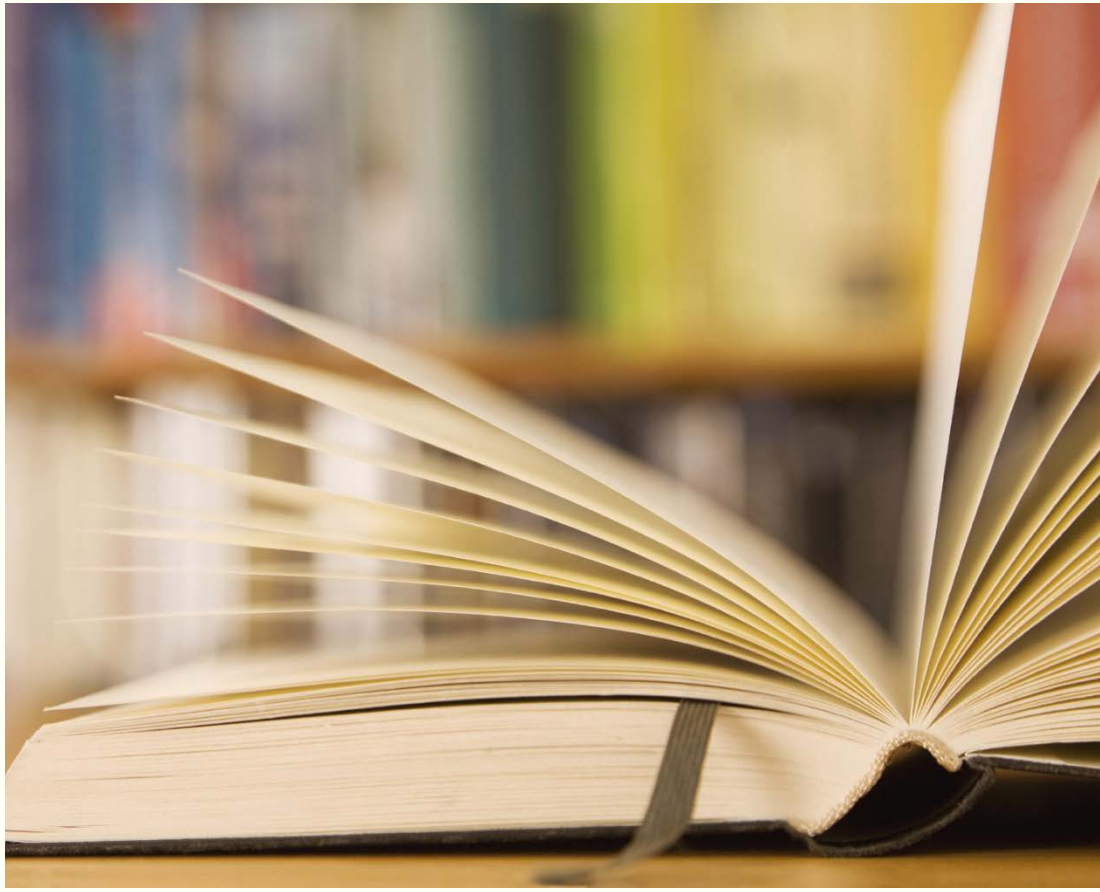
ACHIEVING APPA'S MISSION THRU ACADEMIC AND COMMUNITY PARTNERSHIPS

ILAPPA 2018 – March 23, 2018



APPA's Purpose

With one eye on providing excellence in today's educational environment, and one always trained on adapting, enhancing, and transforming the facilities of the future, APPA seeks to create positive impact in educational facilities on three important levels:

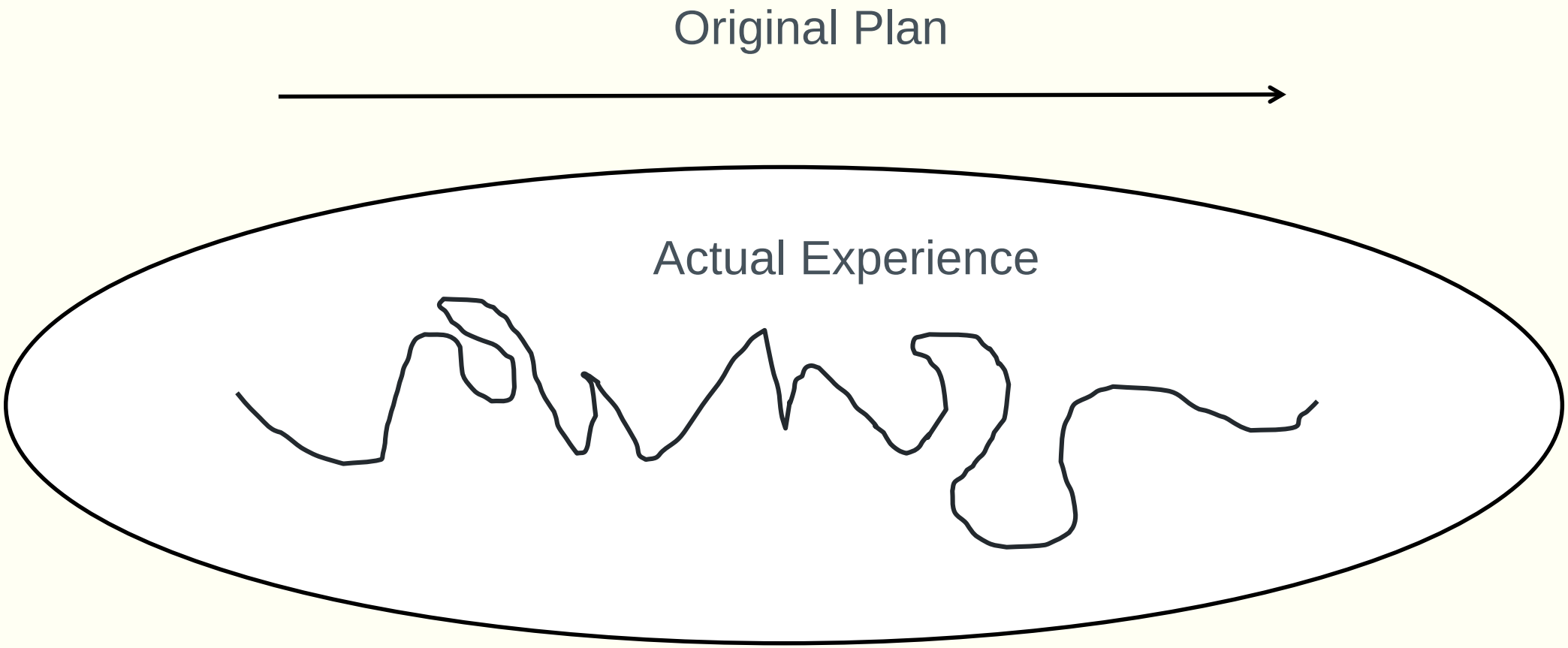
- APPA transforms individual facilities professionals into higher performing managers and leaders, which…
- Helps transform member institutions into more inviting and supportive learning environments, which…
- Elevates the recognition and value of educational facilities and their direct impact on the recruitment and retention of students, faculty and staff.

The Change Leadership Dilemma

Original Plan

“The Official Story Versus the Real Story of Change” by Leith sharp is licensed for sharing and adapting under Creative Commons CC BY-SA 4.0

The Change Leadership Dilemma



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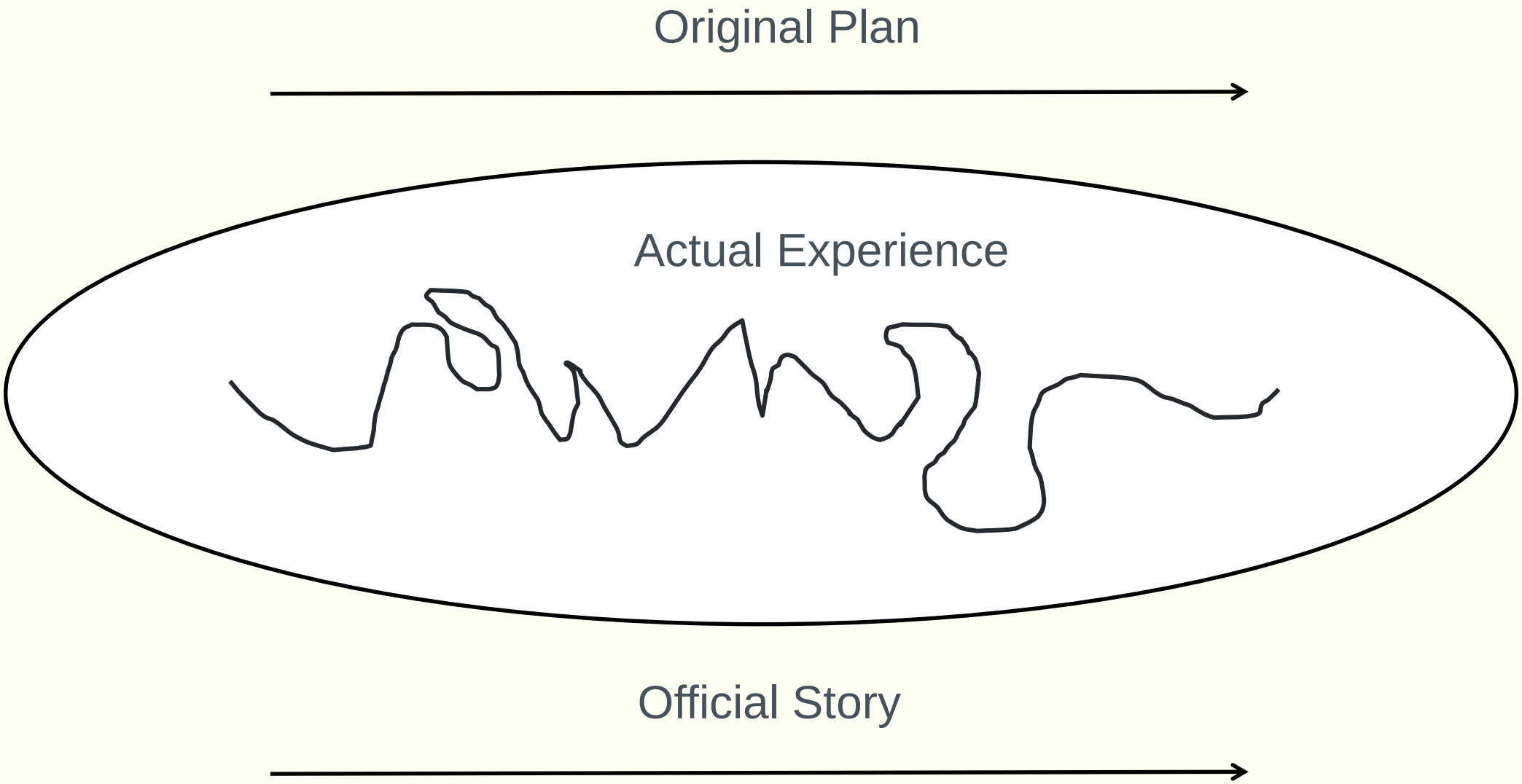
The Change Leadership Dilemma



“Disconnect between how new things get done and the Official Story” by Leith sharp is licensed for open sharing and adapting under Creative Commons CC BY-SA 4.0

What does higher education offer? How many are seeking it?

University	Colleges	Undergrad Majors	Undergrad Enrollment	Graduate Enrollment	Total Enrollment
Illinois State	7	155	18,643	2,396	21,039
Eastern Illinois	7	35	5,957	1,458	7,415
SIU - E	7	56	11,720	2,422	14,142
SIU - C	11	105	12,182	3,805	15,987
Western	8	66	8,543	1,830	10,373
Northern	7	62	14,079	4,936	19,015
U of I - Urbana	15	150+	33,932	13,019	46,951
U of I - Chicago	15	86	17,959	11,161	29,120
Univ. of Chicago	8	51	5,491	7,831	13,322
DePaul	10	130	15,407	7,703	23,110
Bradley	9	129	4,473	1,125	5,598

What are the indicators that are being measured?

Internal

- Working environment
- Benefits
- Pay
- Being Valued & Contributing to Mission
- Health
- Safety
- Branding & Prestige

External

- Academic Programs
- Affordability
- Branding & Ratings/Rankings
- Safety & Security
- Accessibility
- Health
- Amenities

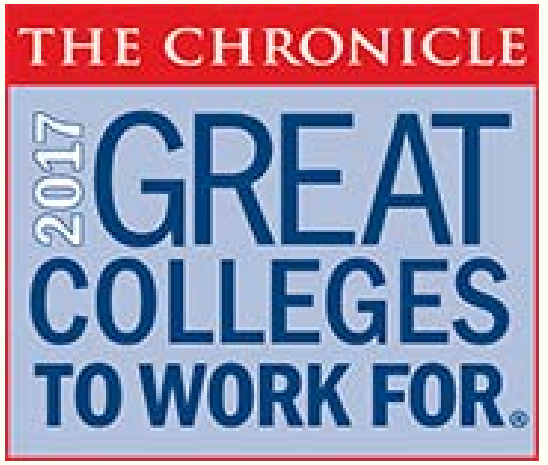
The Indicators that Matter to Students & Faculty

University	US News National	US News Regional	Tuition & Fees	Room & Board	STARS	Princeton Green	ACUPCC
Illinois State	159		$ 14,061.00	$ 9,948.00	Silver	Yes	Yes
Eastern Illinois		51	$ 11,678.00	$ 9,736.00	n/a	Yes	No
SIU - E		70	$ 11,491.00	$ 9,481.00	Silver	Yes	No
SIU - C	216		$ 13,936.00	$10,622.00	Silver	Yes	No
Western		61	$ 11,267.00	$ 9,830.00	n/a	No	No
Northern	231-300		$ 14,352.00	$10,880.00	n/a	No	Yes
U of I - Urbana	52		$ 15,868.00	$11,308.00	Gold	Yes	Yes
U of I - Chicago	145		$ 14,816.00	$10,882.00	Silver	Yes	Yes
Univ. of Chicago	3		$ 53,825.00	$15,726.00	n/a	Yes	
DePaul	120		$ 39,010.00	$13,797.00	Reporter	Yes	No
Bradley		7	$ 32,930.00	$10,310.00	n/a	No	No


RESEARCH AND TEACHING EXCELLENCE ACROSS ALL SUBJECTS
61
IN THE WORLD
RESEARCH CITATIONS
54TH
31ST
EMPLOYER REPUTATION
WORLD UNIVERSITY RANKINGS


MILITARY FRIENDLY
MF'18
SCHOOLS


BEST GLOBAL UNIVERSITIES
U.S.News
2018
RECOGNIZED FOR
Academic Research and Reputation


THE CHRONICLE
2017
GREAT COLLEGES TO WORK FOR.


THE PRINCETON REVIEW
2017
GUIDE TO GREEN SCHOOLS


The 100
Most Beautiful College Campuses


MOST
Best Value Schools
AFFORDABLE


The 25 Most AMAZING College Campus Buildings


Carnegie Foundation
Elective Community Engagement Classification


WORLD UNIVERSITY RANKINGS 2018
THE WORLD UNIVERSITY RANKINGS


EDUVENTURES
STUDENT SUCCESS RATINGS
2016


2016
COLLEGE CHOICE
RANKING
BEST NATIONAL RESEARCH UNIVERSITIES

Who, What, When, Where and How

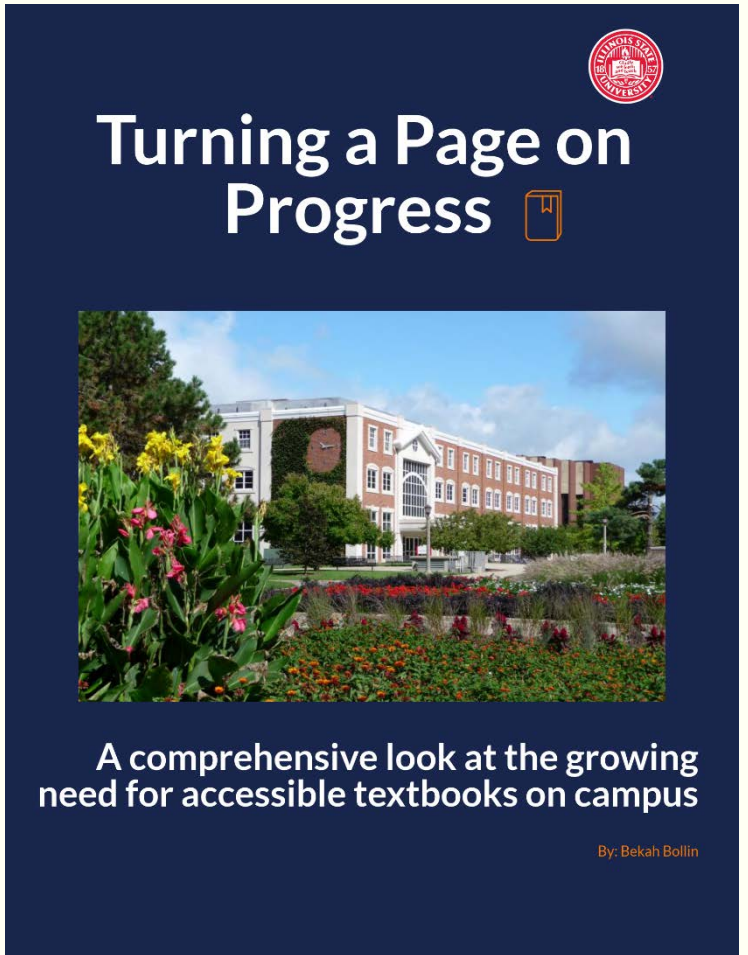
Step 1 Students	Step 2 Faculty	Step 3 Community	Step 4 Research
‘Secret Shopper’	Curriculum Development	Municipal Master Plans	Grants
Internships	Service Learning	Complete Streets & Complete Cities	Mutually beneficial collaboration
Independent Study	Learning Laboratories	Partnerships for student learning	Publicity and Recognition
Hire them for projects	Capstone Projects	Community-wide efforts	Applied & Practical Solutions

STUDENTS – THE NEIGHBORS WE ADORE (AND SOMETIMES DREAD)

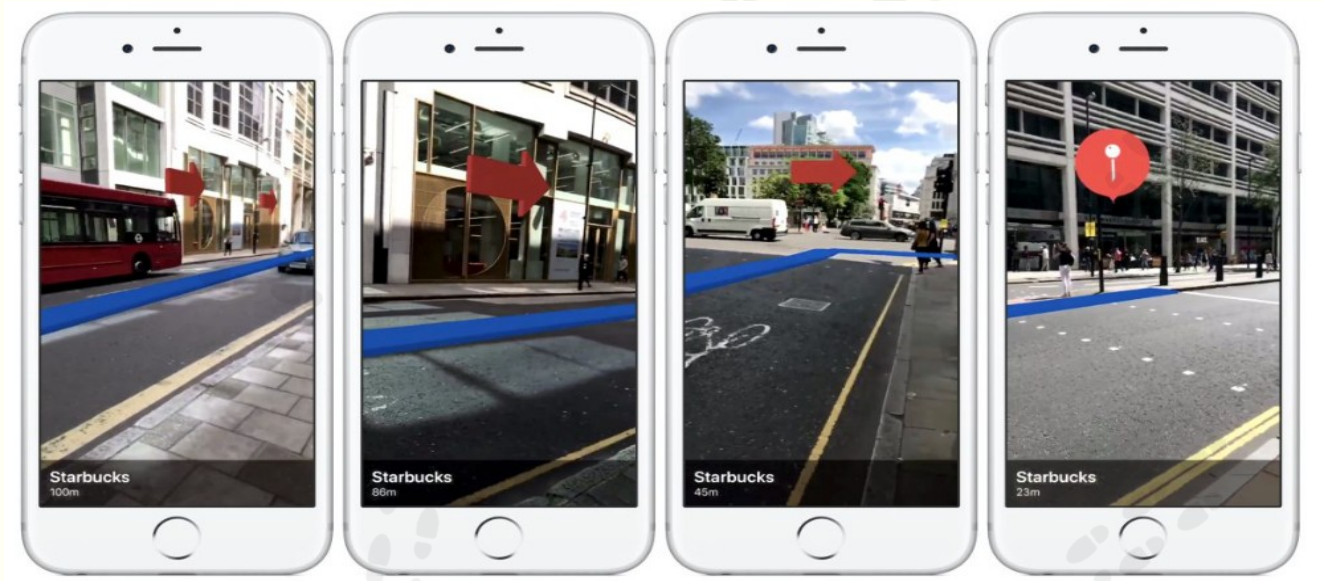
Academic, Service & Employment Opportunities

Students – Our Eyes & Ears, Our Clients

- "Secret Shoppers"
  - Curricular Integration using campus & community issues for analysis and applied solutions



ISU WAYFINDING: A BETTER PATH



An Augmented-Reality Navigation Proposition

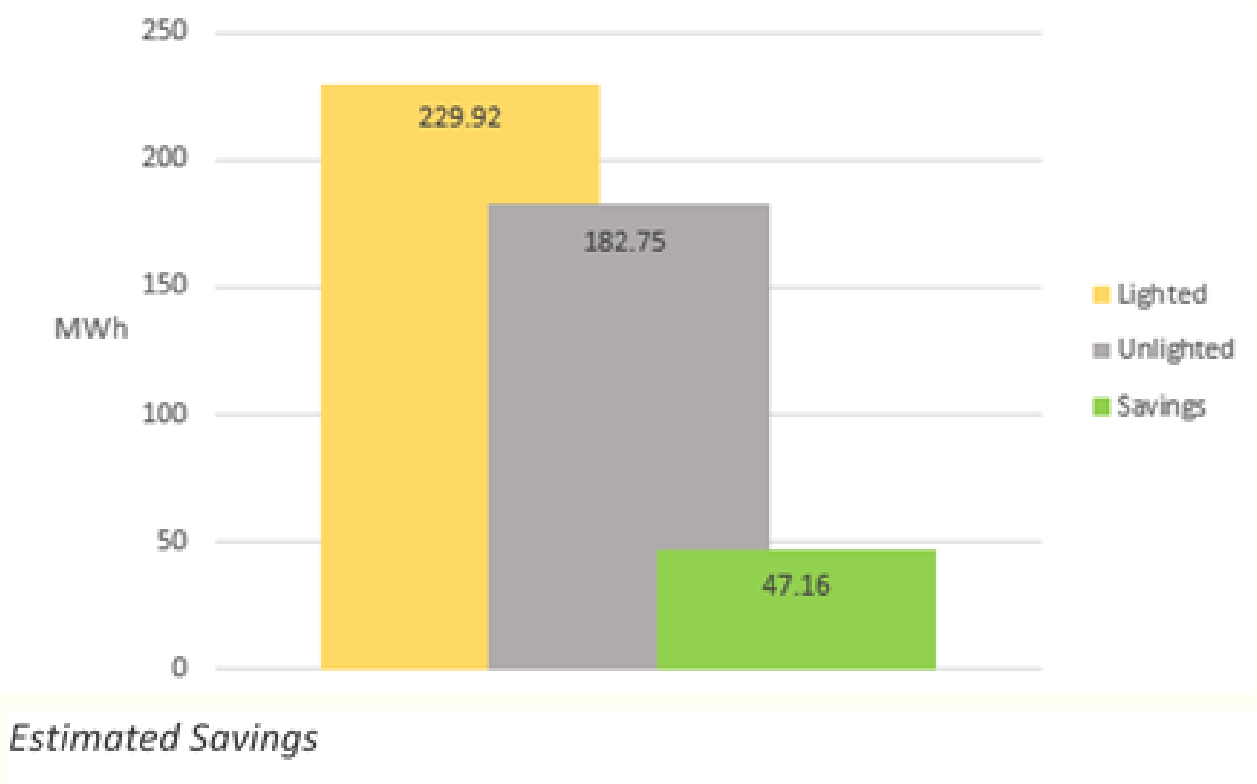
Introduction

Illinois State University offers a beautiful campus with many great resources available to students and visitors. However, it can be frustrating to get from point A to point B for those who are new to campus and do not know their way around. While there are physical navigation solutions that should be addressed, new Augmented Reality technology available on millions of phones worldwide provides a viable concept for a new, intuitive way to navigate.

Drew Robert
Melissa Nergard
Innovation and Inquiry
23 Feb. 2018

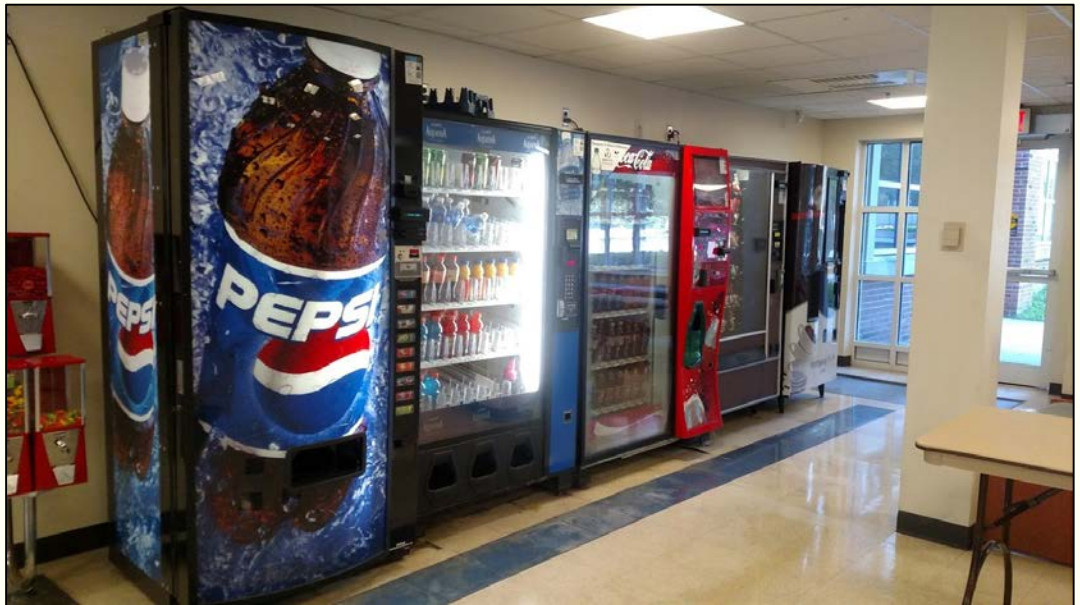
https://vimeo.com/143384284

Vending Machine Energy Usage and Cost-Benefit Contract Analysis, Phase I



Estimated Savings

- Energy logging meters were used to evaluate the electricity demands of 72 vending machines with and without lighting.
- Removing Lighting from the campus machines would save 47,000 kWh/year, which is equivalent to preventing 2.5 metric tons of CO2 being released in the atmosphere.



The Case of the Dripping Faucets

Case: 86,000 gallons of treated water lost annually to dripping faucets in the Chemistry labs

Witness: Chemistry Professor that measured drips from the faucets and calculated loss per faucet for each of the 34 labs

Victim: Chemistry Chair that pays for the water and water treatment for the 34 labs for the Chemistry Department

The Crime Scene Clean-Up Team

1. The Student Intern
2. The Chemistry Lab Manager
3. The Plumbing Foreman
4. The Student Sustainability Committee

The Case of the Dripping Faucets

Collaborative Accomplishments

1. Develops a preventive maintenance plan for the Chemistry Department.
2. Provides consistent budget for labs
3. Provides consistent work and budget for Plumbers
4. Allows for long-range planning for upgrades & lab usage scheduling
5. Provides student learning & practical hands-on experience
6. Saves water, chemicals & energy

Chemistry Experiments - Water and Cost Savings

Water - $.01/gal

Electricity - $.07/kWh

5000 hrs @ 90mL/sec ≈ 428,500 gallons

Equaling approx. $4,200

5000 hrs @ 60W = 300 kWh

Equaling approx. $20

- Students use fast streams of water (90mL/sec) to create a venturi style vacuum to dry out matter, leaving the water running for 5000+ hours a year
- Alternatively they could use 60 watt pumps to create the same vacuum
- Savings of over $4,000/year could be achieved

FACULTY - THE NEIGHBORS WE WANT

Subject matter experts, teachers, collaborators, grant PI’s and partners

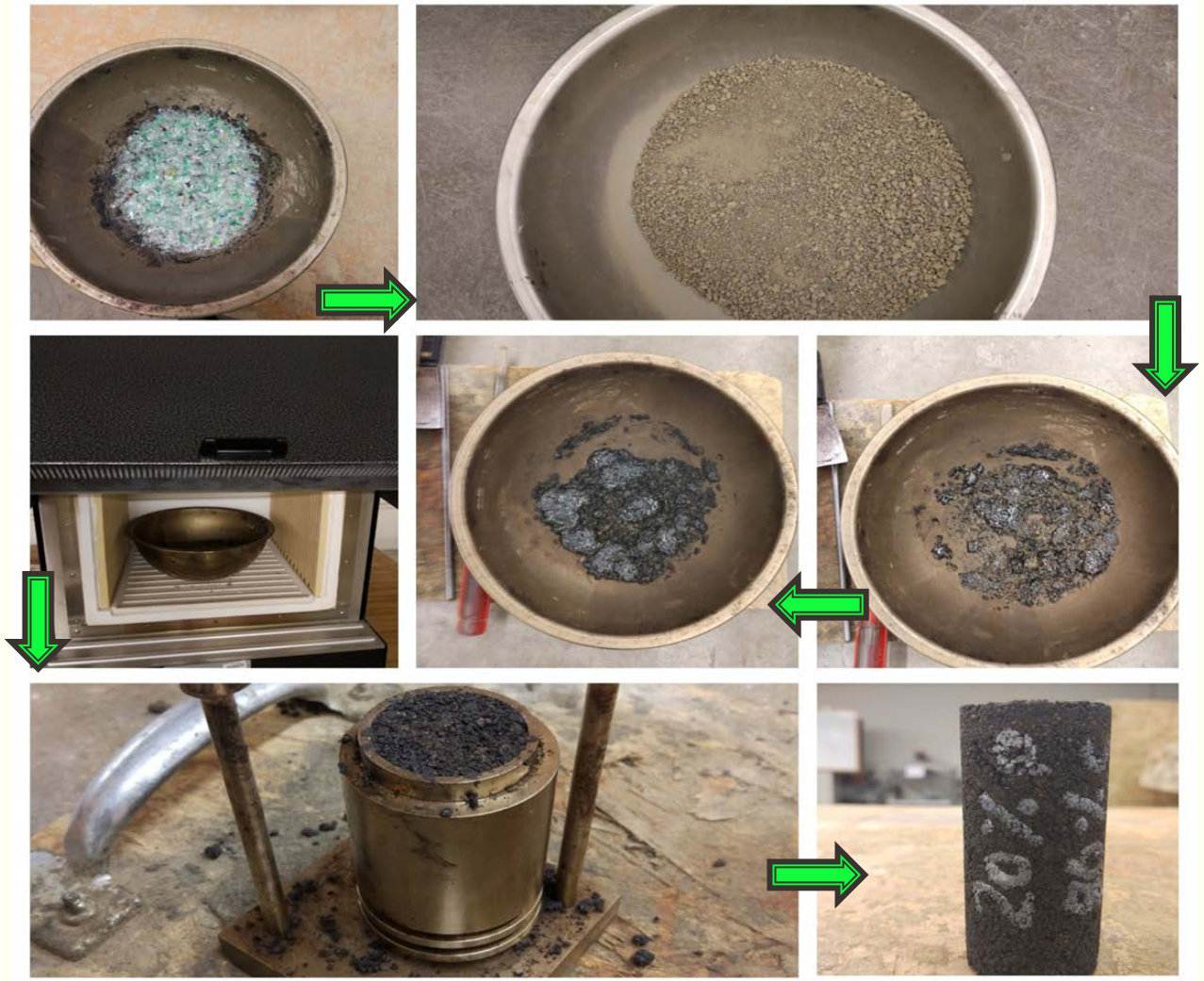
Faculty Example – Pervious Concrete & Recycled Materials

- Dr. Pranshoo Solanki and Samikaran Bhattarai (GA) – Utilization of Post-Consumer Plastic Bottles in Construction
- Develop and evaluate stabilizing properties of molten plastic for use in pervious pavement

Mix# PPC	Sample Label	PET (%)	Soil (%)	Coarse Aggregate (%)
1	P5 S0	5	0	95
2	P5 S5	5	5	90
3	P5 S10	5	10	85
4	P7.5 S0	*7.5*	0	92.5
5	P7.5 S5	*7.5*	5	87.5
6	P7.5 S10	*7.5*	10	82.5
7	P10 S0	10	0	90
8	P10 S5	10	5	85
9	P10 S10	10	10	80

Sample Preparations for the Two Mixes

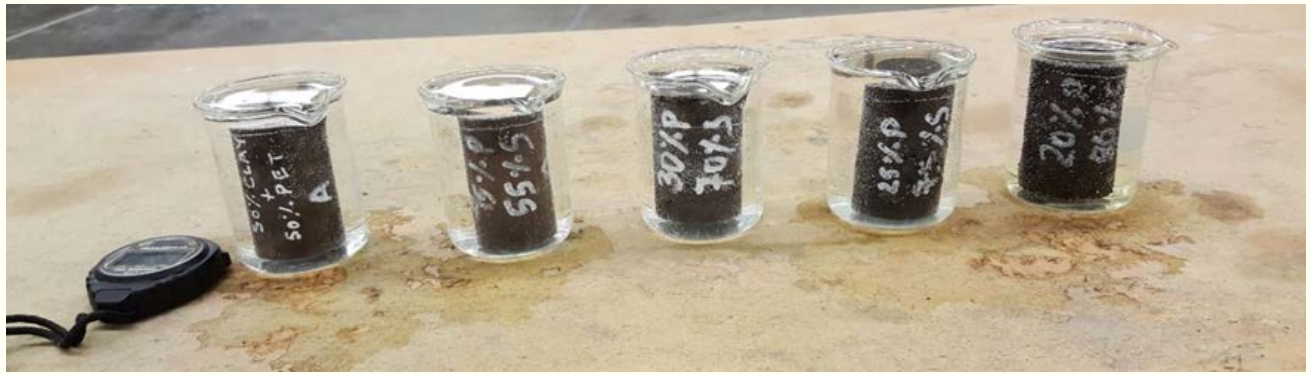
PSC – PET Soil Composite (n=6)



PPC – Pervious PET Composite (n=9)

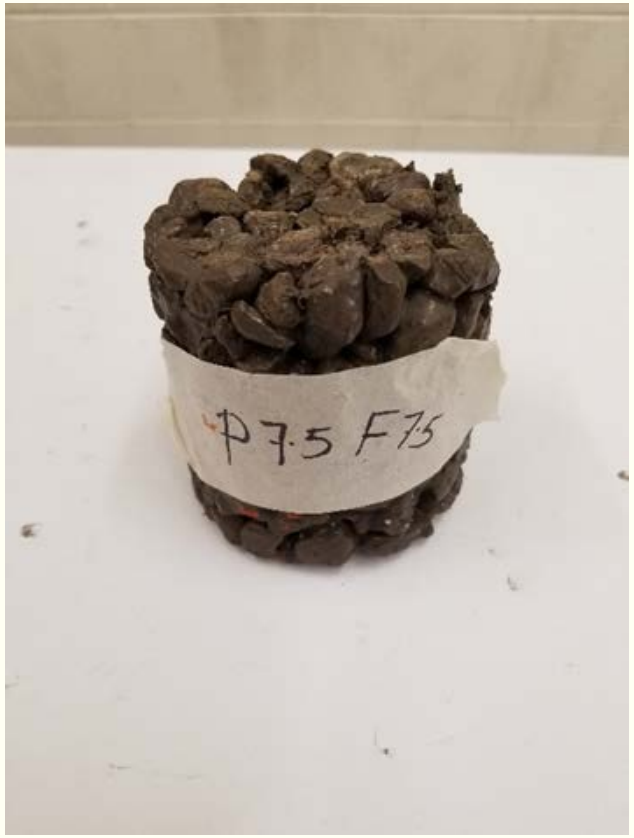
Example of Tests

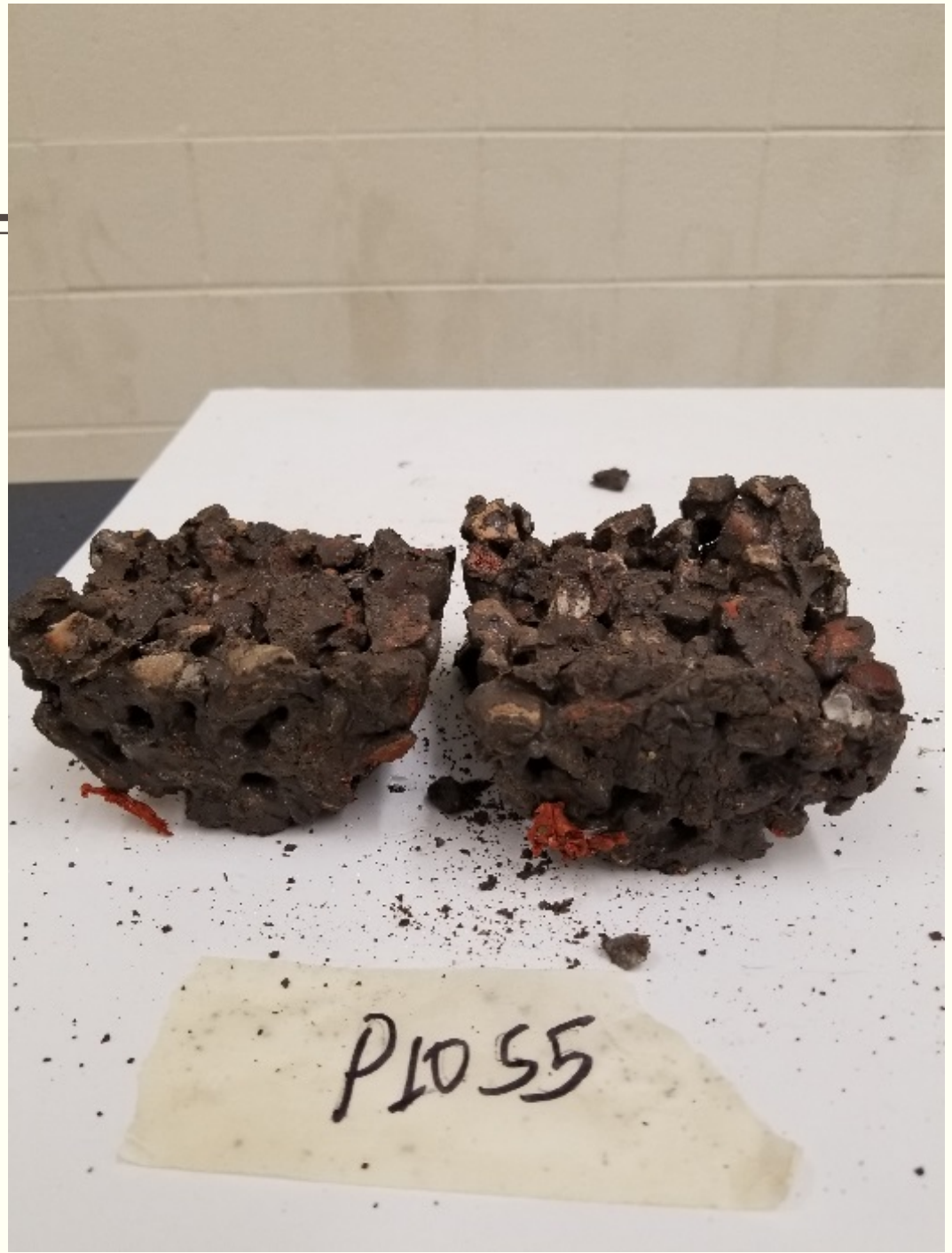
- PSC Moisture Susceptibility
  - Tested for unconfined compressive strength (before, i.e. dry and after soaking in water for 5 hours, i.e., wet)



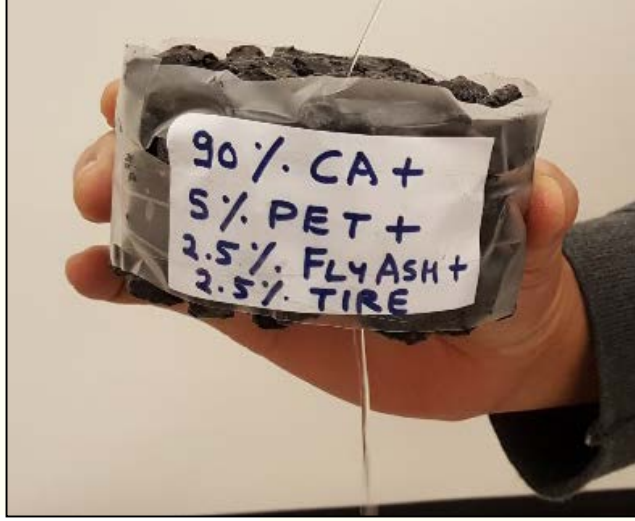
Example of Tests

- Tensile Strength
  -Specimens tested for tensile strength (4 inch diameter x 4 inch height) by subjecting to load until failure

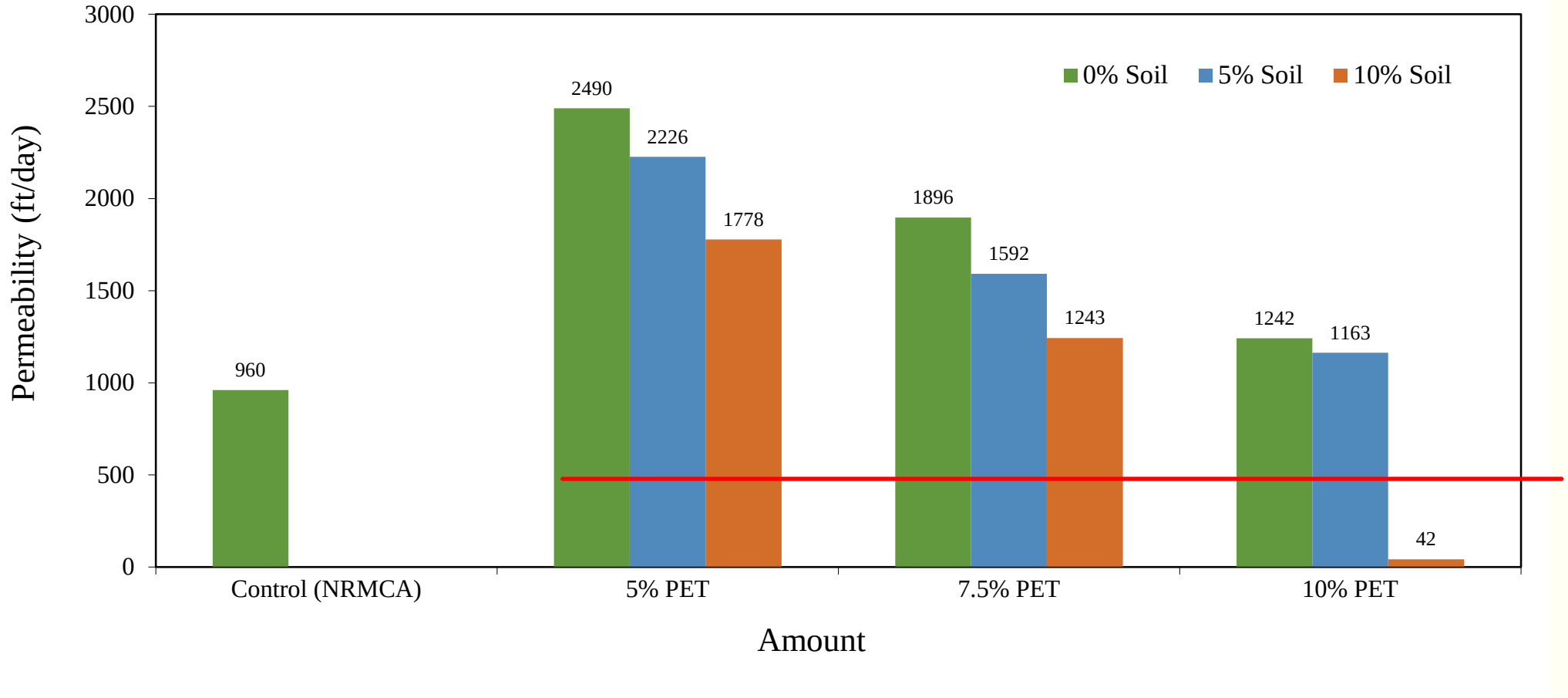




Testing – PPC Permeability



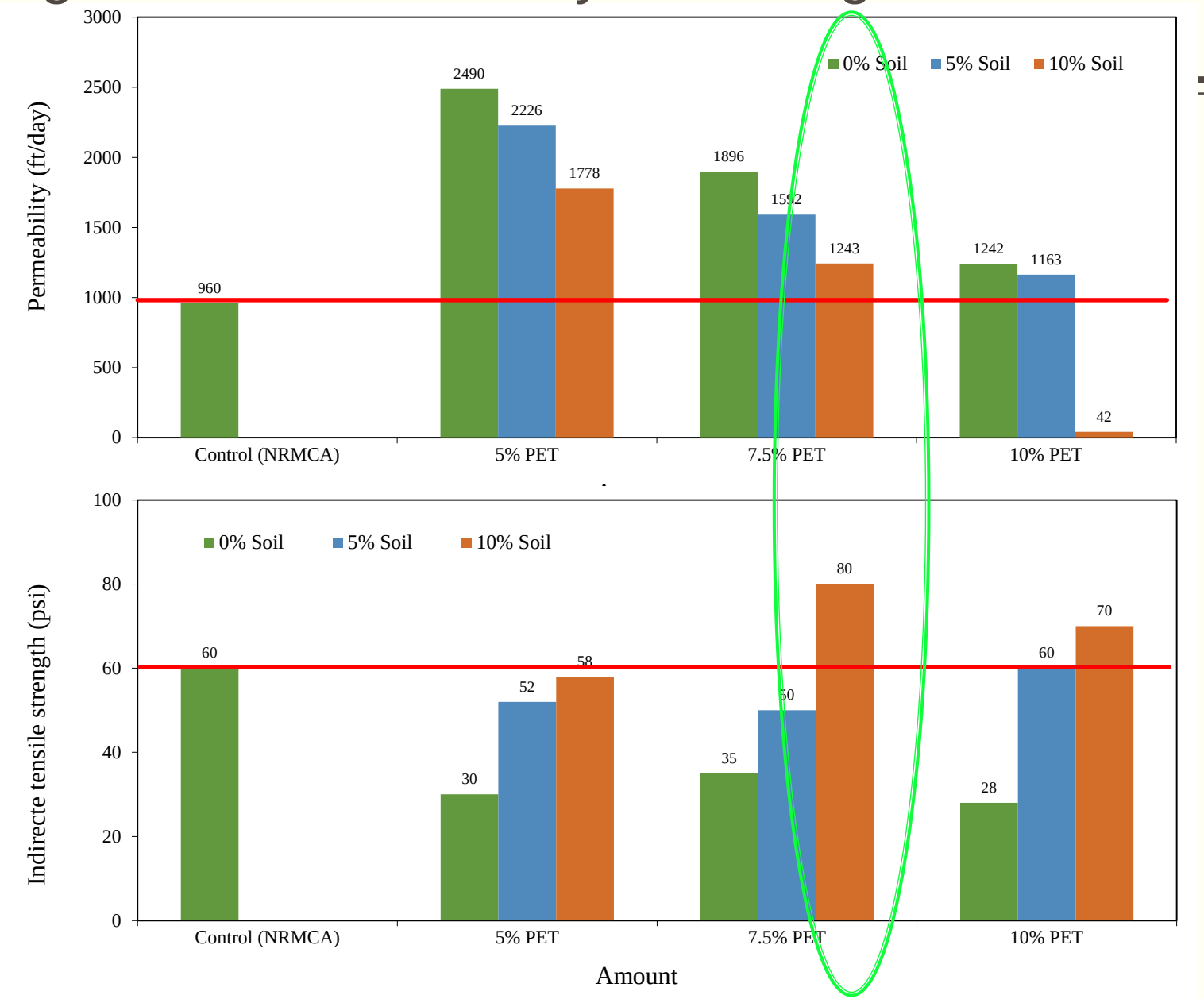
- Permeability
  - Permeability values (↓) with PET content. PET decreases void content.
  - Permeability values (↓) with soil content. Soil decreases void content.
  - Compare with control



Conclusions

- PSC
  - 25% PET content showed acceptable strength for both before and after 5 hour soaking
- PPC
  - Permeability decreases and tensile strength increases with soil content
  - Permeability was found to decrease with PET content but tensile strength increased up to 7.5% PET content
  - 7.5% PET + 10% Soil + 82.5% aggregate provided both acceptable high strength as well as high permeability
- Utilization of PET in construction materials
  - Provide new market potential and eventually reduce the amount of waste entering landfills
  - For example, PPC could be used for low-strength construction such as driveways, sidewalks and parking lots
  - Greater likelihood for recycling by consuming the bulk of PET waste bottles

Testing – PPC Permeability vs Strength



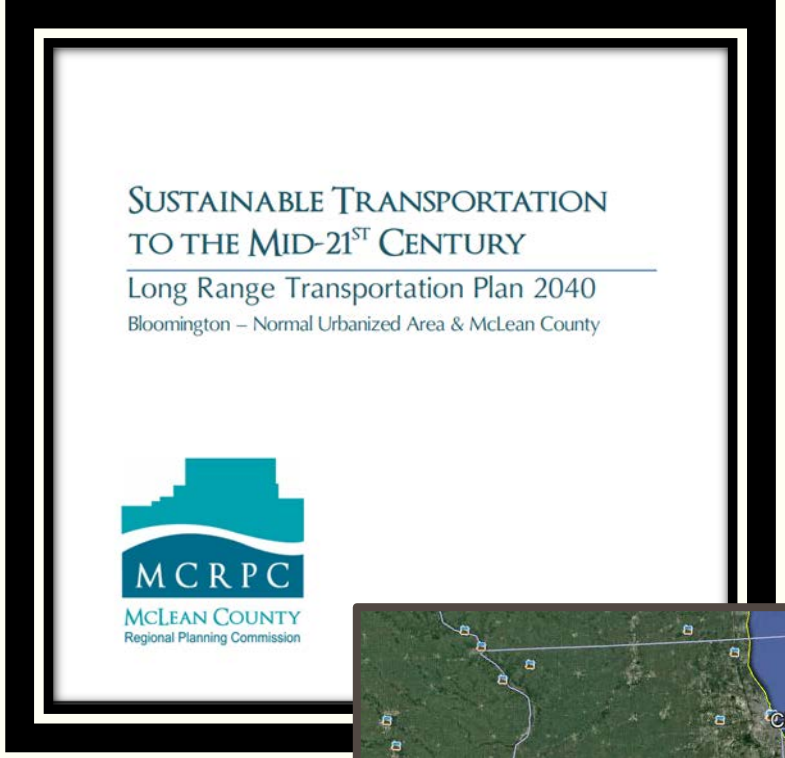
COMMUNITY – THE NEIGHBORHOOD

Government, business, not-for-profits, advocates, fans and supporters

Our Communities:
Informed Master Planning - Parking

Be a sleuth (& a partner) - What do we know and how will it impact us?

- Parking on campus is decreasing in outer lots – fewer commuters due to student lodging in close proximity to campus.
- Commuters are frustrated trying to find lot parking, so they park on the streets.
- Municipalities are dealing with on-street parking issues and are working collaboratively to address parking policy
- Rivian Automotive – Production of two electric vehicles, very likely to be semi-autonomous
- Legislators and Public Officials working to create a test zone for autonomous vehicle which spans from Springfield, to Urbana, to Peoria and Bloomington.



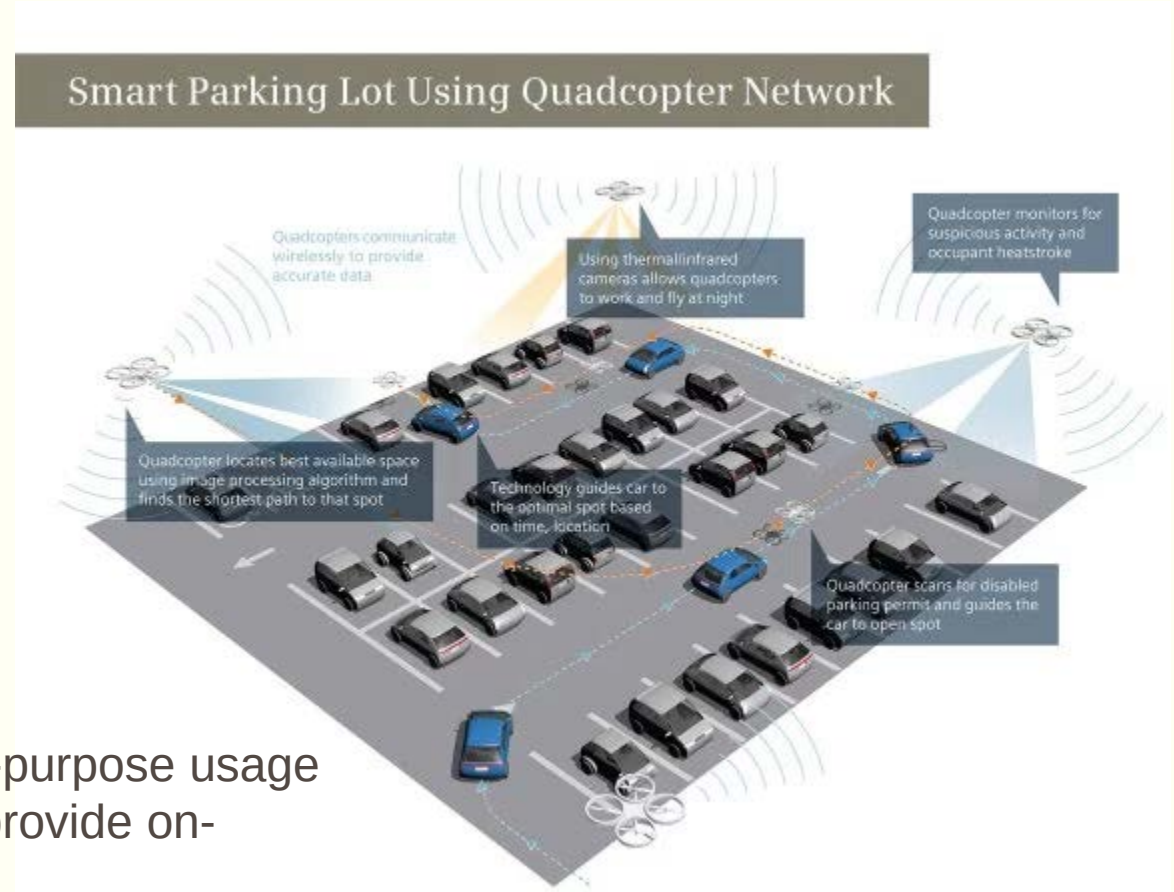
Our Communities: Informed Master Planning, Analytics

Data Needed	Data Obtained Through
▪ Commuter passes sold	• Parking Services
▪ Public transit usage	• Transit Authority
▪ Bike rack capacity and usage	• Physical Surveys (labor intensive)
▪ Street parking	• Physical Surveys (labor intensive)
▪ Lot usage	• Physical Surveys (labor intensive)
▪ Month/Day/Time usage of transit, bike racks & parking lots.	• Compiling data from physical surveys (labor intensive and requires additional skills in data entry & analysis)

Drone Projects for Data Collection
- Town/Gown Partnership

Innovation for the Future

- Share the cost & footage from drones with the municipalities or set-up in-kind agreements where:
- Students set-up the methodology for data collection based on client information needs
- Students do the counting and enter the data
- Students and/or classes conduct the data analysis and interpret the data for general consumption
- Students create the reports and graphics



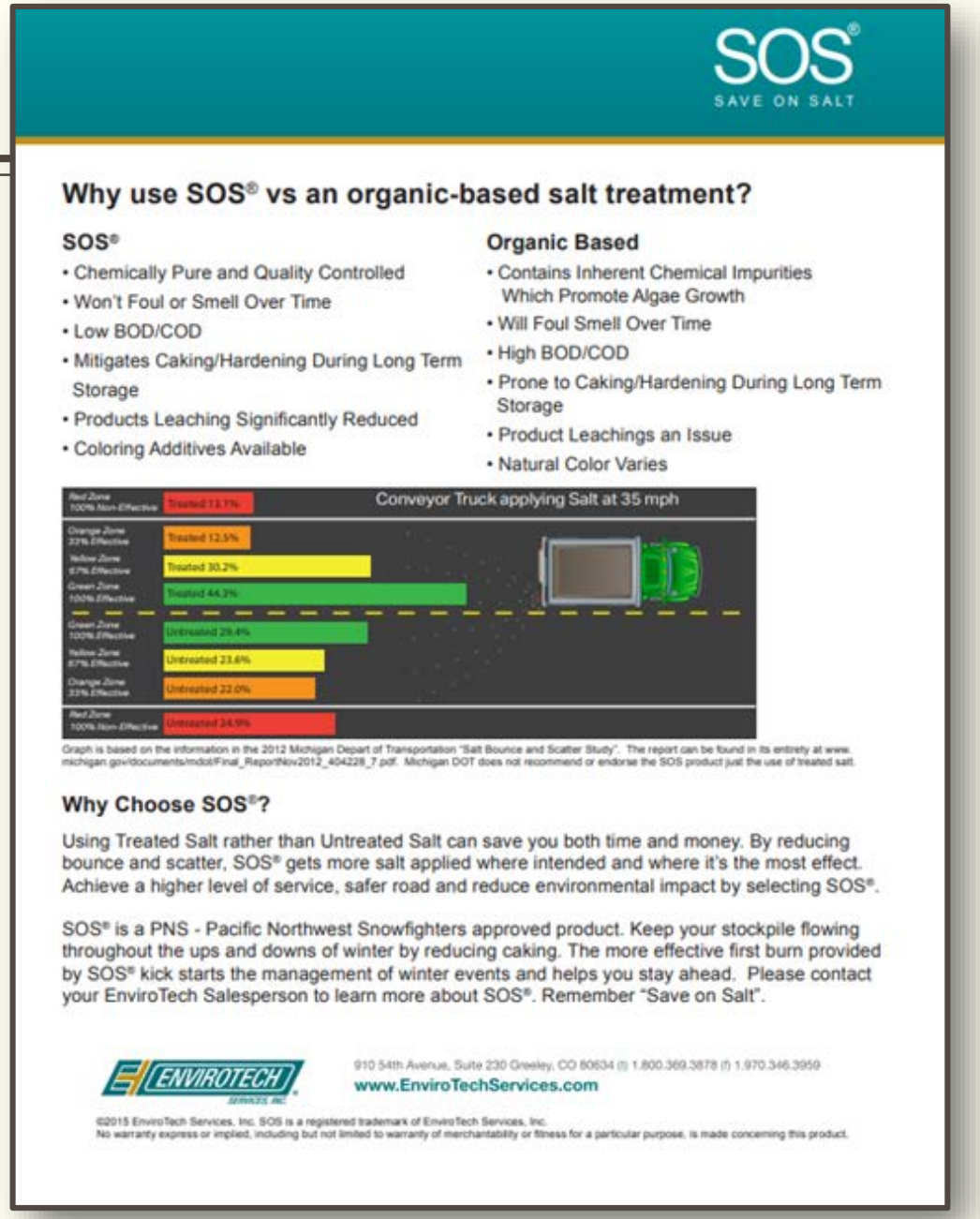
- Innovation districts: multi-function and multi-purpose usage
- Example – sensors mounted on lights that provide on-demand information about parking spaces.

RESEARCH ON CAMPUS AND RESEARCH FOR CAMPUS – IMPROVING LIFE IN THE NEIGHBORHOOD

Providing opportunities to utilize the campus as a laboratory and apply the research for the benefit of all

Snow & Ice Operations

- Salt Brine Plant & Proprietary Solution by Envirotech
- Product claims 70% decrease in concrete corrosion
- Existing research is on ice melt capacity and performance factors
  - MN DOT, 2012
  - Vermont, 2009
  - CO DOT, 2009
- SHRP-H-332 Standards provides 12 main & 50 ancillary tests for evaluating deicers (Chappelow, 1992)
- Transportation Research Board – IDEA Program



SOS®
SAVE ON SALT

Why use SOS® vs an organic-based salt treatment?

SOS®
- Chemically Pure and Quality Controlled
- Won't Foul or Smell Over Time
- Low BOD/COD
- Mitigates Caking/Hardening During Long Term Storage
- Products Leaching Significantly Reduced
- Coloring Additives Available

Organic Based
- Contains Inherent Chemical Impurities Which Promote Algae Growth
- Will Foul Smell Over Time
- High BOD/COD
- Prone to Caking/Hardening During Long Term Storage
- Product Leachings an Issue
- Natural Color Varies

Graph is based on the information in the 2012 Michigan Depart of Transportation "Salt Bounce and Scatter Study". The report can be found in its entirety at www.michigan.gov/documents/mdot/Final_ReportNov2012_404228_7.pdf. Michigan DOT does not recommend or endorse the SOS product just the use of treated salt.

Why Choose SOS®?

Using Treated Salt rather than Untreated Salt can save you both time and money. By reducing bounce and scatter, SOS® gets more salt applied where intended and where it's the most effect. Achieve a higher level of service, safer road and reduce environmental impact by selecting SOS®.

SOS® is a PNS - Pacific Northwest Snowfighters approved product. Keep your stockpile flowing throughout the ups and downs of winter by reducing caking. The more effective first burn provided by SOS® kick starts the management of winter events and helps you stay ahead. Please contact your EnviroTech Salesperson to learn more about SOS®. Remember "Save on Salt".

ENVIROTECH SERVICES, INC.

910 54th Avenue, Suite 230 Greeley, CO 80634 (t) 1.800.369.3878 (f) 1.970.346.3959
www.EnviroTechServices.com

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SMOKING
304J


NO
PARKING

Opportunities

Transportation Research Board Programs

- National Cooperative Highway Research Program
- Innovations Deserving Exploratory Analysis
- Airport Cooperative Research Program
- Transit Cooperative Research Program
- Hazardous Material Cooperative Research Program
- National Cooperative Freight Research Program

Federal Research Programs

- Federal Highway Administration
- Federal Transit Administration
- Federal Aviation Administration
- Research and Innovative Technology Administration
- National Highway Traffic Safety Administration
- Federal Rail Administration
- Maritime Administration
- Federal Motor Carrier Safety Administration
- Pipeline and Hazardous Materials Safety
- National Science Foundation
- National Institute of Health
- Department of Energy
- Department of Homeland Security
- Department of Education
- Environmental Protection Agency
- Department of Agriculture

State Department of Transportation Programs

- State Departments of Transportation Research Programs
- Transportation Pooled Funds Program

University Transportation Centers

Private Corporations or Foundations

International Research Programs

This Illustrates the range of research programs focused on transportation.

TRB (Transportation Research Board) facilitates research opportunities

Research Questions:

- What is the corrosiveness level of SOS on concrete?
- What is cost compared to other methods?
- Are there impacts to macroinvertebrates in the water way? In the soil?
- Is there an impact to stormwater management practices?
- Does this product impact the vegetation of the stream buffers?

Audubon Cooperative Sanctuary Program

- Began the process in 2010
- Six Certifications completed to earn the designation
- Undergraduate and Graduate students from 2 Colleges completed the majority of the work
- Branding (1 of 56 golf courses in Illinois, and 897 in the world)
- Setting up ongoing internships with municipal golf courses
- Complements the establishment of our Center for a Sustainable Water Future
- Complements faculty research funded by an EPA grant on residential lawn practices and impact on water quality

- The Six Certifications
  - Environmental Planning
  - Water Quality Management
  - Water Conservation
  - Chemical Use Reduction & Safety
  - Wildlife and Habitat Management
  - Outreach and Education

Completed March 14, 2018!

APPA's Purpose

With one eye on providing excellence in today's educational environment, and one always trained on adapting, enhancing, and transforming the facilities of the future, APPA seeks to create positive impact in educational facilities on three important levels:

- APPA transforms individual facilities professionals into higher performing managers and leaders, which…
- Helps transform member institutions into more inviting and supportive learning environments, which…
- Elevates the recognition and value of educational facilities and their direct impact on the recruitment and retention of students, faculty and staff.

THANK YOU! QUESTIONS?

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