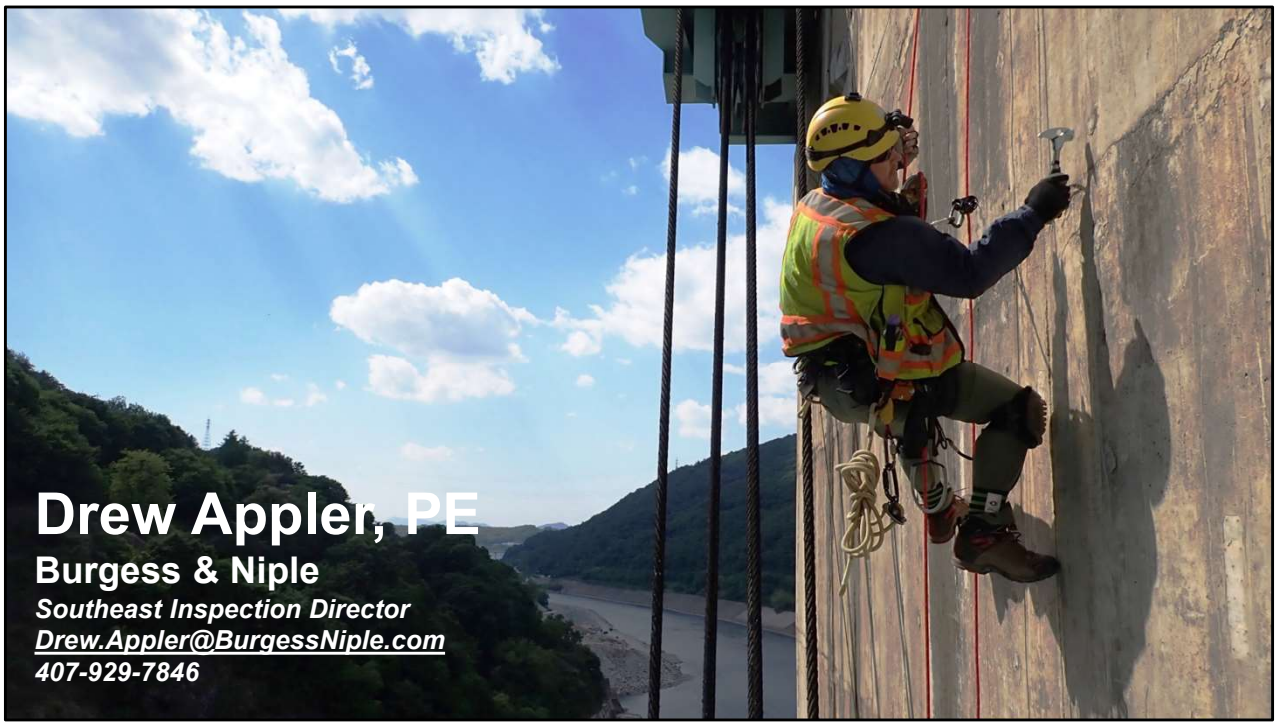

BURGESS & NIPLE
Reaching
New Heights:
Enhancing Bridge Inspections
through Rope Access Climbing



Drew Appler, PE

Burgess & Niple

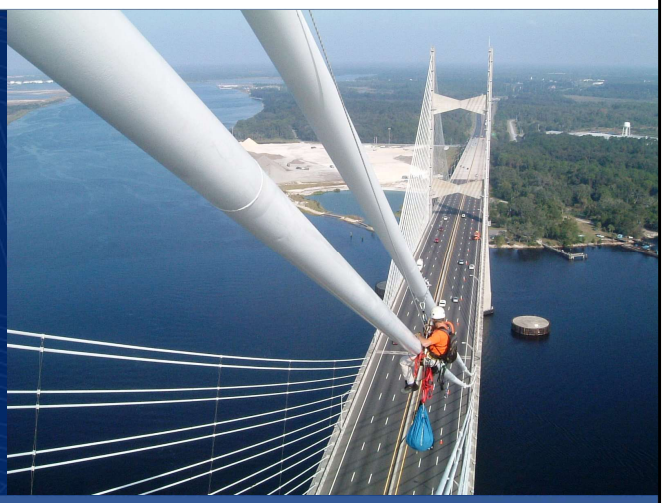
Southeast Inspection Director

Drew.Appler@BurgessNiple.com

407-929-7846

AGENDA

- **Setting the Stage**
  The Challenge
- **Rope Access**
  What It Is & Why It Works
- **Benefits**
- **Real World Examples**
- **Call to Action**



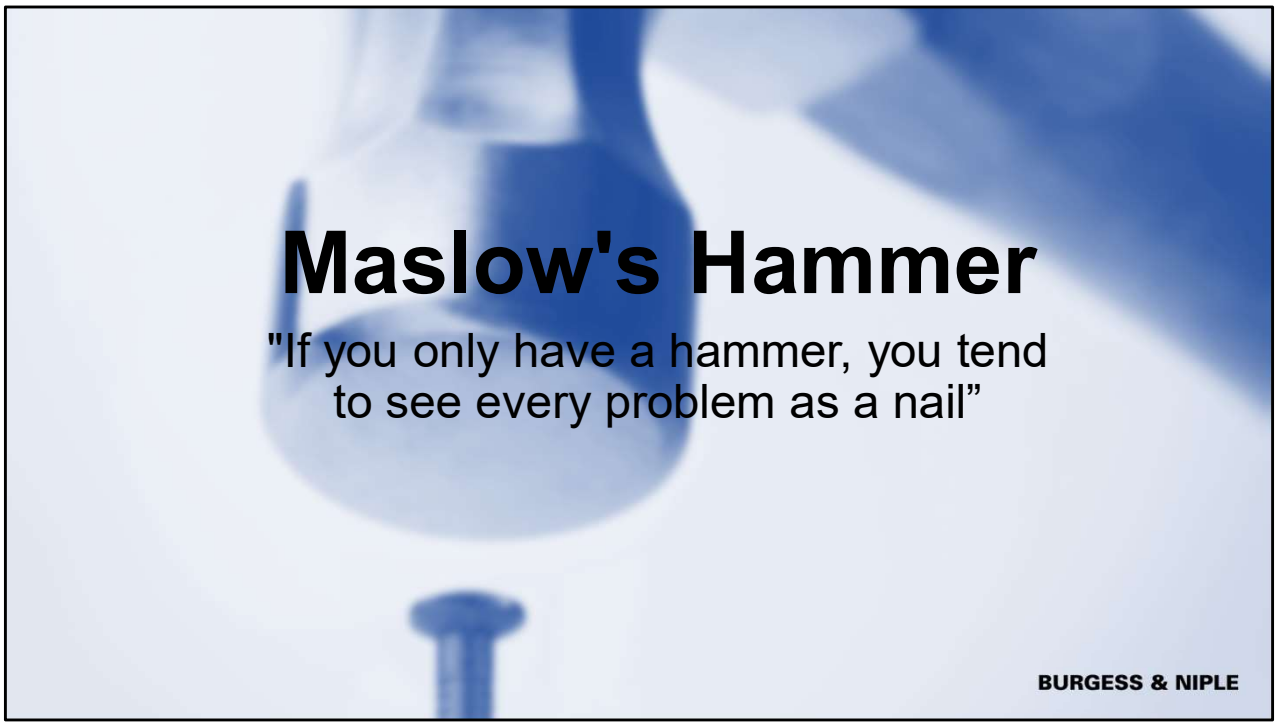
BURGESS & NIPLE

BURGESS & NIPLE

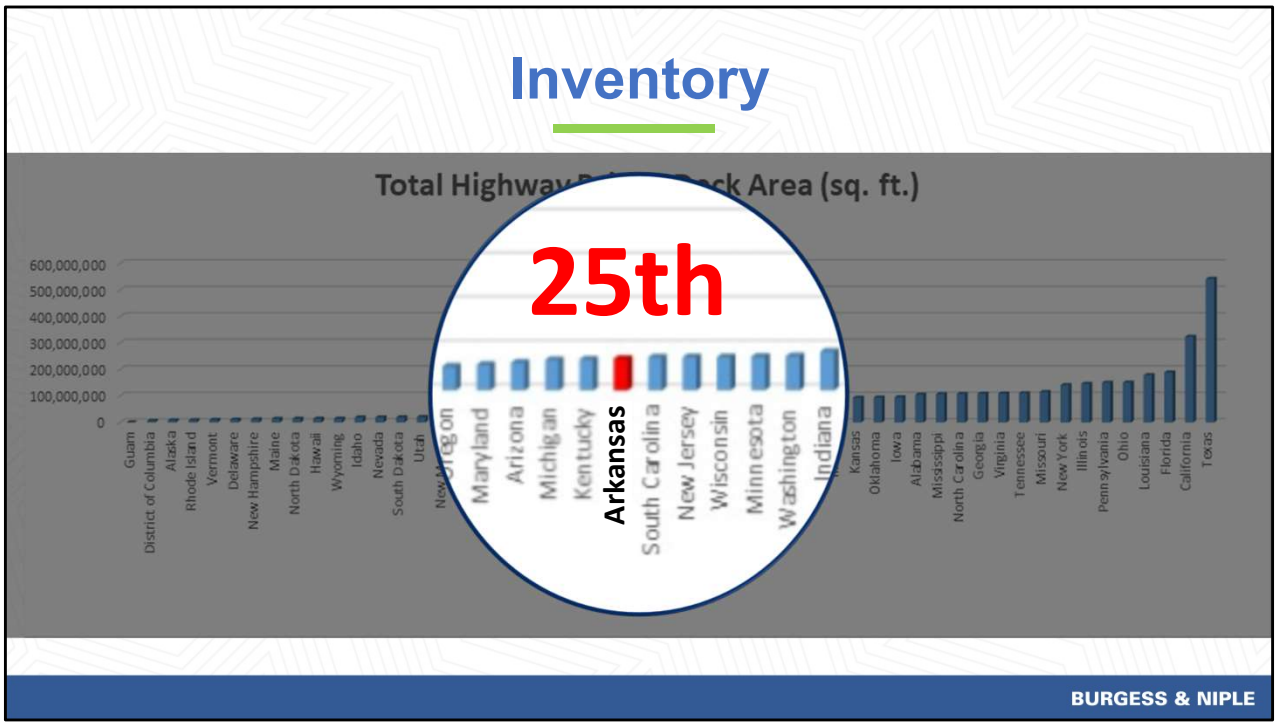
1

SETTING THE STAGE

The Challenge



Rope Access is another tool in the tool bag



Out of the 50 States DC And 5 Territories
ARDOT has ~70M Deck Square Foot

The Challenge

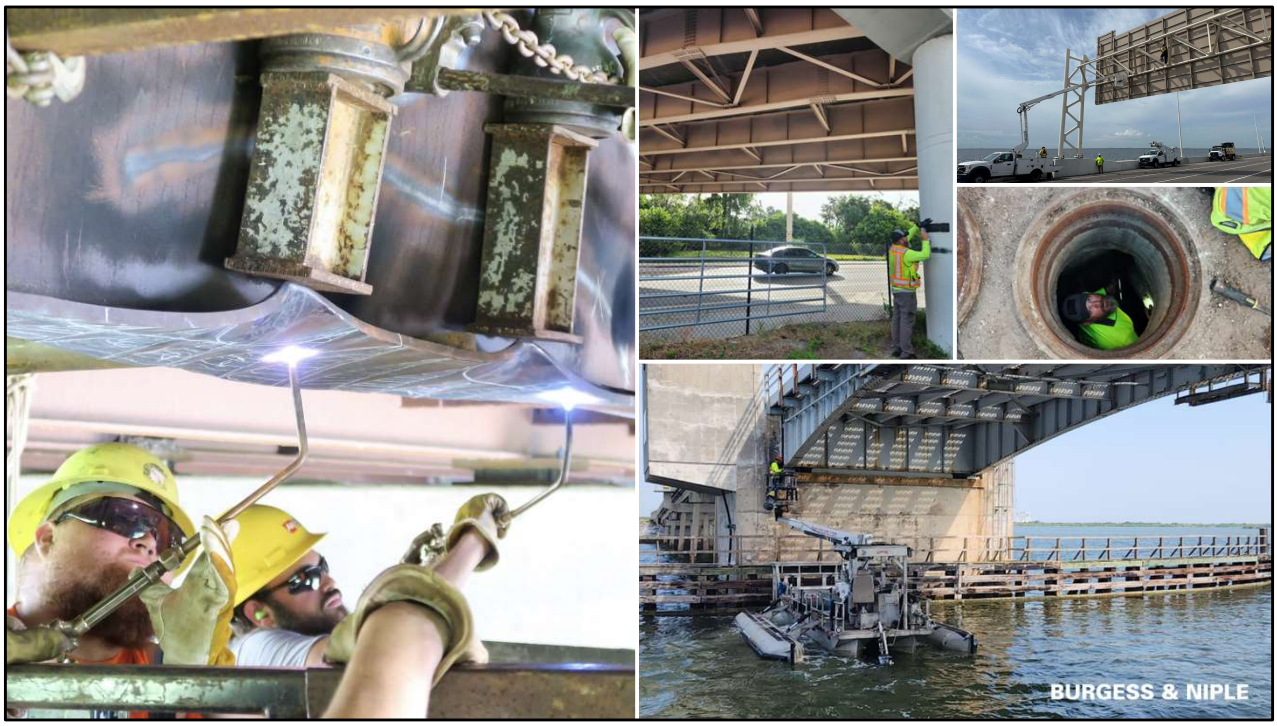
Total Bridge Structures

~12,800

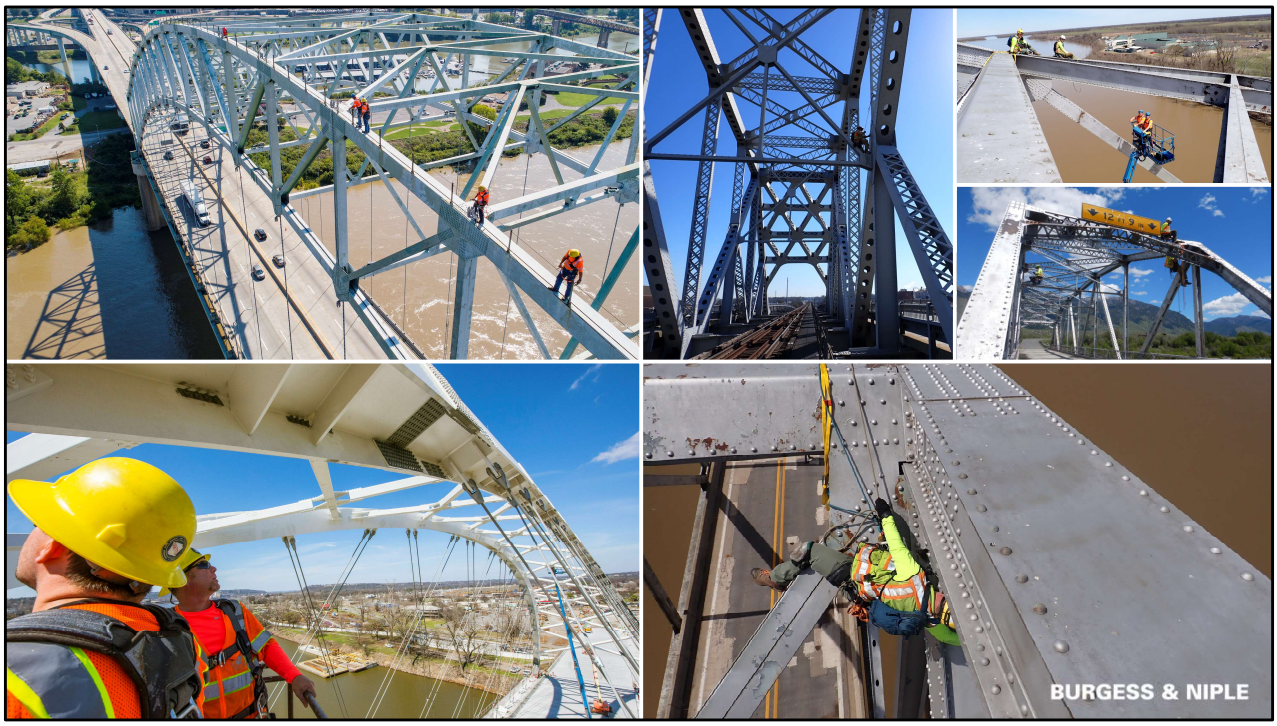
Complex Crossings

118

BURGESS & NIPLE



Culverts to PS/ Beams, Steel Girders you name it
29 Inspection Teams
7 Engineers
Sub 100 Folks



Including
Rope Access
Additional Underwater
NDE

BURGESS & NIPLE

2

ROPE ACCESS
What It Is & Why It Works

Specific to Rope Access
IRATA Internation Rope Access Trade Association – 1987 (EUROPE)
SPRAT Society for Rope Access Technicians – Mid 1990's (AMERICA)
Mainly Gas and Offshore Oil Platforms
Builds the foundations of working safely at heights

Level I
Level II
Level III

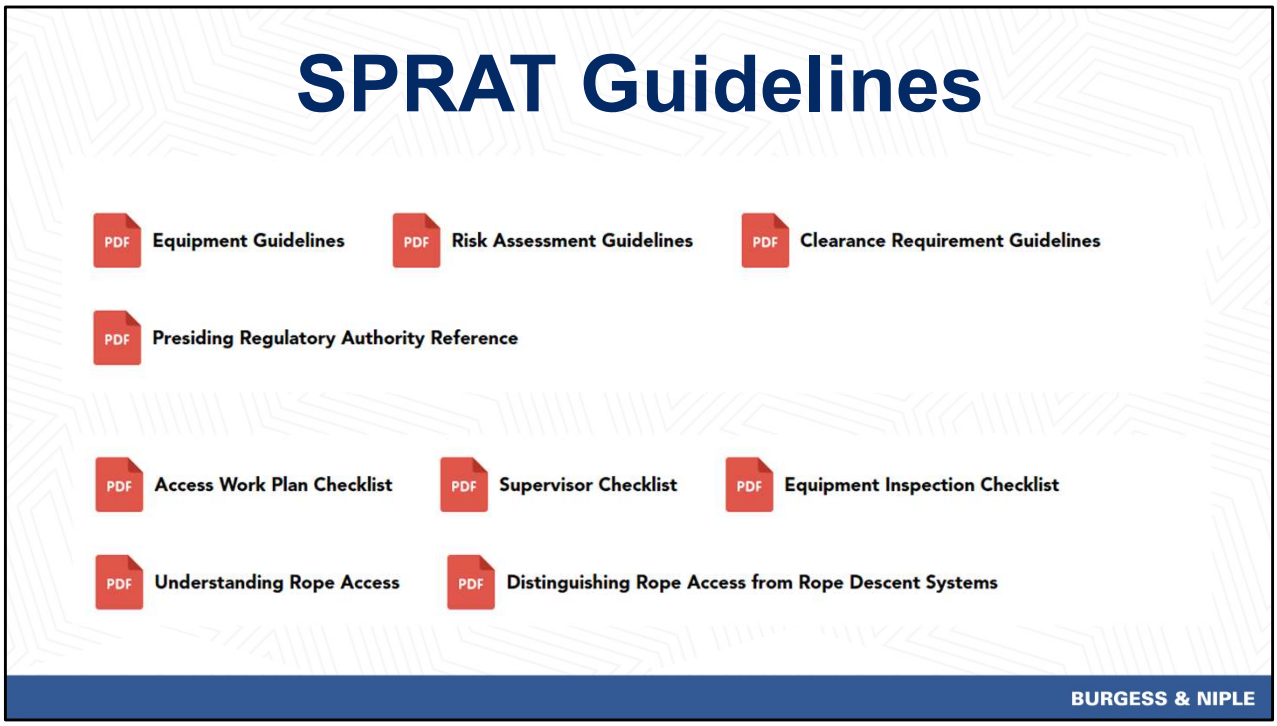
Specific to Bridges Grew out of a need

Our way of solving the problem, how to safely inspect bridges

Started with Sport harnesses and webbing

After SPRAT IRATA came along we adjusted to what those associations guidelines.

That was 35 Years ago



These Guidelines provide the base level of input

Risk Assessment

Equipment Guidelines

Work Plan Check LIsts

Builds the foundations of working safely at heights

Outlines what you need to do work safetly

Level I
Level II
Level III

Builds the foundations of working safely at heights

3 Levels

Level I Entry Level One Week Course General (written and physical)
Level II 500 Hours at Level I on Rope + a test (written and physical)
Level III 500 Hours at Level II + a test (written and physical)

Valid for 3 Years….

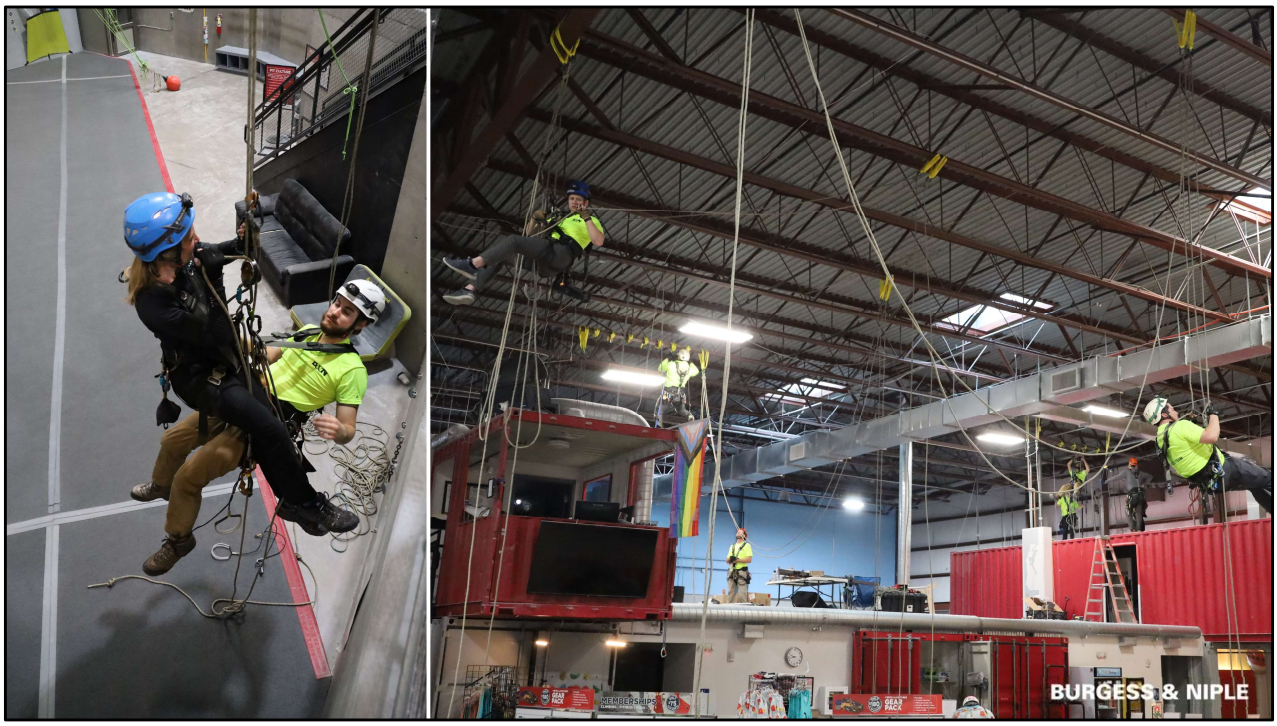
B&N's Yearly Summit our entire team gets together once a year to learn about what other regions have been working on.

What's Gone right on projects.... What hasn't... Also Practice

Not all bridge inspection on Rope is straight out of the SPRAT handbook, but it based on the foundating principles of SPRAT

Work and Practice situations not frequently seen in the field

Do the inspectors like heights?



Put our teams in situations Including Rescues

Practice Makes Perfect

Happy to see other consultant consultants have begun doing this

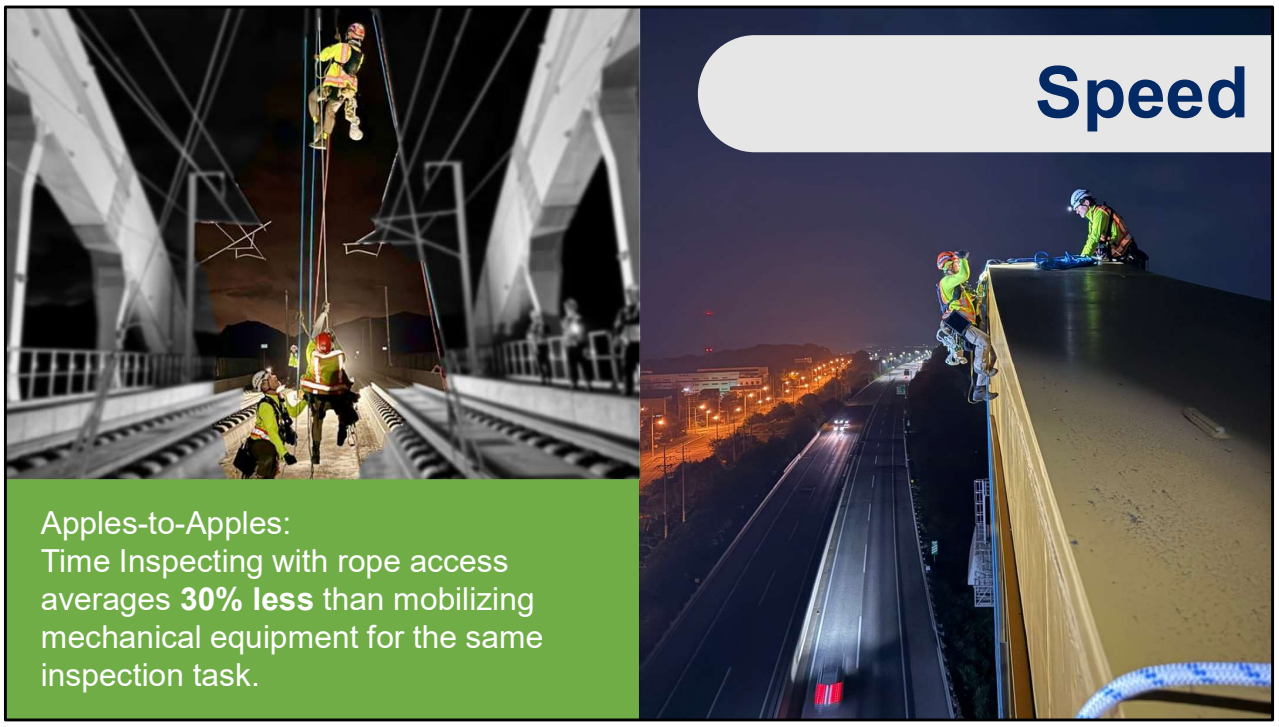
Beyond IRATA and SPRAT which are the guiding foundations

3 main advantages
Safety
Speed
Synergy

Safety … Safety …. Safety…

Looks dangerous, but ….

I feel more comfortable on rope than on the deck.



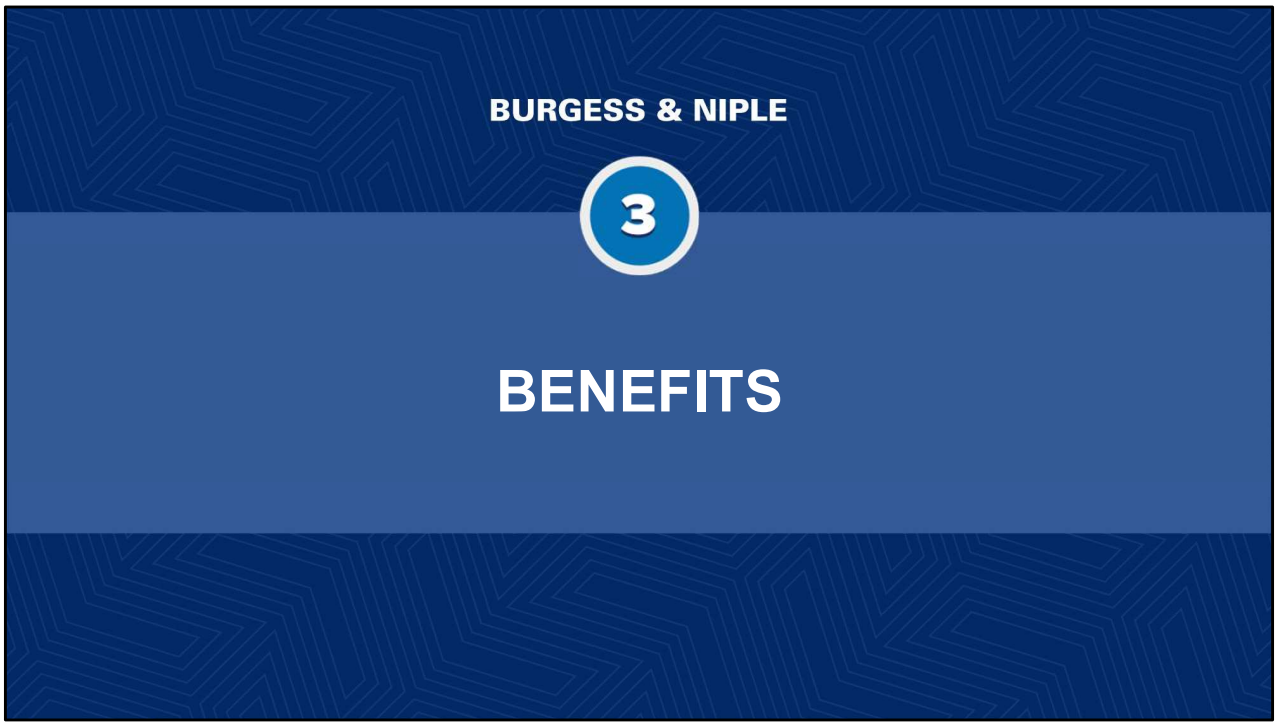
Not all bridges are equal

Rope Access shine on Trusses, Cable Stays, and complex structures.

Less useful on Segmental

Inspectors can work in pairs or separately safely.... meaning more inspecting gets done.

We have very little down time.



Now we know why it works… lets talk about some direct benefits you'll see.

Benefits

Access

Studies show rope access allows inspectors to reach **3x more connection points** in truss bridges than mechanical access in the same timeframe.

Impacts

By reducing closures, agencies have reported saving **thousands of driver delay hours per project**.

Quality

Nothing replaces a human hands and eyes (yet)

BURGESS & NIPLE

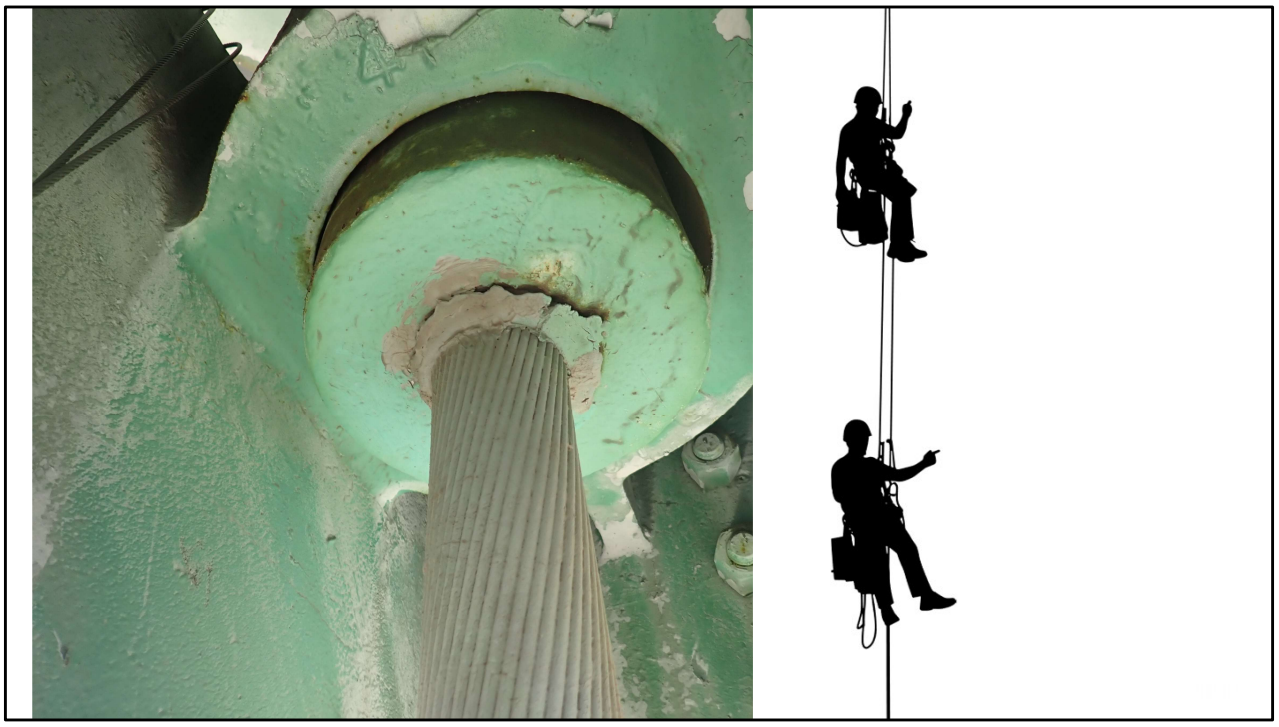
As Dr. Hernandez spoke on this morning the Roadway User Costs are approximately 20% higher for lane closures

Inspector is safely inspecting all aspects, not standing on the top rail of man lift.

Yes, they have tall mechanical access I’ve been on a 180ft man lift they are no fun.

Left Photo from a drone
Right photo from a human

On Surface
Is that minor fretting corrosion on the threads… an inspector would know…
Also what areas can’t you see in the drone photo? Underneath



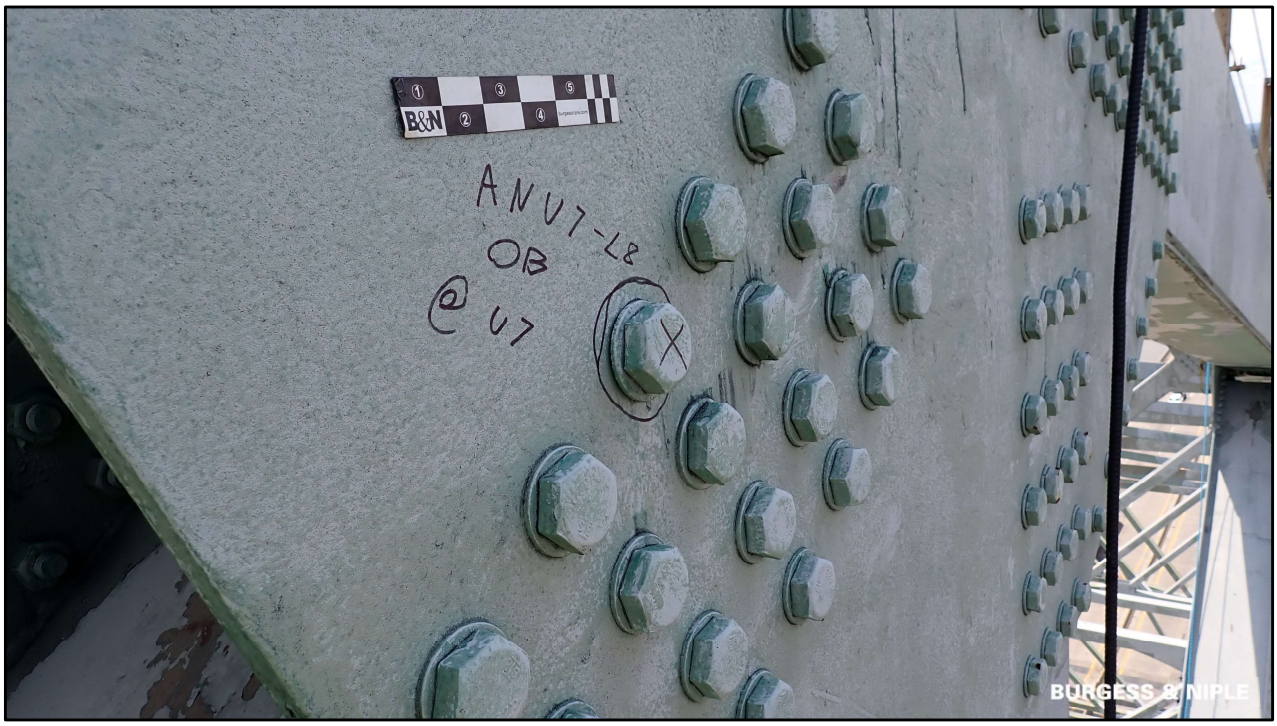
Drones are able to have their camera rotate but have limitations.

Typical Photo of Gusset Plate could have been taken by a drone or boat

What does it tell you??

Minor flaking paint…

Now what do these tell you



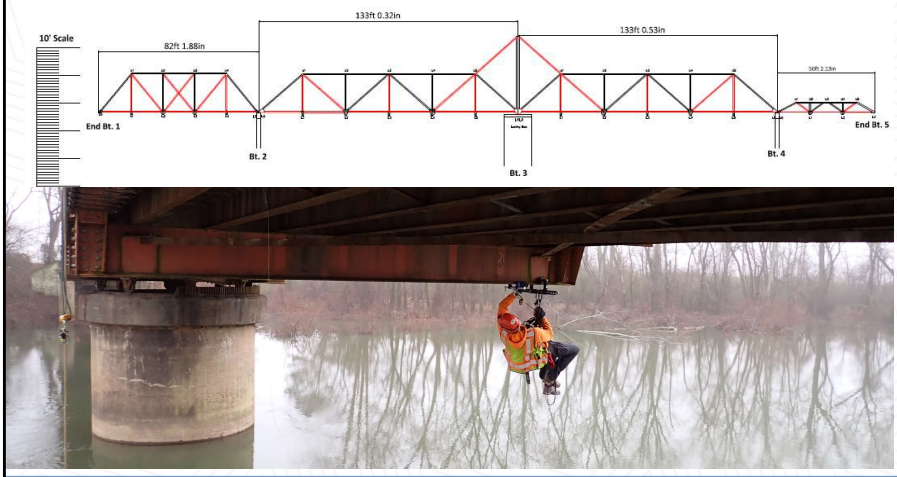
With out the maker on the bolt there is no way a drone would be able to tell that washer is loose.

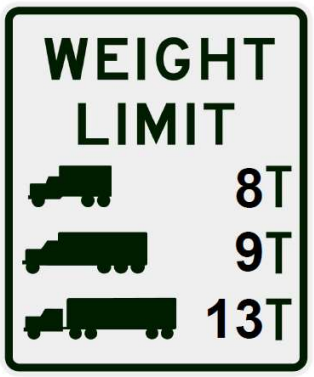
BURGESS & NIPLE

4

REAL-WORLD EXAMPLES

Smaller Truss Bridge





BURGESS & NIPLE

Varying design types, but all spans have NSTMs
Limited to 8TN
Beam Rolling to the rescue

Large Truss Bridge

Red Members = NSTM (Hand On Inspection Required)
Green = Areas where Mechanical Access is limited
Solution – Tag Team it

Inspectors are able to get 360 degrees around the connections

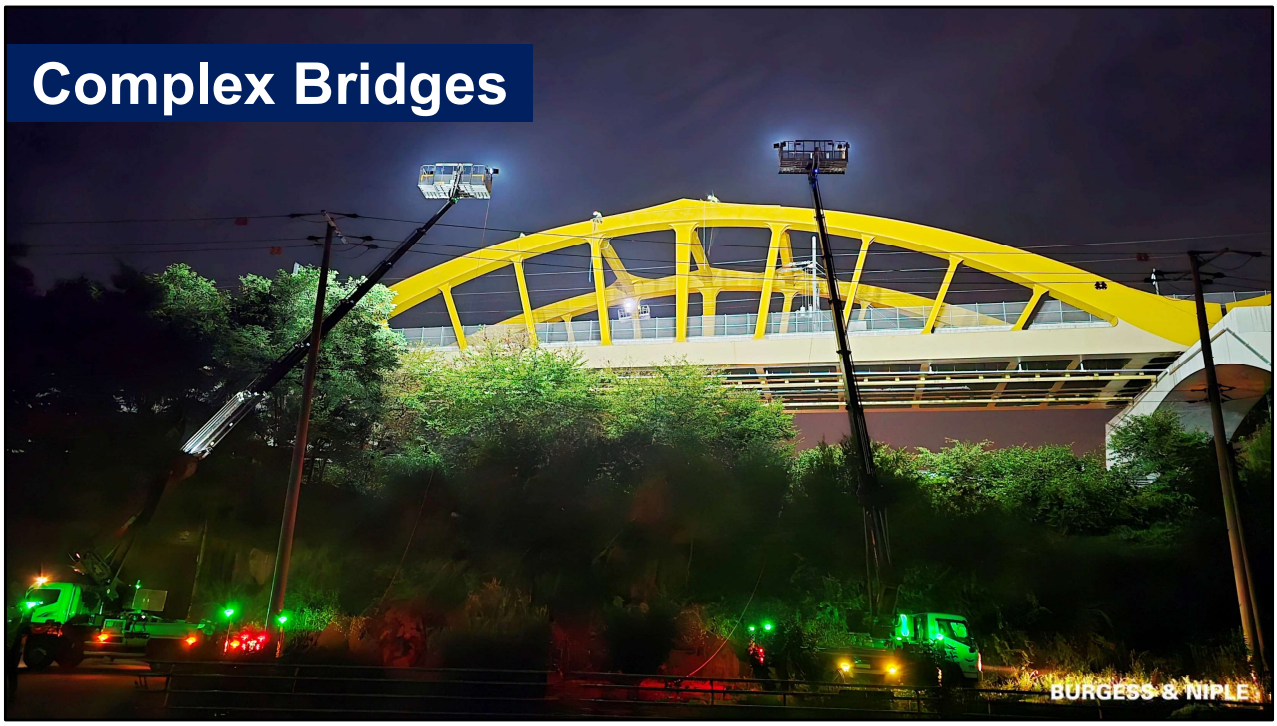
Large Truss Bridges


Complex Bridges
BURGESS & NIPLE

Complex Bridges

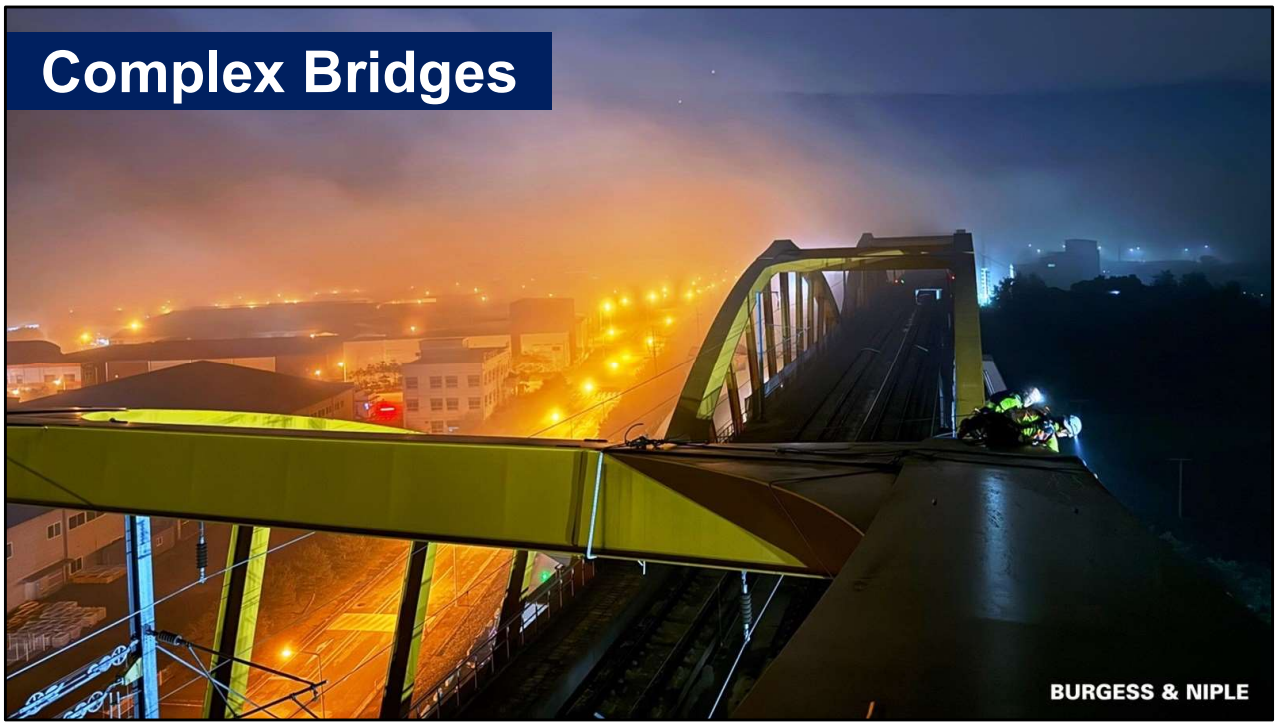
Tag Team – Climbers take the Upper Truss
Snoopers take the Floor System

Complex Bridges



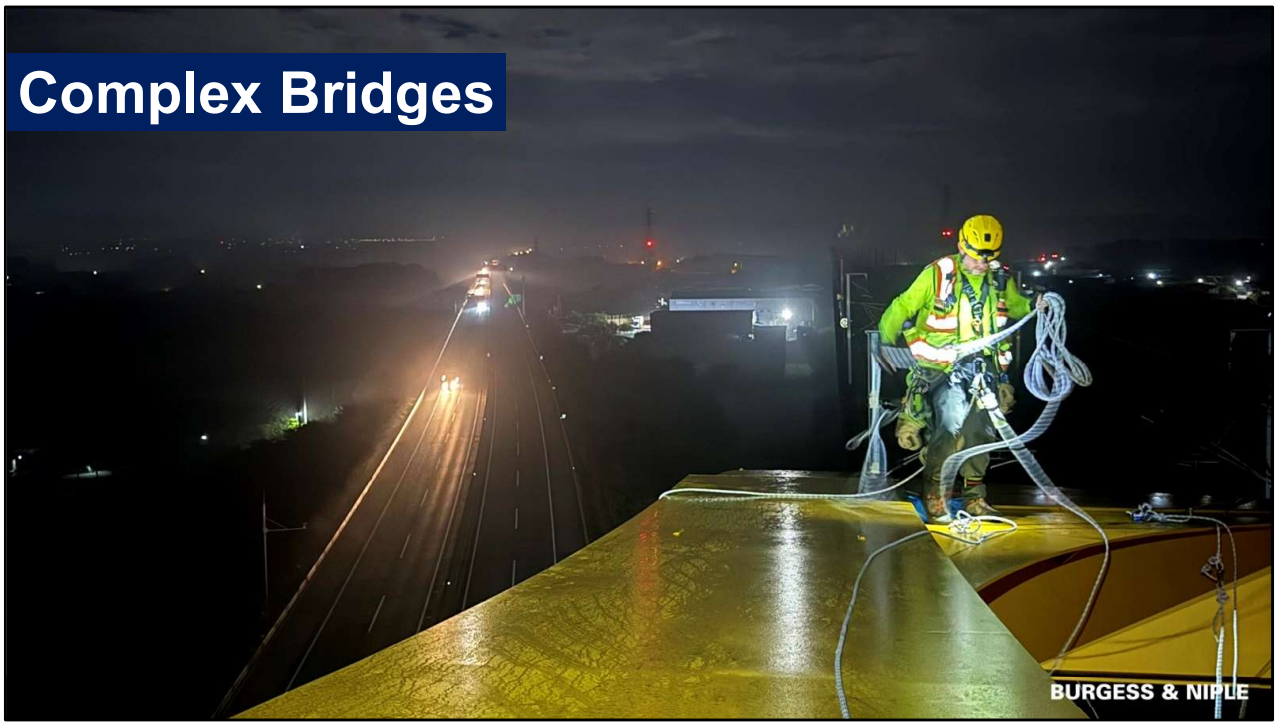
High Speed Rail
Only thing that has tighter restrictions than our cargo rails is High Speed Rails…
Limited Working Windows
Speed is Key

Complex Bridges



12KV Line down the middle
Safety = Lock Out Tag Out

Complex Bridges



Did I forget to mention that Major Highway below

Partial inspection using manlift… Again a tag team

BURGESS & NIPLE

CALL TO ACTION

What does this mean for your Project

-Not One Size Fits all

BURGESS & NIPLE

No good to inspect a culvert on rope…

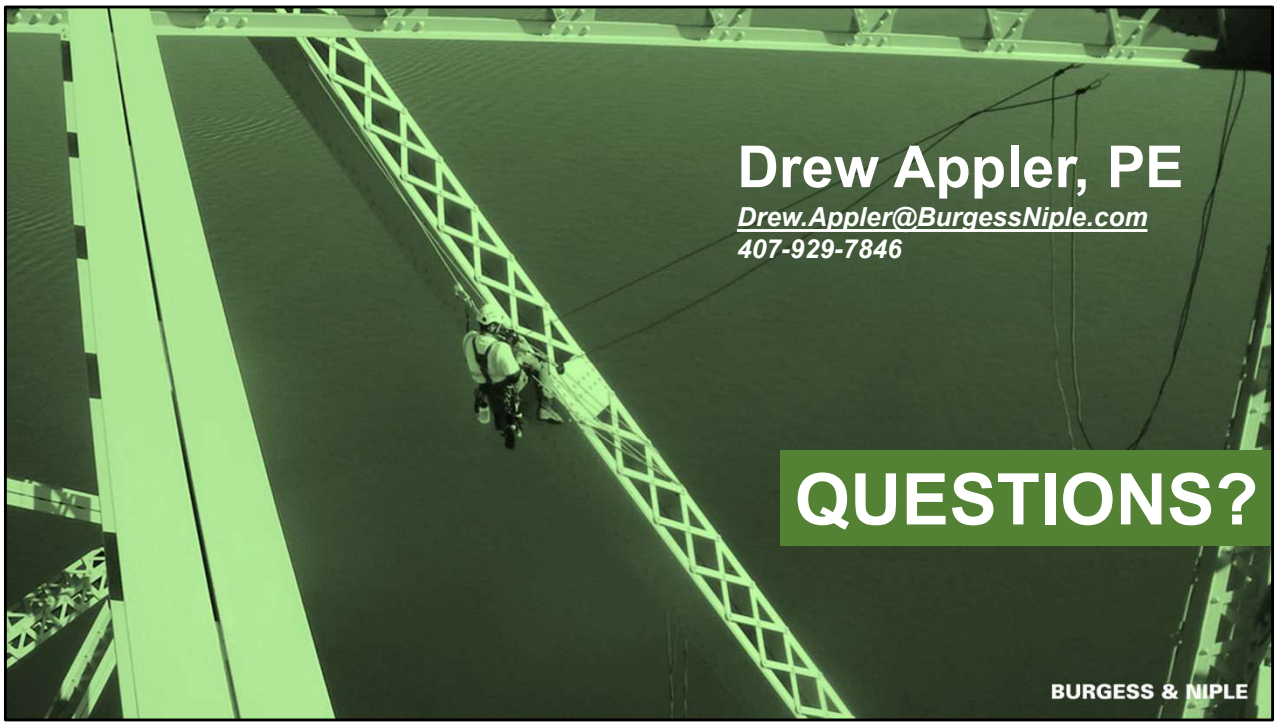
Key in on areas of interests (Drone First?)

Teamwork

"Teamwork is the ability to work together toward a common vision. It is the fuel that allows common people to attain uncommon results."

– Andrew Carnegie

Rope Access does not replace the team…. It becomes another tool in the tool box


Drew Appler, PE
Drew.Appler@BurgessNiple.com
407-929-7846
QUESTIONS?
BURGESS & NIPLE