Snowplow Safety Training

Richard Domonkos
Indiana Local Technical Assistance Program
Developing A Culture Of Safety

Rich’s “Top Ten” List of Snowfighter comments that lead to an emergency room visit.

1. Ok - Everybody stand back!
2. (2-way radio call) What is the biggest chain we got!
3. I never see a train on those tracks!
4. It’s not that stuck, give it a tug!
5. We couldn’t wait for the power company.
6. Try it again – but this time try to get a running start.
7. I tried to tell him to slow down.
8. Hurry up so we can go home!
9. We have always done it that way and know one has ever got hurt before.
10. I’ll be fine with one plow light.
According to the 2015 edition of the Farmers’ Almanac, the winter of 2014–15 will see below-normal temperatures for about three-quarters of the nation. A large zone of very cold temperatures will be found from east of the Continental Divide east to the Appalachians. The most frigid temperatures will be found from the Northern Plains into the Great Lakes. The coldest outbreak of the season will come during the final week of January into the beginning of February, when frigid arctic air drops temperatures across the Northern Plains to perhaps 40 below zero. As the frigid air blows across the Great Lakes, snow showers and squalls will drop heavy amounts of snow to the lee of the Lakes.
Indiana First Fall Frost
10-year Average

Average Date of First Fall Frost
32 F or Lower

Average Date of First Fall Frost
28 F or Lower

Analysis by Indiana State Climate Office
Web: http://www.indclimate.org
Indiana Last Spring Frost
10-year Average

Average Date of Last Spring Frost 32 F or Lower

Average Date of Last Spring Frost 28 F or Lower

Analysis by Indiana State Climate Office
Web: http://www.idem.state.org
Developing A Culture Of Safety

Tools to develop a culture of safety in your agency.

- Tailgate talks.
- Pre shift safety/planning briefings.
- Pre-trip planning, the right tool for the job.
- Everyone is responsible, someone is in charge!
- Equipment safety training.
- Look for the safety labels & devices on your equipment.
- Training on proper use of tools and equipment.
- Accountability & discipline – Be fair but firm.
What We Will Cover Today

- Pre/Post Trip Inspections
- Plowing Safety
- Plow Types
- Material Spreaders
- Recovery
- Hand Signals
- Maintenance
Your Work Does Save Lives
Training

**Pre-winter safety training**
- Outside trainer
- Senior leadership

**Pre-winter route practice & landmarks**
- Route development
- Practice runs & creating landmarks

**Pre-winter equipment preparation & safety**
- New equipment training
- New materials training

**Responsibilities and expectations**
- New area to maintain
- New agency policies
- New L.O.S. for an area or route
Equipment

Right equipment for the right job
- Use what's needed - not just what's available
- Equipment purchasing
- Training on machine and capabilities
Equipment

Additional Equipment

• Truck loading
• Equipment repair
• Equipment refueling
• Tire chains
• Towing chains
• Shovels
• Hand tools
• Two – way radio
Equipment Hazards – Pre/Post Trip

**Equipment Checklists**

Good preventive maintenance program

Pre-start and Post Operation checklist

- Chassis
- Spreaders
- Controls
- Plows
- Electrical Equipment
- Safety Equipment - Lighting
- Hydraulic Equipment
- Tires & Rims
Equipment Checklists

- Should cover in detail machine and functions.
- Checklist review process by maintenance staff.
- Good recordkeeping on equipment history

TYPICAL TRUCK OR COMBINATION VEHICLE INSPECTION GUIDE

- Engine Compartment
- Fluids
- Bolts and hoses
- Components

STEP 1: Engine Compartment
- Fluids
- Bolts and hoses
- Components

STEP 2: Left Side of Cab Area
- Left front wheel
- Left front suspension
- Left front brake

STEP 3: Front of Cab Area
- Front axle
- Condition of steering system
- Windshield
- Lights and reflectors

STEP 4: Right Side of Cab Area
- Items as done on left side of cab area

STEP 5: Fuel tank(s) Visible parts

STEP 6: Trailer Front Area
- Air and electrical lines and connections
- Lights and reflectors

STEP 7: Right Rear Tractor Wheels Area
- Dual wheels
- Pneumatic or Tandem axles
- Brakes

STEP 8: Rear of Tractor Area
- Frame and cross members
- Air and electrical lines and connections

STEP 9: Coupling System Area
- Fifth-wheel (lower)
- Fifth-wheel (upper)
- Slinging fifth-wheel
- Air and electrical lines and connections

STEP 10: Right Side of Trailer Area
- Front trailer support (landing gear or dollies)
- Bake (axle(s))
- Lights and reflectors
- Frame and body

STEP 11: Right Rear Trailer Wheels Area
- Dual wheels
- Pneumatic or Tandem axles
- Brakes

STEP 12: Rear of Trailer Area
- Lights and reflectors
- Cargo securement

STEP 13: Left Rear Trailer Wheels Area

STEP 14: Left Side of Trailer Area

STEP 15: Left Saddle Tank Area
Snow Plows
Equipment Hazards – Plowing Safety

Know Your Route

- Look For Obstacles Before You Plow. (Mailbox, Manhole, Curb, Power lines, Fire Hydrants & Soft Shoulders)
- Know Where to do Your Backing. **AND PRACTICE**
- Have Landmarks on Your Route.
Stay Alert!

- Travel slowly through subdivisions watch for children and animals
- Watch for children playing near the edge of the road
- During heavy snow watch for abandon vehicles!
- Plowing near Railroad Tracks
  - STOP LOOK LISTEN
- Plowing on Bridges SLOW DOWN!
- Be Patient in heavy traffic
Equipment Hazards – Plowing Safety
Equipment Hazards – Plowing Safety

Great Planning – But what about Winter?
Equipment Hazards – Plowing Safety
Equipment Hazards – Plowing Safety
A snow plow driver was airlifted to a local Hospital after driving his truck into the path of an oncoming train.

It happened at about 8:30 a.m. Sheriff's Lieutenant on the scene says the plow driver slowed for the stop sign at the tracks on County Road 151 West, but did not stop.

"The truck actually rolled over and was pushed 30 to 40 feet down a hill. It was carrying sand, so there was quite a bit of sand that was dumped out," The plow driver was conscious at the scene, but had leg and arm injuries. Rescuers cut through the wreckage to free him.
Equipment Hazards – Plowing Safety

Right equipment for the right job.
- Use what's needed - not just what's available.
- Training on machine and capabilities.
- Travel at safe plowing speeds.
Equipment Hazards – Plowing Safety

- Speed Kills, Keep Control!!!
- Communicate what you're doing and where you're at!
- Work Together through storm!
Equipment Hazards – Plowing Safety

- Know Your Equipment; Horsepower,
- Weight, Stopping Distance and Turning Radius w / Plow.
- Don’t Overload
- Don’t modify equipment without approval first
- Keep your winter gear with you always
- Keep Debris Out of Cab Area
Equipment Hazards – Plowing Safety

- Check lugs, tires & rims at each refuel
- Keep Windshield Clean And Clear.
- Keep steps clear of built up snow & ice
- Keep unit as full of fuel as possible
- Check tires & rims often
- ALWAYS CHECK EQUIPMENT!
Equipment Hazards – Plowing Safety
Equipment Hazards – Plow Types

One Way Plow
Power Reversing
Straight Blade
Full Moldboard Trip
Full Trip Edge Moldboard
Sectional Trip Edge
Equipment Hazards – Plow Types

One Way / Fixed Angle
- High Discharge
- Higher Speed

Reversible / Power Angle
High Discharge / Both Directions
Equipment Hazards – Plow Types

Ryan E. Pedone Collection
Equipment Hazards – Plow Types

Ryan E. Pedone Collection
Equipment Hazards – Plow Types
Equipment Hazards-Material Spreaders

Salt Spreader

- KEEP HANDS AND LOOSE FITTING CLOTHES AWAY FROM MOVING PARTS (Auger, Chains, & Gears)
- Check equipment (Hoses, fittings, leaks, wear and corrosion)
- Keep equipment serviced and secure at all times
- Calibrate equipment
- Run test in yard using sand before the winter season
Equipment Hazards-Material Spreaders

**Salt Spreader**
- Spread material at a steady speed
- Don’t let material bounce into the ditch
- Reduce spinner when passing or when oncoming traffic is approaching
- Adjust spinner for one or multi lane use
- Avoid wet or frozen material
- Clean bed before loading winter material
- Wash out and service after each use!
Equipment Hazards-Material Spreaders

Don’t be this guy – this year!
Operator Safety

Health & Safety effects of winter

- Frostbite
- Hypothermia
- Hazards around equipment
- In the yard – on the road
- Fatigue – Long hours
- Accidents
- Run off the road incidents
- What Else???

Questions ???
Equipment Hazards - Recovery
# Equipment Hazards - Recovery

<table>
<thead>
<tr>
<th>GRADE</th>
<th>DESCRIPTION</th>
<th>PART #</th>
<th>SIZE</th>
<th>WORKING LOAD LIMIT</th>
<th>WEIGHT PER FOOT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GRADE 28</strong></td>
<td>Proofcoil A general utility chain used commonly in car towing assemblies. Low carbon steel, zinc plated. Not For Lifting, Hoisting or Recovery Applications.</td>
<td>010.055.032</td>
<td>3/16&quot; x 250' Pail</td>
<td>800 lbs.</td>
<td>0.35 lbs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>010.070.032</td>
<td>1/4&quot; x 141' Pail</td>
<td>1,250 lbs.</td>
<td>0.63 lbs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>010.085.032</td>
<td>5/16&quot; x 92' Pail</td>
<td>1,900 lbs.</td>
<td>1.00 lbs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>010.103.032</td>
<td>3/8&quot; x 63' Pail</td>
<td>2,650 lbs.</td>
<td>1.45 lbs.</td>
</tr>
<tr>
<td><strong>GRADE 70</strong></td>
<td>Transport Boron manganese steel makes this chain exceptionally hard. Used in medium to heavy duty tow assemblies. Yellow dichromate finish. Not For Lifting, Hoisting or Recovery Applications.</td>
<td>017.070.039</td>
<td>1/4&quot; x 133' Pail</td>
<td>3,150 lbs.</td>
<td>0.75 lbs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>017.085.049</td>
<td>1/4&quot; x 400' Drum</td>
<td>3,150 lbs.</td>
<td>0.75 lbs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>017.085.039</td>
<td>5/16&quot; x 91' Pail</td>
<td>4,700 lbs.</td>
<td>0.94 lbs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>017.085.049</td>
<td>5/16&quot; x 275' Drum</td>
<td>4,700 lbs.</td>
<td>0.94 lbs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>017.103.039</td>
<td>3/8&quot; x 66' Pail</td>
<td>6,600 lbs.</td>
<td>1.45 lbs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>017.103.049</td>
<td>3/8&quot; x 200' Drum</td>
<td>6,600 lbs.</td>
<td>1.45 lbs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>017.135.039</td>
<td>1/2&quot; x 50' Pail</td>
<td>11,300 lbs.</td>
<td>2.63 lbs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>017.135.049</td>
<td>1/2&quot; x 100' Drum</td>
<td>11,300 lbs.</td>
<td>2.63 lbs.</td>
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<tr>
<td><strong>GRADE 80</strong></td>
<td>Alloy Good choice for heavy duty tow assemblies. Self colored. Approved For Lifting, Hoisting &amp; Recovery Applications</td>
<td>9/32&quot; x Bulk</td>
<td>3,500 lbs.</td>
<td>0.75 lbs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Discontinued Replaced By Grade 100 Alloy Found Below</td>
<td>5/16&quot; x Bulk</td>
<td>4,500 lbs.</td>
<td>0.96 lbs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3/8&quot; x Bulk</td>
<td>7,100 lbs.</td>
<td>1.48 lbs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1/2&quot; x Bulk</td>
<td>12,000 lbs.</td>
<td>2.56 lbs.</td>
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<tr>
<td></td>
<td></td>
<td>5/8&quot; x Bulk</td>
<td>18,100 lbs.</td>
<td>3.93 lbs.</td>
<td></td>
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<tr>
<td><strong>GRADE 100</strong></td>
<td>Alloy Special alloy steel makes this chain one of the strongest in the industry for heavy duty tow and recovery assemblies. Self colored. Approved For Lifting, Hoisting &amp; Recovery Applications.</td>
<td>273710</td>
<td>1/4&quot; x Bulk</td>
<td>4,300 lbs.</td>
<td>0.75 lbs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>273729</td>
<td>5/16&quot; x Bulk</td>
<td>5,700 lbs.</td>
<td>1.13 lbs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>273738</td>
<td>3/8&quot; x Bulk</td>
<td>8,800 lbs.</td>
<td>1.48 lbs.</td>
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<tr>
<td></td>
<td></td>
<td>273747</td>
<td>1/2&quot; x Bulk</td>
<td>15,000 lbs.</td>
<td>2.49 lbs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>273756</td>
<td>5/8&quot; x Bulk</td>
<td>22,600 lbs.</td>
<td>3.78 lbs.</td>
</tr>
</tbody>
</table>
Equipment Hazards - Recovery

G100 ALLOY STEEL CHAIN SLING WORKING LOAD LIMITS (LBS)

GRADE 80 CHAIN COMPONENTS

<table>
<thead>
<tr>
<th>Clevis Self Locking Hook</th>
<th>Clevis Sling Hook</th>
<th>Clevis Grab Hook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available Size</td>
<td>Available Size</td>
<td>Available Size</td>
</tr>
</tbody>
</table>

Note: The size of the hook and connecting link is rate for the same size chain.

| EE: 3/8 Connecting Link for 3/8 Chain and 3/8 Hook for 3/8 Chain |

CAUTION: Never exceed working load limit.

NOTE: Eye Hooks will need a connecting link to attach to chain.


LTAP
Leadership Technical Assistance Program

PURDUE UNIVERSITY
Equipment Hazards - Recovery

**Strength of Recovery Straps in Strength Order**

- 2" 1-ply
- 3" 1-ply
- 2" 2-ply
- 4" 1-ply
- 2" 3-ply
- 3" 2-ply
- 6" 1-ply
- 4" 2-ply
- 2" 4-ply
- 3" 3-ply
- 4" 3-ply
- 10" 1-ply
- 6" 2-ply
- 3" 4-ply
- 12" 1-ply
- 4" 4-ply
- 6" 3-ply
- 10" 2-ply
- 6" 4-ply
- 12" 2-ply
- 10" 3-ply
- 12" 3-ply
- 10" 4-ply
- 12" 4-ply

**Recovery Strap & Eye & Eye Sling Capacities**

<table>
<thead>
<tr>
<th></th>
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<tr>
<td>1 Ply</td>
<td>2 Inch</td>
<td>3,200</td>
<td>2,500</td>
<td>6,400</td>
</tr>
<tr>
<td></td>
<td>3 Inch</td>
<td>4,800</td>
<td>3,800</td>
<td>9,600</td>
</tr>
<tr>
<td></td>
<td>4 Inch</td>
<td>6,400</td>
<td>5,000</td>
<td>12,800</td>
</tr>
<tr>
<td></td>
<td>6 Inch</td>
<td>9,600</td>
<td>7,700</td>
<td>19,200</td>
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<td>8 Inch</td>
<td>12,800</td>
<td>10,200</td>
<td>25,600</td>
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<td>10 Inch</td>
<td>16,000</td>
<td>12,800</td>
<td>32,000</td>
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<td>12 Inch</td>
<td>19,200</td>
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<td>38,400</td>
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<tr>
<td>2 Ply</td>
<td>2 Inch</td>
<td>6,400</td>
<td>5,000</td>
<td>12,800</td>
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<tr>
<td></td>
<td>3 Inch</td>
<td>8,600</td>
<td>6,900</td>
<td>17,200</td>
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<tr>
<td></td>
<td>4 Inch</td>
<td>11,500</td>
<td>9,200</td>
<td>23,000</td>
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<td>6 Inch</td>
<td>16,300</td>
<td>13,000</td>
<td>32,600</td>
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<td>19,200</td>
<td>15,400</td>
<td>38,400</td>
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<td>10 Inch</td>
<td>22,400</td>
<td>17,900</td>
<td>44,800</td>
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<td>12 Inch</td>
<td>26,900</td>
<td>21,500</td>
<td>53,800</td>
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<tr>
<td>3 Ply</td>
<td>2 Inch</td>
<td>8,300</td>
<td>6,600</td>
<td>16,600</td>
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<tr>
<td></td>
<td>3 Inch</td>
<td>12,500</td>
<td>10,000</td>
<td>25,000</td>
</tr>
<tr>
<td></td>
<td>4 Inch</td>
<td>16,000</td>
<td>12,800</td>
<td>32,000</td>
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<td></td>
<td>6 Inch</td>
<td>23,000</td>
<td>18,400</td>
<td>46,000</td>
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<tr>
<td></td>
<td>8 Inch</td>
<td>30,700</td>
<td>24,500</td>
<td>61,400</td>
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<td></td>
<td>10 Inch</td>
<td>36,800</td>
<td>29,400</td>
<td>73,600</td>
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<tr>
<td></td>
<td>12 Inch</td>
<td>44,000</td>
<td>35,200</td>
<td>88,000</td>
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</table>
Equipment Hazards - Recovery
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Equipment Hazards – Hand Signals

Backhoe hand signals
https://www.youtube.com/watch?v=i1YP0tAaHi0
Equipment Hazards – Hand Signals

Good communication equals success
Equipment Hazards – Hand Signals

Haven't seen this one in West Lafayette for a few years!
Equipment Hazards – Overhead Power lines

- Identify all overhead lines in jobsite planning and design.
- Take every precaution before beginning work.
- Not allowed within 10’ feet of ANY overhead lines without proper training and certification!
- Electricity is searching for ground to complete circuit, if equipment comes in contact with wires,
  - stay in machine
  - keep everyone away
  - call for help!

https://www.youtube.com/watch?feature=player_embedded&v=QYuaoRGRGH24
When performing routine or heavy maintenance be aware of unique features of different types of equipment.

- Use proper jacks and jackstands for the equipment being lifted. Remove damaged or incorrectly repaired equipment.
- When raising equipment with jacks take in account the type of repair.
- Some equipment maintenance requires climbing on or using ladders.
- Use only approved dump bed supports or attachment supports when performing hydraulics system repairs.
- Be cautious when working around electrical, hydraulic or systems, only trained qualified technicians should perform complex repairs.
Tips From Around the State

- Plowing a roundabout – Often - at each pass through – can take several passes – plow inside to outside.
- Cracks on plow - look for rusted area
- Stay on the road – soft edges
- Get out early – stay with route
- Slow travel in subdivision
- In heavy snow or ice – stay loaded
- No salt when drifting across – sand only
- Work with the wind, not against it
- Salt & Beet Juice - plow twice treat once
- Keep snow pushed back at intersections
- Mains first - subs after
- Plow alleys during daylight
February 9, 2013
San Diego, CA.
Where is This? – Land of Oz!

Unusual weather we're having, ain't it?

There may be things that fall that are worse then snow!
Where is This? – Land of Oz!

Unusual weather we're having, ain't it?
Questions??