Safety

2019 OACES / ODOT BRIDGE MAINTENANCE
A Pilot Training Course / Workshop
NL1  Slides pulled from:
1. NHI Bridge Maintenance M1L2.
2. NHI Bridge Maintenance M2L1.
3. NHI Bridge Maintenance M3L2.
NGUYEN Lisa, 9/4/2018
Health, **Safety**, Security

• “Under the Occupational Safety and Health Act of 1970, employers are responsible for providing a safe and healthful workplace. No person should ever have to be injured, become ill, or die for a paycheck.”
Causes of Accidents

- Improper attitude – Time, effort, peer pressure
- Personal limitations
  - Physical impairment
- Boredom and/or Carelessness
- Faulty equipment
- Inappropriate or loose fitting clothing
- Lack of planning
- Lack of proper training
- Lack of pre-safety meeting
- Cowboys and Heroes
Cowboys and Heroes – Do you work with any of these individuals?
The craziest things happen --
On your last day of Work!!

- Call an Engineer?
- Don’t Call?
The Fatal Four

• Falls,
• Electrocution
• Struck by object
• Caught-in/between
# Common Worker Safety Hazards & Risks

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Risk</th>
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<tr>
<td>Working at Heights</td>
<td>Falling</td>
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<tr>
<td>Fumes, Dust, Smoke</td>
<td>Respiratory Impairments</td>
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<td>Chemical exposure</td>
<td>Bodily harm</td>
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<td>Equipment/Machinery</td>
<td>Injury</td>
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<td>Power lines</td>
<td>Shock or electrocution</td>
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<tr>
<td>Confined Space</td>
<td>Oxygen deficiency</td>
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<td>Trenches &amp; Excavitations</td>
<td>Collapse/cave-in</td>
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<td>Traffic</td>
<td>Collision and bodily injury</td>
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</table>
Required Training

• Fall Protection Training
• GHS – Globally Harmonized System: Hazard Communication
• Respiratory Safety, Silica Table 1
• Lock-Out Tag-Out
• Blood Borne Pathogens
• Excavation – Trenching / Shoring
• CPR – First Aide
Addressing Worker Safety Hazards in the Field

- Training, Training, Training - Documentation
- Use fall protection
- Use appropriate personal protective equipment (PPE) for the job
- Apply accident prevention and proper safety measures
Fall Protection

• What is a “Safe” Height ???

• Scaffold & Construction Work vs General Industry Work
  Scaffold Standard (29 CFR 1926.451(g)(1)) - 10 Feet
  Construction Standard (29 CFR 1926.501(b)(1)) - 6 Feet
  General industry standard,(29 CFR 1910.28(b)(1)(i)) – 4 Feet

CFR – U.S. CODE OF FEDERAL REGULATIONS
Fall Protection

- Fall Prevention, Fall Restraint, Fall Arrest
- Survey the site for potential fall hazards before working
  - Applies to unprotected side or edge
- Complete proper training before using fall protection
Fall Protection (con.)

• A,B,C,&D = Anchor, Body Wear, Connection, getting Down

• Fall Gear – Service Life

• Must be anchored to structurally sound attachment point.
  o Separate anchorage points for each line
Fall Protection - Ladders

- LADDERS (29 CFR 1910.23)
- Always inspect a ladder before use.
- Verify level footing and rigid support at top
- Follow manufacturers Warnings!
- Use the proper lean ratio when using a ladder:
  - 1 foot out from base, for every 4 feet of elevation
Bridge Rail
Importance of PPE Video
Appropriate PPE

- OSHA, OR-OSHA, and ANSI Guidelines
- Head protection
  - Hardhats or helmets
- Eye and face protection
  - Safety glasses, goggles, face shields
- Foot protection
  - Boots with impact resistant toes, electrical, slip resistance and puncture resistant soles
Appropriate PPE (con.)

- Hand protection
  - Gloves
- Hearing protection
  - Ear plugs or muffs
  - Two Way Headsets
- Respiratory protection
  - Respirator or dust mask
  - Air monitoring device
- Protection from motorists
  - Safety reflector vest – 1000 Ft
- Drowning prevention
  - Life jacket
Over/ Near Water

- Anywhere there is a chance of drowning!
- Life Jacket
- Skiff
Respirable Crystalline Silica

- Know the Rules
- Table 1
Appropriate PPE (con.)

- Skin Protection
  - Proper clothing coverage
  - Gloves
  - Sunblock
  - Face shields
Safety Measures

- Safety attitude and awareness
- Safety Data Sheets (SDS) – The RIGHT to UNDERSTAND
- Equipment and machinery
- Forklift Safety
- Boom Truck Safety
- Electrical safety
- Excavation – Trenching/Shoring
- Confined space
- Traffic configuration and management
Safety Data Sheets (SDS)

9 Pictograms, 16 Section, Two Signal Words – Warning and Danger
Safety Data Sheets (SDS) (con.)

- Globally Harmonized System (GHS) Pictograms:

  - **Acute Toxicity** (fatal or toxic)
  - **Skin Corrosion / Burns**
  - **Explosives**
  - **Gases Under Pressure**
  - **Aquatic Toxicity**
  - **Flammables, Pyrophorics**
  - **Irritant (skin and eye)**
  - **Oxidizers**
  - **Carcinogen**
  - **Self-Heating, Emits Flammable Gas**
  - **Skin Sensitizer**
  - **Self-Reactive, Organic Peroxides**
  - **Acute Toxicity**
  - **Eye Damage**
  - **Self-Reactive**
  - **Corrosive to Metals**
  - **Organic Peroxides**
  - **Emits Flammable Gas**
  - **Respiratory Sensitizer**
  - **Respiratory Tract Irritant**
  - **Narcotic Effects**
  - **Hazardous to Ozone**
  - **Mutagenicity**
  - **Respiratory Sensitizer**
  - **Target Organ Toxicity**
  - **Aspiration Toxicity**
Equipment and Machinery

- Keep work areas uncluttered
- Be aware of all moving equipment
- Do not operate any equipment without appropriate training
  - Be aware of all overhead power lines
What’s Wrong with this Picture

- Cowboy or Super Hero
Forklift Safety

- Training is required by law.
- Study the Operator’s Manual
- Keep the blades low whenever possible.
Boom Trucks

- NCCCO Requirements
  National Commission for the Certification of Crane Operators
- Delayed (again) until April 15, 2019
- Rigging and Signaling
Electrical Safety

• Always perform a pre-work walk through to identify potential sources of danger
• Look for overhead power lines and buried power line indicators
Excavation Safety

- Designed by an Engineer
- Sloped no Steeper than $1\frac{1}{2}:1$
- Certified to identify soil types.
Confined Space

• Potential hazards include:
  o Asphyxiation
  o Toxic materials
  o Entrapment

• You must have the proper training and permit to enter a confined space!
Traffic Hazards
Traffic Safety Video
Traffic Control Planning

- Develop a Plan
- Know the Plan
- Follow the Plan
- Trained Flaggers
- Dedicated Flaggers
Reminders!

- Fatal Accidents happen very quickly
- Caused by “Legacy” practices
- Lack of Situational Awareness