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.





2015 Farmers Almanac

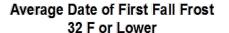


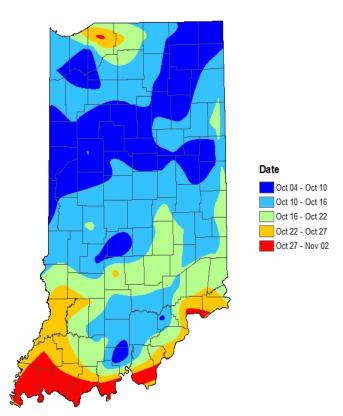
According to the 2015 edition of the Farmers' Almanac, the winter of 2014–15 will see below-normal temperatures for about three-quarters of the nation. A large zone of very cold temperatures will be found from east of the Continental Divide east to the Appalachians. The most frigid temperatures will 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





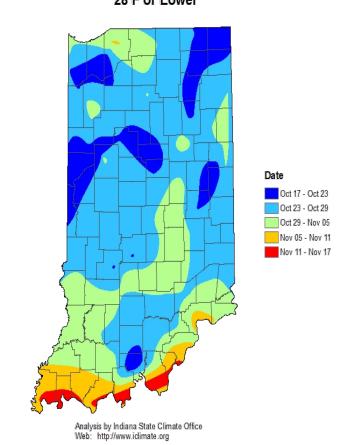
Indiana First Fall Frost 10-year Average



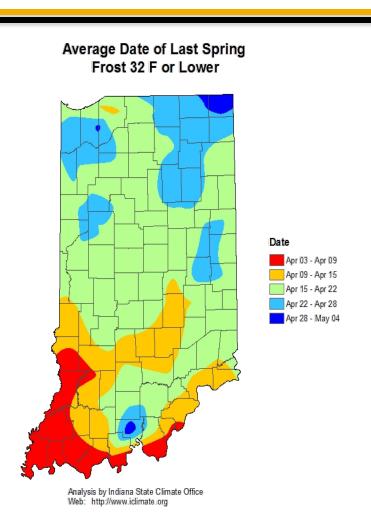


Analysis by Indiana State Climate Office Web: http://www.idimate.org

Average Date of First Fall Frost 28 F or Lower



Indiana Last Spring Frost 10-year Average



Average Date of Last Spring Frost 28 F or Lower Date Mar 21 - Mar 27 Mar 27 - Apr 03 Apr 03 - Apr 10 Apr 10 - Apr 17 Apr 17 - Apr 23

Analysis by Indiana State Climate Office

Web: http://www.iclimate.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		

	BOUND EDGE	Ne. 107
	_	
DRIVER'S	vehicle inspi	CTION REPORT
A) NEOLIFEE	BY THE GOT, PERSONAL MOTOR CAR	PIER SATETY ROLL AT CHE
CARRIER:		
ADDRESS:		
DATE:	TIME:	AT THE COUNTY PM
TRACTOR/		
TRUCK NO.	000METE	
Air Compressor	☐ Front Ade	☐ Enfoty Equipment
☐ Air Lines ☐ Battery ☐ Belts and Hoses		Place Pares Fusees
☐ Belts and Hoses	□ Hom □ Lights	Reflective Triangles
☐ Body	Head - Stop	Spare Bulbe and Fuses
☐ Brake Accessories	Tail - Deah	Spare Seed Boom
☐ Brakes, Parking	Turn Indicators	D Shirted
☐ Brakes, Service ☐ Clusts	D Mirrors D Multer	C Studies
Coupling Devices	Ol Pressure	Dispersion System
☐ DefrostecHeater	☐ Radiatur	C) Yees
C) Delve Line	☐ Rear End	☐ Transmission
☐ Engine	☐ fleffectors	☐ Trip Recorder
C Exhaust	400	☐ Wheels and Rims ☐ Windows
☐ Fluid Levels	11/10/11	☐ Windshield Wipers
☐ Frame and Assembly	A 10	□ Offer
	all a	
TRAILER(S) NO.(S)		
☐ Brake Connections	□ HWb	☐ Suspension System
☐ Brakes	C Landing Gear	O Tarpaulin
Coupling Devices	CI Dights - Al	O Tres
Coupling (King) Pin	D Red Constituted	Tape Wheels and films
Dereky	La rion	LI OFFI
The same of the sa		
-	*	
CONDITION OF THE A	BOVE VEHICLE IS SATIS	FACTORY
04N1873 3KHN7URG		
C) ABOVE DEFECTS CONFECT		
C) ABOVE DEFECTS MEEDINGS	DE CORRECTEDITOR SAFE OF	ERATION OF VISHOUS
MECHANIS SIGNATURE		(w16)
DANSES SCHUTAGE		NET THE RESIDENCE IN SECTION AS
MAINTENANCE FILE	0.03944	2007 J. J. YELLEN E. ASSOCIATED, THE, THANKS, WE USA + 5003; WT-6800 + Period & the United States





Equipment Hazards - Pre/Post Trip

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

STEP 1: Engine Compartment Fluids Belts 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 Light and reflectors

STEP 4: Right Side of Cab Area All 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 Suspension Tandem axles Brakes

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

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

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

STEP 11: Right Rear Trailer Wheels Area Dual tires Suspension Tandem axles Brakes

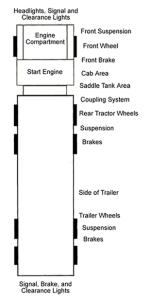
STEP 12: Rear of Trailer Area Lights and reflectors Cargo securement

STEP 13: Left Rear Trailer Wheels Area

STEP 14: Left Side of Trailer Area

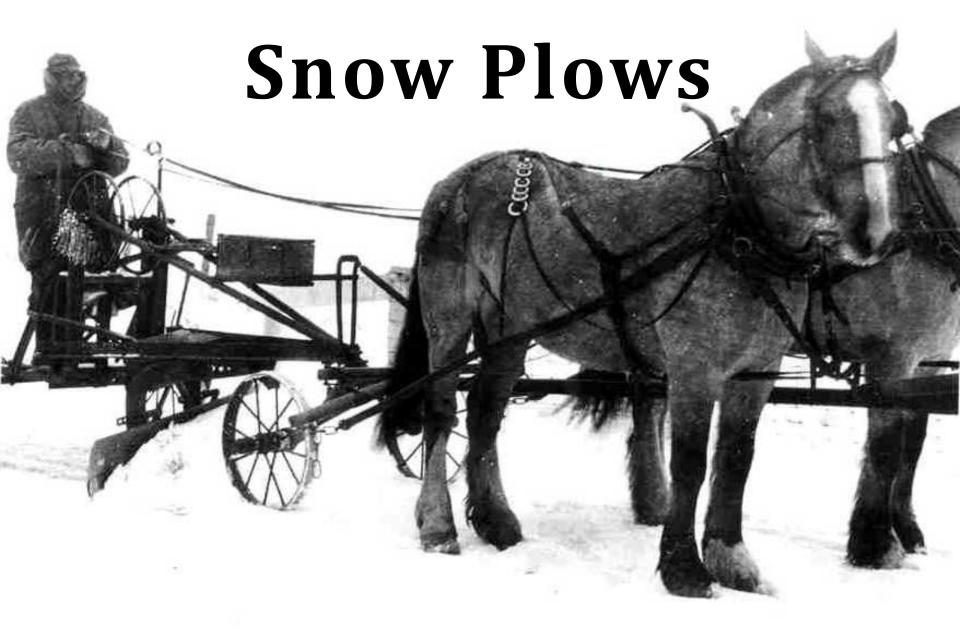












Know Your Route

- 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 <u>SLOW DOWN!</u>
- **☐** Be Patient in heavy traffic

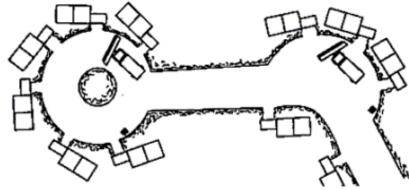


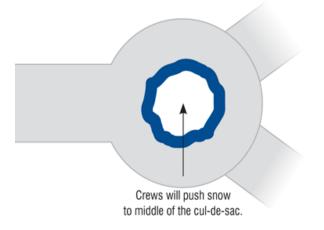


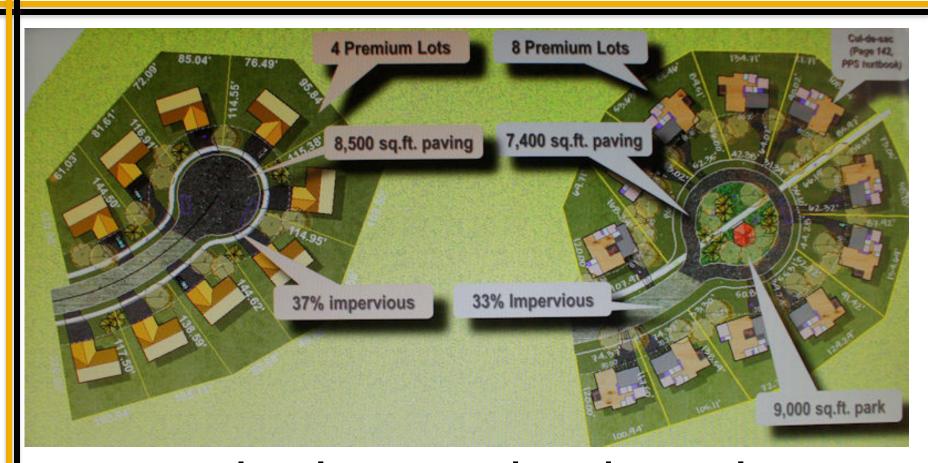












Great Planning –But what about Winter?



















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.



Right equipment for the right job.

Use what's needed - not just what's available.

Training on machine and capabilities.





- Speed Kills, Keep Control!!!
- Communicate what your doing and where your at!
- Work Together through storm!









- 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







- 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 – Plow Types





One Way Plow Power Reversing Straight Blade Full Moldboard Trip Full Trip Edge Moldboard Sectional Trip Edge





Equipment Hazards – Plow Types



Reversible / Power Angle High Discharge / Both Directions

One Way / Fixed Angle

- High Discharge
 - Higher Speed





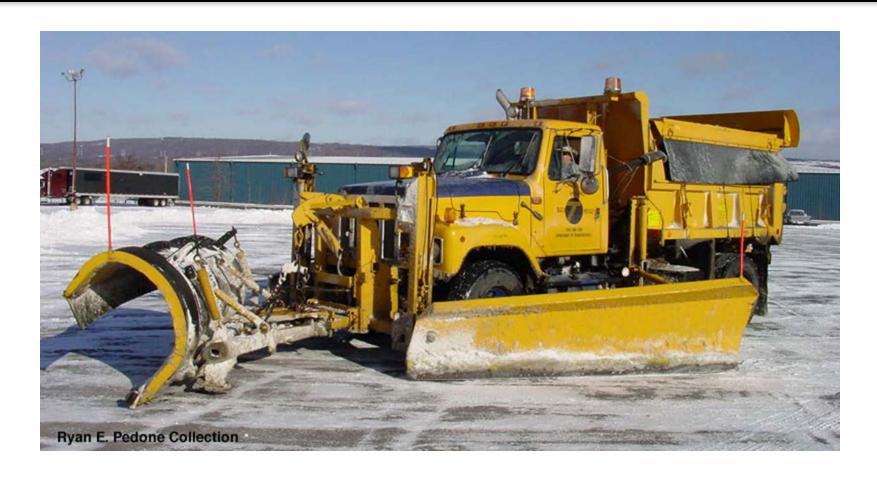
Equipment Hazards - Plow Types







Equipment Hazards – Plow Types







Equipment Hazards – Plow Types





















Equipment Hazards-Material Spreaders

Salt Spreader

- 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!







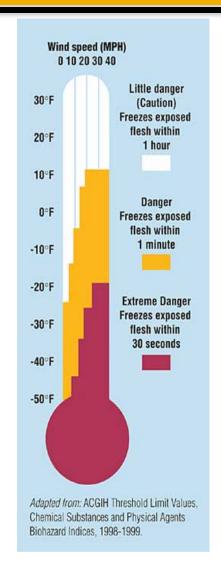
Operator Safety

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???









	CHAIN GRADES	& PRC	PERTIE	ES	
GRADE	DESCRIPTION	PART #	SIZE	WORKING LOAD LIMIT	WEIGHT PER FOOT
GRADE 28 Proofcoil	A general utility chain used commonly in car towing assemblies. Low carbon steel, zinc plated. Not For Lifting, Hoisting or Recovery Applications.	010.055.032 010.070.032 010.085.032 010.103.032	3/16" x 250' Pail 1/4" x 141' Pail 5/16" x 92' Pail 3/8" x 63' Pail	800 lbs. 1,250 lbs. 1,900 lbs. 2,650 lbs.	0.35 lbs. 0.63 lbs. 1.00 lbs. 1.45 lbs.
GRADE 70 Transport	Boron manganese steel makes this chain exceptionally hard. Used in medium to heavy duty tow assemblies. Yellow dicromate finish. Not For Lifting, Hoisting or Recovery Applications.	017.070.039 017.070.049 017.085.039 017.085.049 017.103.039 017.103.049 017.135.039	1/4" x 133' Pail 1/4" x 400' Drum 5/16" x 91' Pail 5/16" x 275' Drum 3/8" x 66' Pail 3/8" x 200' Drum 1/2" x 50' Pail 1/2" x 100' Drum	3,150 lbs. 3,150 lbs. 4,700 lbs. 4,700 lbs. 6,600 lbs. 6,600 lbs. 11,300 lbs.	0.75 lbs. 0.75 lbs. 0.94 lbs. 0.94 lbs. 1.45 lbs. 1.45 lbs. 2.63 lbs.
GRADE 80 Alloy	Good choice for heavy duty tow assemblies. Self colored. Approved For Lifting, Hoisting & Recovery Applications	Discontinued Replaced By Grade 100 Alloy Found Below	9/32" x Bulk 5/16" x Bulk 3/8" x Bulk 1/2" x Bulk 5/8" x Bulk	3,500 lbs. 4,500 lbs. 7,100 lbs. 12,000 lbs. 18,100 lbs.	0.75 lbs. 0.96 lbs. 1.48 lbs. 2.56 lbs. 3.93 lbs.
GRADE 100 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 & Recovery Applications.	273710 273729 273738 273747 273756	1/4" x Bulk 5/16" x Bulk 3/8" x Bulk 1/2" x Bulk 5/8" x Bulk	4,300 lbs. 5,700 lbs. 8,800 lbs. 15,000 lbs. 22,600 lbs.	0.75 lbs. 1.13 lbs. 1.48 lbs. 2.49 lbs. 3.78 lbs.





G100 ALLOY STEEL CHAIN SLING WORKING LOAD LIMITS (LBS)

G100 CHA	IN SIZE	SINGLE LEG	Å	OUBLE LEG	Å	TRIP	LE & QUAD	LEG
IN	MM	90°	90° - 60°	90° - 45°	90° - 30°	90° - 60°	90° - 45°	90° - 30°
7/32	5.5	2,700	4,700	3,800	2,700	7,000	5,700	4,000
9/32	7	4,300	7,400	6,100	4,300	11,200	9,100	6,400
5/16	- 8	5,700	9,900	8,100	5,700	14,800	12,100	8,500
3/8	10	8,800	15,200	12,400	8,800	22,900	18,700	13,200
1/2	13	15,000	26,000	21,200	15,000	39,000	31,800	22,500
5/8	16	22,600	39,100	32,000	22,600	58,700	47,900	33,900
3/4	20	35,300	61,100	49,900	35,300	91,700	74,900	53,000
7/8	22	42,700	74,000	60,400	42,700	110,900	90,600	64,000











GRADE 80 CHAIN COMPONENTS

rate for the same

5 TO 1 SAFETY

size Chain

	1)
	Clevis Self Locking Hook
	Available Size
	1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8
8	Clevis Sling Hook
	Available Size
(3)	1/4 5/16 3/8 1/2 5/8 3/4 7/8



Clevis Grab Hook Available Size

> Connecting link for 3/8 Chain and 3/8 Hook for 3/8 Chain.

NOTE: Eye Hooks will need a Connecting Lin chain.	CAUTION: Never exceed working load limit	
Eye Self Locking	Hook	IN ONT. FOR CONSTRUCTION
Available Size		LIFTING CHAIN HAS TO BE AT A

1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1-1/4

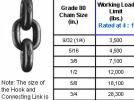
	FF
Swivel Self Locking Hook	
Available Size	
1/4 5/16 3/8 1/2 5/8 3/4 7/8 1	

	1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1	
	Eye Sling Hook	1
	Available Size	4
1	1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1-1/4	



Eye Grab Hook
1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/6
Available offe

MA	Available Size
	1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1-1/4



3/8	7,100	1.48
1/2	12,000	2.43
5/8	18,100	3.51
3/4	28,300	5.84
7/8	34,200	7.05
1	47,700	9.96
1-1/4	72.300	15.75

Limit

(lbs.)

3,500

4,500

Weight Per

(lbs.)

0.72

Grade 80 Chain Size (in.)	Working Load Limit (lbs.) Rated at 5: 1	Weight Per Feet (lbs.)
9/32 (1/4)	2,800	0.72
5/16	3,600	1.14
3/8	5,680	1.48
1/2	9,600	2.43
5/8	14,480	3.51
3/4	22,640	5.84
7/8	27,360	7.05
1	37,600	9.96

57,840

7	Connecting L
	Available Size

1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1-1/4

1-1/4



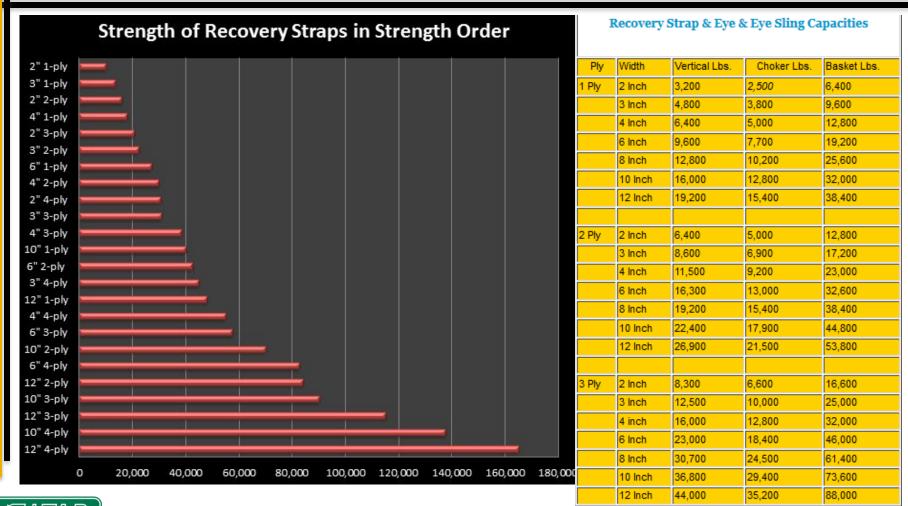
Master Link Sub-Assembly

Available Size

3/4, 7/8, 1, 1-1/4, 1-1/2, 1-3/4, 2, 2-1/4, 2-3/4









































Equipment Hazards – Hand Signals









path of travel (while backing or moving forward) An operator does not have a clear view of the equipment components (e.g., inside dump beds

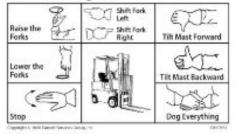
Excavating Near Underground Utilities

The direction of travel cannot be viewed clearly The operator's view is obscured. Working with Cranes Spotters are typically required if: A crane is operating within 20 feet of overhead utilitie Helping a crane operator position a load





Forklift Hand Signals



Overhead Crane Hand Signals







Equipment Hazards – Hand Signals









Equipment Hazards – Hand Signals



Haven't seen this one in West Lafayette for a few years!

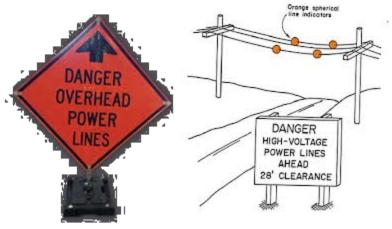




Equipment Hazards – Overhead Power lines

- Identify all overhead lines in jobsite planning and design.
- Take every precaution before beginning work.
- Not allowed within 10' feet of <u>ANY</u> 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!









Equipment Hazards – Maintenance

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.

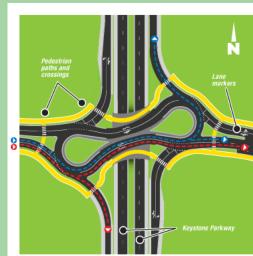






Tips From Around the State

- 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





HAWAII DOT

February 9, 2013 San Diego, CA.



Where is This? - Land of Oz!



There may be things that fall that are worse then snow!



Where is This? – Land of Oz!





