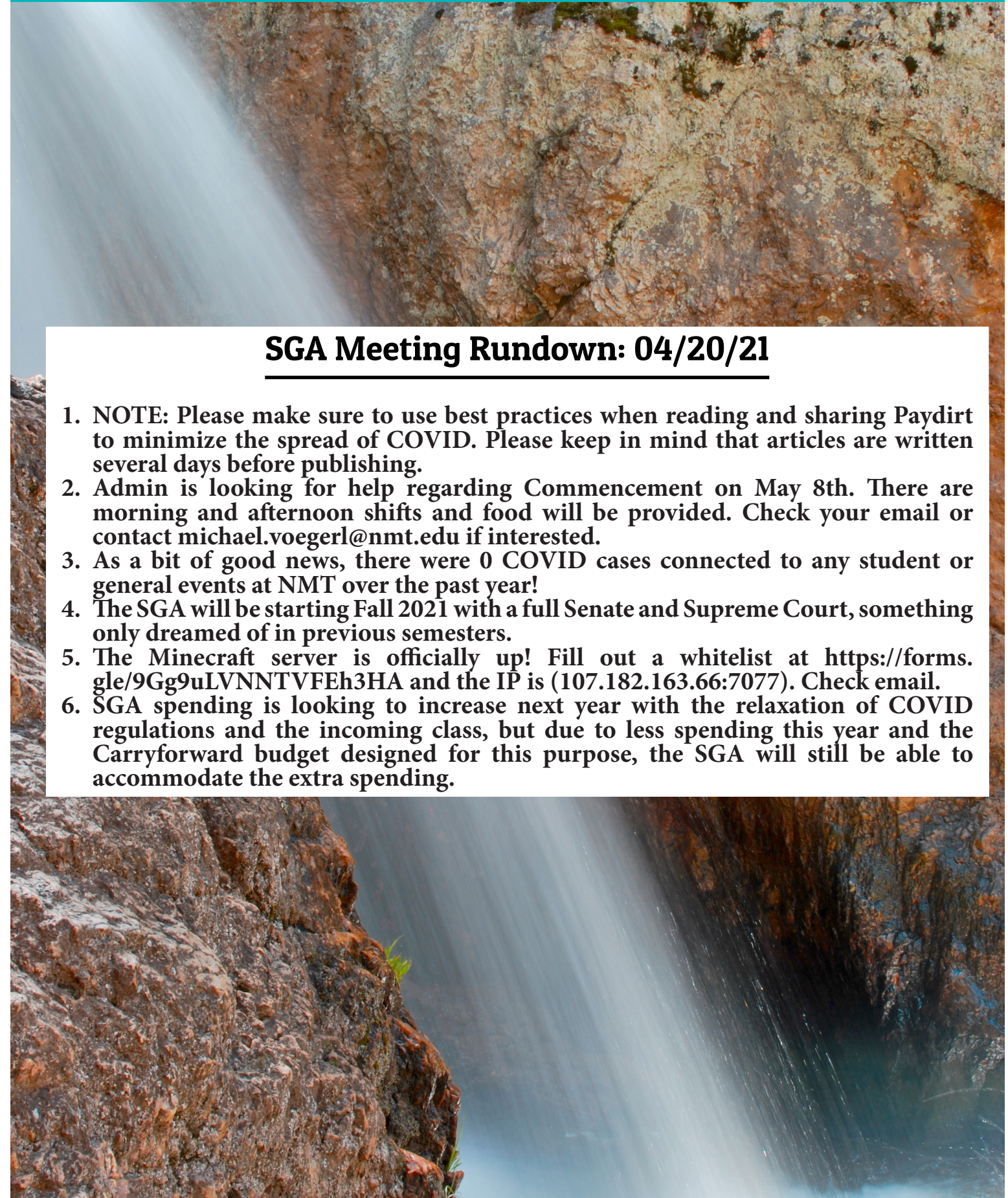


Sudoku

9								
		3	8	4		6		2
		6				8		5
			1		6			
2		8						
	3					4	7	
	5							
7				9			3	
			6	3				

Relax and Unwind

"If you don't mind, it doesn't matter." - Jack Benny



SGA Meeting Rundown: 04/20/21

1. **NOTE:** Please make sure to use best practices when reading and sharing Paydirt to minimize the spread of COVID. Please keep in mind that articles are written several days before publishing.
2. Admin is looking for help regarding Commencement on May 8th. There are morning and afternoon shifts and food will be provided. Check your email or contact michael.voegerl@nmt.edu if interested.
3. As a bit of good news, there were 0 COVID cases connected to any student or general events at NMT over the past year!
4. The SGA will be starting Fall 2021 with a full Senate and Supreme Court, something only dreamed of in previous semesters.
5. The Minecraft server is officially up! Fill out a whitelist at <https://forms.gle/9Gg9uLVNNTVFEh3HA> and the IP is (107.182.163.66:7077). Check email.
6. SGA spending is looking to increase next year with the relaxation of COVID regulations and the incoming class, but due to less spending this year and the Carryforward budget designed for this purpose, the SGA will still be able to accommodate the extra spending.

Campus Life

"Age is something that doesn't matter, unless you are a cheese." - Luis Bunuel

Dallin Sobers: New SGA President



In case you were not aware, the Student Government Association just went through a high turnout voting season, and the winner of the SGA Presidential election was Dallin Sobers. Dallin, the current Vice President of the SGA, sat down with me this last Tuesday to discuss some of his plans regarding NMT and his thoughts on the SGA as a whole.

Can you give us your major, background, etc.?

DS: My major is in Basic Sciences with a minor in Chemistry. I've been in the SGA since freshman year. My first year was as Chairman of the Club Advisory Committee, then I moved up to 2 years as Vice President. I'm also in tune with my creative side; I'm taking painting and oils, I took stained glass [previously], and for a year I was President of the Albuquerque Youth Orchestra.

Why did you choose Tech?

DS: I originally wasn't even going to go to NMT. I was committed to a school in Texas where I don't even remember what I was going to study. I think that the closer I looked at Tech it was more what I wanted. I came from a smaller school environment, so the transition to Tech was easier to make.

Another thing is that I graduated from High School a year early, took a gap year, and then that turned into 2 more [gap] years. Every [year] I did that I applied to Tech, was accepted, and then withdrew. The fact they accepted my application every time anyways was important to me. They never held it against me or expected me to withdraw.

If you had to, what would you say your general overall mission statement or theme is?

DS: If I had to choose a theme it would be creation. My goal is to make new things happen at Tech, instead of playing within the lines. There is already so much that is repeated. Those events are still going to happen, but my goal is to not just let another year pass.

What are some of the goals and ideas you want to bring to Tech?

DS: I want to bring more tradition than just 49ers and Spring Fling. An idea I had is to have every graduating class build something and leave it behind at Tech. If you are in the class of 2022, it will say 'built by class of 2022.' I also want to utilize more of the space we have, like the new lots, for things like outdoor events.



Pet Photo Gallery!



I hope to start a lot more of a dialogue between administration and students, and even between academic departments. For the departments, they work well by themselves, but hardly know what their neighbors are doing. This increase in communication will allow people to know what is going on and create internship/research opportunities through field overlap. I've had many students say 'I wish I had known' regarding other departmental research, grants, programs, etc.

What are your thoughts and opinions on the SGA?
DS: [They] change. I have to understand I've always had a roll in it, so my opinion of it is very skewed from those that are not technically in the SGA. We have self-sufficient departments but they rarely communicate with each other. For example, Paydirt and the SAB (events) could run their ads together with greater efficiency.

[Regarding] other schools, we've always had 'a seat at the table' but we have rarely been in it. There are lobbying groups and general communication events that exist for our schools around New Mexico, but the seat labeled NMT has been empty until the end of this semester.

Any closing remarks?
DS: My goal is not to reinvent the wheel, just to make sure all of ours are turning!

Dallin Sobers assumes the position of SGA President this summer, and thus will be able to be reached at the presidential email, but until then you can reach him at sga.vp@npe.nmt.edu for any questions you might have.

Quincy Bradfield will be taking over the Vice President position, a swap from his current Presidential position. Again, he will assume VP officially this summer, but he can be reached currently at sga.president@npe.nmt.edu.

- Skyler Matteson

Getting Their Hands Dirty: Miners Rugby



If there could only be one thing that Techies should be hyped about, it's our Rugby teams. They're rough, they're ready, and they'll eat all of your spaghetti (assuming you've got some laying about). But they're also invested in the community which surrounds them; While they may be getting physically dirty out there on the athletic field, you can more often find the men and women of the Miners rugby teams getting metaphorically dirty as they give back to both the Tech and Socorro communities.

Let's pull back a bit and focus on where they started. Back in 1973, about a decade before Tech celebrated its centennial birthday, a small group of Techies with an unquenchable thirst for physical activity formed what would eventually become today's Rugby team.

It was a rough start: the team was formed just in time to be crushed in the first set of brackets during the "High Desert Classic" rugby tournament during a match with the University of New Mexico team. Since then, they have grown from about three or four dedicated individuals to a full team of twenty-five young men who have dedicated their lives to the game.

To get a better understanding of how that original dream grew and expanded over the years, I secured an interview with the Men's Rugby club President, Elijah Naranjo. Naranjo, a Materials undergraduate student, joined the team several years ago and has become increasingly more involved in the sport since then.

As President of the club, Naranjo's duties include making

sure that the team gets the funding it needs from the Scholar Government Association, managing the finances for the team's outings and games, coordinating events with the school, and setting up volunteering opportunities for the members of his team.

"[The rugby club] is one of the oldest [clubs] at Tech," Naranjo related, "[So] we definitely have one of the biggest traditions for 49ers." In addition to being the oldest club, the rugby club is also one of the few sports here at Tech, which is due in part to Tech's desire to emphasize education over sports in order to avoid getting caught up in the mainstream college sports craze. While 49ers may not have had a great year thanks to COVID-19, Naranjo remembers that, in past years, the rugby games were one of the largest highlights of the school holiday. "...[We're] one of the only clubs who have alumni coming back [just] for 49ers," he recalls, "[There are usually about] fifteen to twenty people that come back to participate every year."

Aware as they are of the club's status as the most prominent Tech sport, Naranjo and club coordinator/men's coach Kyle Dunbar also take pride in the work they do with regards to getting Techies involved.

"It was kinda tough this year," admit Naranjo. "We had a lot of big ideas, but with Covid, it [...] limited us to what we could do on campus. But this next year we're definitely going to have a lot of events on campus which [help get] students out and [about]." As a student with several years' worth of exposure to the Tech social setting, Naranjo has dedicated his time as president



be followed and responsibilities that must be considered. Taking care of an animal by yourself can bring about a lot of daily tasks and responsibilities that must be kept in mind, especially when living in a small dorm room.

Since ESAs can vary in animal type, ranging from cats and dogs to lizards and guinea pigs, certain animals may be less suited to dorm life than others. ESAs like dogs must be taken outside frequently for bathroom breaks and exercise, cats have litter boxes that must be cleaned regularly, and most animals come with their own host of tasks that are needed for proper care. This can be exasperated by how small dorms can be, finding an appropriate amount of space for enclosures and kennels can be a difficult task. If you're thinking of applying for an ESA, you must consider the good and the bad of bringing an animal with you to campus. One student says,

"It was definitely worth it in the long run, but working with training early on can be really hard. I would recommend [if getting a dog] to get a puppy because they're way easier to train and get them used to the dorms and routine [of college]."

The process of applying for an ESA title is fairly simple as well. First, you need to get evaluated by a mental health provider or another approved entity that will deem you as someone who would benefit from an ESA. Then you must talk to the NMT Office of Counseling and Disability Services and have them approve your ESA application. After approval, there are a strict series of rules that are in place that you must follow to be able to keep your ESA with you. Then all you have to do is experience all the benefits of an ESA!

Emotional Support Animals can be virtually any animal that can be deemed helpful for someone's disability and health. They can help with mental, emotional, and sometimes physical health, especially in stressed college students. Think an ESA would be beneficial to your college experience and success? Reach out to the Office of Counseling and Disability Services to start discussing your options.

- Alexandra Sartori

Emotional Support Animals



It's been a long day, you just got out of your worst lecture of the day. You're walking across campus back to your dorm and you start getting anxious about an upcoming exam. You finally get to your dorm building and go to head up, halfway up the stairs, you remember that you still need to email your advisor back about registration. Your anxiety has been building up all day and then you get to your dorm room. You start opening the door, look down and what do you see? A little puppy nose already peaking through the doorway. Your anxiety subsides as you get inside and start saying hi to your Emotional Support Animal (ESA).

ESAs have been integral to the success of a lot of students in college. College is a time of constant stress, it's easy for students to get lost in all the work and forget about taking care of themselves emotionally and mentally. ESAs can be allowed to students that find it necessary to have a mini companion that can help with their emotional and mental health. ESAs and service animals may seem very similar but there is a wide distinction. Service animals are animals, typically dogs, that are trained to perform tasks and guidance to people with disabilities. ESAs are untrained animals, not always dogs or cats, that can help

alleviate other disabilities such as depression, anxiety, or PTSD.

Owning an animal has been shown to have a multiplicity of benefits, both mental and physical. Animals can help elevate levels of dopamine and serotonin, reduce anxiety, and can help with symptoms of depression. They can even help promote healthy lifestyle choices, dogs require walks and owning an animal in general can help bring a structure and routine to someone's life.

While a pet can help with these things, most college campuses don't allow for students to just bring family pets with them. Through the Fair Housing Amendments Act of 1988, the US Department of Health and Urban Development considers "assistance animals" a "reasonable accommodation" for citizens. This allows for people with disabilities, that are seeking housing, to be able to bring their ESA or service animal to live with them without additional fees or prejudice from landlords or renters. This applies to college campuses as well.

While registering for an ESA as soon as possible may seem like a good idea, there is an established process that must



to giving Techies as many opportunities as possible to come together through rugby events.

As per the Covid-agenda this school year, the club has taken the time away from in-person games to give back to the community. Typically, you can find many of the members from both the men's and women's teams volunteering at school-hosted events, whether they are asked to help set up a stage for a performing band or man an information table for a few hours. Most recently, they donated over two hundred pounds worth of dog food to the local animal shelter and spent time walking the dogs living there.

While the volunteer work covers most of the members' club fees, the rest is handling through fundraising through one form or another. One regular fundraising event is held through the annual golf tournament hosted by the school; Every year, the club enters a team of its' finest players to go out and participate in the event themselves. Additionally, the club also partners up with the local elementary and high schools to run other fundraisers, the proceeds from which benefit both parties.

Between volunteering and fundraising, whatever is left of the club dues gets taken care of through sponsorships. Funny story, one of rugby's sponsors, Brew Lab 101, is based here in Socorro; the owner still pays homage to his hometown through one of the specialty brews he offers, Strawberry Peak.

On a more personal note, I attended the most recent match (April 17th) and, despite having negligible knowledge of the

sport of rugby football, I thoroughly enjoyed myself. Our Miners faced off with the Las Vegas Rugby club and simply watching the players face off, throw themselves headlong into the opposing team, or just pull an SR-71 Blackbird and break several speed records in a race down the field was an absolute treat.

It wasn't until both of the two games played had ended that I witnessed what was perhaps my favorite moment of all, however; The teams came together, shook hands in a show of good sportsmanship, and then lined up facing the crowd to cheer for us. That is something which I have never witnessed and let me tell you: Getting three cheers from a line of forty men who had just finished engaging in extremely physical activity was an experience I don't think I'll ever forget.

For anyone who is interested in participating in matches, procuring more information, or joining the team itself, contact Elijah Naranjo at elijah.naranjo@student.nmt.edu or simply just go talk to any of the team members during practice at the athletic field on Monday, Wednesday, and Friday evenings around 5:00 PM. Until then, I've been Isaiah Padilla, stressed-by-finals Paydirt journalist, signing off.

- Isaiah Padilla

Science and Research

"Expert: a man who makes three correct guesses consecutively." - Laurence J. Peter

Filling in the Cracks: Retrofitting Deteriorating Structures

Engineering failures: They can provide some level of entertainment depending on the incident, but more often than not, they shock the world through the terrifying reports on collapsing buildings or failed vehicle designs. However, sometimes the fault lies not in the design of the structure, but in the integrity of materials as time passes. Dr. Seyedsina Yousefianmoghadam, a Postdoctoral Researcher at the Department of Civil, Structural, and Environmental Engineering at the University of Buffalo, hopes to provide a solution to that issue through his research.

Dr. Yousefianmoghadam, or Dr. Sina, has held his Doctor of Philosophy in Structural Engineering degree for two years now, but his work has been an ongoing effort for much longer than that. In 2007, the then-undergraduate Sina attended the Amirkabir University of Technology located in Tehran, Iran, in order to obtain a Bachelor of Science in Civil Engineering, then worked on his Master's in Structural Engineering at the Sharif University of Technology, also based in Tehran, Iran, before finally procuring his Ph.D from the State University of New York at Buffalo in 2019. During those years, Dr. Sina worked as a Research Assistant and an Assistant Professor to continue developing his skills as a structural engineer. By the time he graduated with his Ph.D in Structural Engineering in 2019, he was more than ready to take on the task he had set himself: Preventing the collapse of older civil buildings and structures.

Historical buildings compose a large part of many countries these days, and more often than not we see them suffering from the stains of time. Oftentimes, these buildings or structures, of historical value or not, are greatly affected by the movement of the tectonic plates' shifting. This leads to the accelerated deterioration of bridges, halls, houses, and other civil structures. As mentioned previously, Dr. Sina seeks to prevent the eventual collapse of these buildings and structures by filling the internal structures with reinforced concrete (typically referred to as "RC").

The research is split into two components: One section works to identify primary targets in areas of high seismic activity and the second works to implement machine learning algorithms that can automatically detect the

structural health and condition of buildings and structures. Thus far, Dr. Sina's team has encountered numerous successes in their attempts to re-stabilize structures.

As may be inferred, the team working to identify so-called targets (in essence, those buildings or structures which are more liable to collapse than others) engage in quite a bit of field-work. Currently, Dr. Sina has people focusing their efforts on regions of Mexico, Nepal, and Ecuador since these countries frequently encounter violent earthquakes and suffer greatly from the resulting collapses.

Before any work could be done to retrofit structures still in use could begin, however, the team first needed some experience in getting the RC mixture just right. To gain this experience, the team traveled around America to various deteriorating and condemned buildings to run one of two main tests on RC infilled buildings and structures. The first test, a vibrational test, saw the team removing supporting walls in a multi-level structure constructed in 1914 to simulate a demolition before starting the infilling process. Then, a mobile shaker (a deployable machine able to use non-explosive vibration methods to cause damage to infrastructure through vibrational movements) was set up and used for eighty-six consecutive tests. Based on the data gathered by various sensors set up about the building, the team was then able to construct a finite element model of the structure for further analysis.

When it comes to the second test, quasi-static testing, bridges were the more commonly used structure. In quasi-static testing, forces are slowly increased in a motion which causes the structure to become displaced. Different structures, which embody different moments of elasticity, are only able to take so much displacement, and at some point, the molecular bonds will be pushed past their limit and broken completely. This process can be manifested in the physical cracks which we observe. Unfortunately, these cracks aren't always visible; what's worse is that the cracks which are invisible to the naked eye are often the more concerning of the two types of cracks.

At any rate, the quasi-static tests performed by Dr. Sina's teams yield data that informs them of the crack

propagation rate, the system through which the cracks progress, how much damage is caused by the cracks, and other such crucial variables pertaining to the prediction of the effectivity of the RC infilling.

In order to actually determine the effectiveness of the RC mixtures themselves, Dr. Sina and his team take beams and pour RC over them to later run the same tests on them in order to determine the most effective solution for certain load and placement types. The results were boiled down into three graphs depicting the moment of elasticity with respect to the rotational force in motion around the beam. When the graph showed a sharp point in the graph after an initial constant increase, the beam was shown to have entered failure; Complete failure occurred at the point where the graph stopped decreasing in a stepwise manner and simply flatlined.

As Dr. Sina continues working to prevent the collapse of civil buildings and structures, his efforts continue to benefit communities affected by earthquake-resultant collapses around the world.

For anyone interested in finding out more about his research, please contact Dr. Seyedsina Yousefianmoghadam at seyedsin@buffalo.edu. Until then, I've been Isiah Padilla, internally reinforced Paydirt journalist, signing off.

- Isiah Padilla

