



FORMAL HAZARD ASSESSMENT

TITLE: Horizontal Directional Drilling				FHA #: 006							
Positions Considered:			Assessment Team:				Date Created:		March 18, 2022		
Field Supervisor Heavy Equipment Operator Directional Driller & Locator			Arnold Ferguson Frank Dean Robert Wallen				Revision #:				
							Last Revision Date:				
Task	Health	Safety	Hazards Associated with Task <i>Identify hazards (as applicable) presented by; operations, equipment, vehicles, materials, products, working conditions and environment.</i>	Raw Risk Rating			Controls <i>Consider the Hierarchy of Controls.</i>	Residual Risk Rating			
				Severity	Probability	Overall Risk Rating		Severity	Probability	Overall Risk Rating	
Driving		X	Wildlife on Road Causing Collision	3	3	9	Eng: Truck headlights and high beams Adm: Defensive Driving training, Safe Driving COP, Working Alone COP, Wildlife Awareness Training, Signage, ERP PPE: Seatbelt. Equipment in Vehicle for Emergencies.	3	2	6	
		X	Fatigue / Exhaustion Causing Collision	3	3	9	Eng: Adm: Adequate Amounts of Rest, Stretch and Take Breaks When Needed, Job Rotation, Communication Procedures. Worker Competency Program. PPE: Seatbelt. Equipment in Vehicle for Emergencies.	3	2	6	
			X	Backing Up in Congested Areas Causing Vehicle Damage	2	2	4	Eng: Backup Camera and Alarm Adm: Safe Driving Practices, Use of a Spotter, Communication Procedures. Worker Competency Program. New Worker Orientation. PPE: Seatbelt. Equipment in Vehicle for Emergencies.	2	1	2
			X	Extreme Weather Conditions	3	3	9	Eng: Winter Tires Adm: Journey Management Plan, Pre-Use Inspections, New Worker Orientation, ERP, Work-Rest Cycles, Communication Procedures. Vehicle Headlights / High Beams.	3	2	6



						6	PPE: Winter Gear/ Equipment in Vehicle for Emergencies/ Vehicle Breakdowns, Emergency Blanket, Gloves			4
Transporting Equipment	X	Equipment Damage	2	3	6		Eng: Adm: Journey Management Plan, Pre-Use Inspections, New Worker Orientation, ERP, Work-Rest Cycles, Communication Procedures. Safe lifting procedures. Two-man PPE: Head Protection, Fire-Resistant Clothing with High Visibility Stripes, Safety Eyewear, Protective Footwear, Hand Protection / Cut Resistance as Necessary to the task	2	2	4
	X	Unsecure / Failing Material Causing Worker Injury	3	4	12		Eng: Clamps, Secure Tie-Downs, Back-Up Alarms Adm: Training, Cargo Securement Requirements, Signage, SWP, Housekeeping, Pre-Use Inspections, New Worker Orientation, ERP, Safe Manual Lifting/Carrying Techniques, Temporary Blockades to Prevent Worker Crossing, Tiedown Requirements. No Work Zones. PPE: Head Protection, Fire-Resistant Clothing with High Visibility Stripes, Safety Eyewear, Protective Footwear, Hand Protection / Cut Resistance as Necessary to the task	3	2	6
	X	Striking Overhead Utilities	4	4	16		Eng: Adm: Signage, SWP, Pre-Job Meeting, Housekeeping, Pre-Use Inspections, New Worker Orientation, Limits of Approach for Electricity, ERP, Use of a Spotter PPE: Head Protection, Fire-Resistant Clothing with High Visibility Stripes, Safety Eyewear, Hearing Protection (As the Hazard Dictates), Protective Footwear, Hand Protection / Cut Resistance as Necessary to the task	3	2	6
	x	Obstacles / Hazards on Road	4	2	8		Eng: Vehicle High Beams/Headlights Adm: Driver Awareness Training, Journey Management Plan, Emergency Preparedness plans, Drive Defensively, Safe Driving COP, Motor Vehicle Act, Preventative Maintenance Program, Pre-Trip Inspections PPE:	2	2	4
Setting Up Drill Rig	X	Improper installation	3	3	9		Eng: Adm: Pre-Use Inspections, Worker Competency Program/ Training Program, On-the-job training PPE:	2	1	2
	X	Heavy Manual Lifting Causing Injury	3	3	9		Eng: Motorized lifting equipment. Dolly.	2	2	4



							Adm: Ergonomics Training, Signage, SWP, Safety Program, Housekeeping, Pre-Use Inspections, New Worker Orientation, ERP PPE: Safety Hard Hats, Fire-Resistant Clothing with High Visibility Stripes, Safety Eyewear, Hand Protection / Rubber Insulating Gloves and Properly Sized Leather Protectors, Electric Safety Mat and Sleeves, Steel-Toed Boots			
	X	Body Part Contracting Pinch Point	4	2	8	Eng: Adm: SWP, Housekeeping, Pre-Use Inspections, New Worker Orientation, ERP PPE: Head Protection, Fire-Resistant Clothing with High Visibility Stripes, Safety Eyewear, Hearing Protection (As the Hazard Dictates), Protective Footwear, Hand Protection / Cut Resistance as Necessary to the task	2	2	4	
	X	Dust (Inhalation)	4	2	8	Eng: Adm: Monitor weather conditions/high wind, Windssock, Job Rotation, SWP, Housekeeping, Pre-Use Inspections, New Worker Orientation PPE: Head Protection, Safety Eyewear, Hand Protection / Cut Resistance as Necessary to the task, N-95 Mask or Full-Face Mask	2	2	4	
Pushing drill string into ground – attach drill head and penetrate ground	X	Obstacles in Ground / Unmarked Utilities	4	3	12	Eng: Adm: Ensure underground utilities are marked prior to every job. Worker Competency Program/ Training Program, On-the-job training. PPE:	3	2	6	
	X	Equipment Failure	3	3	9	Eng: Adm: Regular Maintenance on Tools and Equipment, Pre-Use Inspection, Worker Competency Program/ Training Program PPE: Head Protection, Safety Eyewear, Hand Protection / Cut Resistance as Necessary to the task	3	2	6	
	X	Excessive Noise	3	2	6	Eng: Adm: Regular Maintenance on Tools and Equipment. Work Rotation/ Rest Cycle. SWP. Noise exposure limits. PPE: Wear approved safety ear plugs or muffs when operating tools or working close, Head Protection, Fire-Resistant Clothing with High Visibility Stripes, Safety Eyewear, Protective Footwear, Hand Protection / Cut Resistant Gloves as Necessary to the task	2	1	2	



	X		Repetitive Movements on Powered Equipment, Causing Injury to Workers	4	2	8	<p>Eng:</p> <p>Adm: Ergonomics Training Program. Equipment Fit Testing. Work Rotation/ Rest Cycle.</p> <p>PPE: Head Protection, Fire-Resistant Clothing with High Visibility Stripes, Safety Eyewear, Protective Footwear, Hand Protection / Cut Resistance as Necessary to the task.</p>	2	2	4
Reaming	X		Insecure Set-up	3	3	9	<p>Eng:</p> <p>Adm: New Worker Orientation. Competency Program. Work Rotation/ Rest Cycle. SWP. Pre-Job Meeting. Communication Procedures.</p> <p>PPE: Head Protection, Fire-Resistant Clothing with High Visibility Stripes, Safety Eyewear, Protective Footwear, Hand Protection / Cut Resistance as Necessary to the task</p>	4	2	4
	X		Excessive Speed	3	3	9	<p>Eng:</p> <p>Adm: New Worker Orientation. Competency Program. Work Rotation/ Rest Cycle. SWP. Pre-Job Meeting. Use of a Spotter. Communication Procedures</p> <p>PPE: Equipment seat belt. Head Protection. Safety Eyewear. Protective Footwear.</p>	3	2	6
	X		Struck By / Caught by Mechanical Moving Parts	3	3	9	<p>Eng:</p> <p>Adm: New Worker Orientation. Exclusion zones on the job site. SWP. Use of a spotter. Communication Procedures.</p> <p>PPE: Head Protection, Fire-Resistant Clothing with High Visibility Stripes, Safety Eyewear, Protective Footwear, Hand Protection / Cut Resistance as Necessary to the task.</p>	3	2	6
	X		Fire And Explosion from Damaging Electric and Gas Lines	4	3	12	<p>Eng:</p> <p>Adm: H2S COP, H2S Alive Training, H2S Monitor, Wind Sock, Signage, SWP, Safety Program, Pre-Job Meeting, Housekeeping, Pre-Use Inspections, New Worker Orientation, ERP, Use of a Spotter.</p> <p>PPE: Head Protection, Fire-Resistant Clothing with High Visibility Stripes, Safety Eyewear, Protective Footwear, Hand Protection / Cut Resistance as Necessary to the task</p>	3	2	6
Pull Back	X		Force / Pressure	3	3	9	<p>Eng:</p> <p>Adm: Competency/Training Program, SWP, Avoid Prolonged or Excessive Grasping of Tools, Work/Rest Cycle</p> <p>PPE: Safety Hard Hats, Fire-Resistant Clothing with High Visibility Stripes, Safety Eyewear, Hand Protection / Rubber</p>	3	2	6



							Insulating Gloves and Properly Sized Leather Protectors, Electric Sleeves.			
	X	Worker Injury due to Slip / Trip / Fall	2	3	6		Eng: Adm: Aware of Ground Conditions, Signage, SWP, Housekeeping, Pre-Use Inspections, New Worker Orientation, ERP. PPE: Safety Hard Hats, Fire-Resistant Clothing with High Visibility Stripes, Safety Eyewear, Hand Protection / Rubber Insulating Gloves and Properly Sized Leather Protectors, Electric Safety Mat and Sleeves, Steel-Toed Boots	2	1	2
	X	Lack of Communication	4	2	8		Eng: Adm: Communication Procedures, Journey Management Program, Pre-Job Meeting, New Worker Orientation, Establish exclusion zones. Personnel on the ground should keep away from the work area unless they are needed. PPE:	3	1	3
Disassembly	X	Awkward Posture/Body Position or Hold	3	2	6		Eng: Adm: Ergonomics Training, SWP, Pre-Use Inspections, New Worker Orientation. On-the-Job Training. PPE:	2	2	4
	X	Heavy Manual Lifting Causing Injury	2	4	8		Eng: Adm: Ergonomics Training, Signage, SWP, Safety Program, Housekeeping, Pre-Use Inspections, New Worker Orientation, ERP. PPE:	3	1	3
Exposure to Other Affected Parties on the Worksite	X	Potential Violence and Harassment	4	2	8		Eng: Adm: Violence and Harassment Plan. Communication Procedures. ERP. PPE:	2	2	4
Returning Equipment to Shop	X	Unsecure Loading of Equipment on Trailer, Causing Damage	3	3	9		Eng: Clamps, Load Straps, Secondary Securement Adm: Training, Cargo Securement Requirements, Signage, SWP, Housekeeping, Pre-Use Inspections, New Worker Orientation, ERP, Safe Manual Lifting/Carrying Techniques, Temporary Blockades to Prevent Worker Crossing PPE: Head Protection, Fire-Resistant Clothing with High Visibility Stripes, Safety Eyewear, Hearing Protection (As the Hazard Dictates), Protective Footwear, Hand Protection / Cut	2	2	4



							Resistance or Medical Examination Gloves as Necessary to the task			
		X	Unsecure Loading of Equipment on Trailer, Causing Injury to Workers	4	3	12	Eng: Clamps, Load Straps, Secondary Securement Adm: Training, Cargo Securement Requirements, Signage, SWP, Housekeeping, Pre-Use Inspections, New Worker Orientation, ERP, Safe Manual Lifting/Carrying Techniques, Temporary Blockades to Prevent Worker Crossing PPE: Head Protection, Fire-Resistant Clothing with High Visibility Stripes, Safety Eyewear, Hearing Protection (As the Hazard Dictates), Protective Footwear, Hand Protection / Cut Resistance or Medical Examination Gloves as Necessary to the task	3	2	6



Risk Matrix

		Severity			
		1 - Insignificant	2 - Minor	3 - Major	4 - Severe
Probability	4 - Almost Certain	Medium 4	High 8	Extreme 12	Extreme 16
	3 - Likely	Medium 3	Medium 6	High 9	Extreme 12
	2 - Unlikely	Low 2	Medium 4	Medium 6	High 8
	1 - Rare	Low 1	Low 2	Medium 3	Medium 4

Probability pertains to the extent of how likely it is for the risk to occur.

The 4 risk rating levels for this component are:

1. **Rare** – unlikely to happen or has never happened.
2. **Unlikely** – has the possibility to happen or has happened at least once.
3. **Likely** – almost sure to happen or has happened multiple times.
4. **Almost certain** – sure to happen or has happened frequently.

Severity is to determine the level of effects that the hazard could cause.

The 4 risk rating levels for this component are:

1. **Insignificant** – can cause injuries/illnesses requiring first aid or negligible property damage.
2. **Minor** – can cause moderate injuries/illnesses requiring medical aid or moderate property damage.
3. **Major** – can cause irreversible injuries/illnesses requiring long term aid or serious property damage.
4. **Severe** – can result in a fatality or irreversible property damage.

Overall Risk Rating

Severity x Probability = Overall Risk Rating

Low - no further action needed; proper control measures are in place.

Medium – proceed with caution and monitor at regular intervals.

High – must be reviewed and reassessed prior to work proceeding.

Extreme – work must be stopped until adequate controls have reduced hazard to an acceptable level.

