

DTI Construction Branch Comprehensive Hazard Assessment					RISK POTENTIAL				RESIDUAL POTENTIAL					
Task	HAZARD	CAUSES	TOP EVENT What is the harm the hazard could cause	CONSEQUENCES	PEOPLE	ASSET	ENVIRONMENT	REPUTATION	CONTROLS	COMMENTS /RECOMMENDATIONS	PEOPLE	ASSET	ENVIRONMENT	REPUTATION
General - All Positions														
Impairment	Unfit for duty	Under the influence of Alcohol/drugs (recreational) Under the influence of prescribed medication Fatigue, lack of sleep Return to work from injury	Death	Personal injury Injury to others Lost time Hospitalization Fatality Property damage Environmental impact	5C	5D	2D	4C	Follow Administration Manual Policy AD-2707: <i>Substance use in the Workplace</i> - do not consume alcohol or recreational drugs prior to or during work hours - request temporary work accommodation for any medication that can affect cognitive ability that could result in an incident/injury - do not drive or operate any equipment/devices when condition exists Request temporary work accommodation for any limitations that can affect ability to safely perform work (i.e. fitness to return to work form)		2C	2C	2D	2D
Any	Inadequate skill level to perform task Casuals & Summer Students	Lack of orientation, not aware of Policies & Procedures inadequate supervision, not following established policies & procedures, near misses Inadequately trained, lack of work experience,	Death	Personal injury Injury to others Lost time Hospitalization Fatality Property damage Environmental impact	5C	5D	2D	4C	Employee to receive general orientation as per H&S Manual, Section 2.2.1 - <i>Orientation Checklist</i> and Management Manual, section 02-0035: Employee Orientation Policy, Appendix C - H&S Orientation Guide & Checklist. Training (OH&S/ WHMIS awareness, WATCM awareness ... etc.) to be given within 1 week of commencement of work (DTI H&S Manual and prior to on-site activities, Section 2.2), Employee to receive any task specific orientation required prior to working on task Provide additional supervision for new casuals & summer students due to lack of work experience in field, Employee to follow policies and procedures or face discipline as per Management Manual, Section 02-0020: <i>Constructive Discipline System</i> , immediately report any safety concerns to supervisor (DTI H&S Manual, Section 8.1 - <i>Reporting Procedure</i>) Const. Training Matrix to be used as a checklist to identify training requirements, Supervisors to review training requirements with personnel at Performance Review (2x per year), all training received to be documented in HRIS		2D	2D	2D	2D
At jobsites	Insects Dangerous plants Bites Spills/Leaks Lack of Visibility Punctures	Stung by Rashes or infections due to contact Wildlife encounters Accident, inadequate/improper equipment/vehicle maintenance and on-site petroleum/other hazardous materials storage methods Not wearing basic PPE protection	Death	Swelling Stitches Punctures Work time loss Anaphylactic shock Rabies Disease Infection Hospitalization Fatality Property damage Environmental impact	5C	2D	2D	4C	Avoid working alone if possible otherwise develop CoP - <i>Working Alone</i> (DTI H&S Manual, Section 3.4.2), check for insect nests, first aid training on what to do if exposed, be aware of signs of diseases associated with certain insects (Lyme, west Nile ... etc.), advise members of crew of any allergies, carry epi-pen, use insect repellent containing DEET Wear additional appropriate PPE (pants, long sleeves, gloves ... etc.), education on what dangerous plants look like so can avoid, first aid training on what to do if exposed Proper disposal of refuse, do not feed wildlife, be on look out during peat migration times (spring/fall), carry repellent, noise maker, education regarding signs of sick wildlife (i.e. Rabies ... etc.) Report any issues with equipment, be aware of what & how to activate the Contractor's emergency response plan, follow guidelines in EMM, Sections 5.13 - <i>Storage & Handling of Petroleum Products</i> and Section 5.14 - <i>Storage & Handling of Other Hazardous Products</i> Wear basic PPE protection at all times as per H&S Manual, Sections 2.4 - <i>Safety Hats</i> , 2.5 - <i>Safety Vests</i> and 2.6 - <i>Safety Footwear</i> , wear appropriate additional PPE as required for task		2D	2D	2D	2D
Inspection of Personal Protective Equipment	Failure of equipment	not properly stored, not inspected, wear & tear	Death	Personal injury Lost time Hospitalization Fatality	5D	1D	1D	4C	Do not share equipment, properly store & protect from elements, inspect equipment as per schedule, replace when required/needed as per H&S Manual, Sections 2.3 to 2.10		2D	1D	1D	2D

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General - All Positions (Con't)															
Travelling public	Distracted drivers	Not pay attention to the road (talking, texting, reaching for items ... etc.)	Death	Personal injury Injury to others Lost time Hospitalization Fatality Property damage Environmental impact	5C	5D	2D	4C	Pay attention to traffic, use an observer if necessary, do not stand between equipment & traffic, plan an escape route in case of incident		2D	2D	2D	2D	
	Driver inattention	Improper or unclear signage, not obeying posted signage, speeding, fatigue							Ensure that signage plan conforms to WATCM, ensure that signage is inspected, reviewed and modified accordingly as required, enlist additional traffic calming devices when necessary, complete public & emergency notifications where necessary (i.e. 511, radio ads ... etc.)						
	Impairment	Drugs (prescription & recreational) & alcohol							Report any suspected impaired drivers to authorities						
Personal Driving	Other vehicles	Driver inattention	Death	Personal injury Injury to others Lost time Hospitalization Fatality Property damage Environmental impact	5C	5D	2D	4C	Use turn signals before maneuvering, pay attention to surroundings and drive defensively		2D	2D	2D	2D	
	Rental vehicles	Unfamiliar dash controls							Familiarize yourself with rental vehicle controls before leaving rental agency						
	Distracted driving	Texting, fatigue, speeding, impairment							Do not drive when compromised, adherence to Admin Manual policy AD 2706 - <i>Preventing Distracted Driving</i> and AD 2707 - <i>Substance Use in the Workplace</i>						
	Debris, wildlife	Insecure loads, vehicle disrepair, animals crossing							Pay attention to surroundings and drive defensively, report any accidents/vehicle damage as per DTI H&S Manual, Section 8.1.1 - <i>Reporting Responsibilities</i>						
	Weather conditions	Weather events (rain, fog, snow, hail, freezing rain, black ice ... etc.)							Inspect vehicle periodically for potential issues, pay attention to signage, surroundings and drive defensively, check weather forecast & plan trips accordingly, slow down to road conditions, proper tires for weather conditions, carry a safety & first aid kit						
	Light conditions	location of sun, time of day							Adjust driving to light conditions: dawn/day (bright sunlight vs dark & cloudy)/dusk/night and orientation of the sun						
Aggressive behavior by: General Public Contractors outside agencies	Harassment & Violence	Unhappy with decisions of NBDTI or Government	Injury to self or others	Personal injury Stress Injury to others Lost time Hospitalization Property damage	4C	3D	2D	2D	When possible go with others or stay within sight of others, remove yourself from harm at first sign of issue, report to supervisor, knowledge of OH&S Harassment & Violence Regulation 2018-82		2D	2D	2D	1D	
		Disagreements with decisions of employee property damage as a result of construction activities							Remove yourself from harm at first sign of issue, report to supervisor, knowledge of OH&S Harassment & Violence Regulation 2018-82 and Admin Manual Policy AD 2913- <i>Workplace Harassment</i>						
Aggressive behavior by: Co-workers supervisors managers other government dept. employees	Harassment & Violence	Disagreements Issues both inside & outside of work													
Working alone	Slips, trips & falls	Uneven terrain, working at heights	Death	Personal injury Lost time Hospitalization Permanent injury Fatality	5C	2D	2D	4C	Avoid working alone if possible otherwise develop CoP - working alone as per DTI H&S Manual, Section 3.4.2 - <i>Working Alone</i> & Section 3.4.2.1 - <i>CoP Working Alone Form</i>)		2D	2D	2D	2D	
	Drowning	Falling into water (i.e.. streams, rivers ... etc.),													
	Medical emergency	Pre-existing conditions, sudden sickness													

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General - All Positions (Con't)																
Weather & Other conditions	Extreme Cold: Hypothermia, frost bite	Lack of adequate clothing, exposure, wind chill,	Death	Property/Vehicle/Equipment Damage Personal injury Lost time Hospitalization Fatality	5C	5D	2D	4C	Schedule outside work for another day when possible otherwise limit exposure time, follow Government of Canada guidelines for cold, wind chill, dress appropriately for conditions, access to heat source if practical (i.e. scale house, site trailer ... etc.)		2D	2D	2D	2D		
	Extreme Heat: heat stress, heat stroke, heat exhaustion	Extreme temperatures, over exertion							Schedule outside work for another day when possible otherwise limit exposure time, wear sunscreen, follow DTI H&S Manual, Section 3.4.1 - <i>Heat Stress Control</i> , Section 3.4.1.1 - <i>Heat Stress Control Tables</i> and Government of Canada guidelines for extreme heat							
	Air Quality: smoke, smog	Fire, pollution							Schedule outside work for another day when possible otherwise limit exposure time, wear respirator (DTI H&S Manual, Section 2.9 - <i>Respirator Protection</i>), follow Government of Canada guidelines for air quality index							
	Slips, trips, falls (due to wet, icy, snowy conditions ... etc.)	Not wearing proper PPE, electronic distraction							Use alternate route if possible, use additional PPE (traction control aids ... etc.)							
	Earthquake	Earth movement/failure, falling equipment/debris							Move away from any objects that can fall (i.e. Equipment, trees, structures ... etc.), watch for earth failures upheavals, evacuate buildings when safe to do so							
	Lightning	near equipment, objects or personally struck by lightning							Be aware & monitor daily weather forecasts, get inside prior to advancing weather systems, do not stand under trees or near objects that might attract lightning, if unable to get inside, crouch down low to the ground							
	Tornado, Hurricane or extreme wind	loose balance or hit by debris from wind							Be aware & monitor daily weather forecasts, in advance of storm advise Contractor to secure site for possible flying debris/equipment, evacuate site if proper advance notice otherwise find best available secure location							
	Forest Fire	not wearing adequate PPE, worsens existing medical conditions, not heeding or lack of advanced warnings							wear additional appropriate respiratory protection (DTI H&S Manual, Section 2.9 - <i>Respiratory Protection</i> and Section 3.5.3 - <i>CoP Respiratory Protection</i>), evacuate area							
	Flooding	working in wet conditions and near overtopped rivers/streams, falling into fast moving water							Be aware & monitor daily weather forecasts, in advance of storm advise Contractor to secure move site equipment away from rivers & streams, inspect areas from a distance if possible or wait for conditions to improve, wear additional PPE (i.e. PFD)							
Working in the Dark	Slips, trips & falls	Not wearing proper PPE	Death	Personal injury Lost time Hospitalization Fatality	5C	5D	2D	4C	Ensure additional proper PPE for the job (hard hat with reflectors, reflective vest, white coveralls, flashlight ... etc.) as per WATCM Manual, Section 2.6 - <i>Night Work</i> and appropriate Particular Contract Specifications.		2D	2D	2D	2D		
	Hit or struck by								Insufficient Lighting						Ensure Contractor provides adequate portable lighting to conduct work & inspection in a safe manner.	
									Working near equipment						Education on where blind spots are for construction equipment, make eye contact with operator/driver before proceeding, Review Contractor's site safety plan, attend & participate in safety talks & tail gate meetings, be knowledgeable of DTI's H&S Manual and OH&S Act & Regulations	
Use of Electronic Devices (cell phones, GPS ... etc.)	Slips, trips & falls	Not paying full attention to the task at hand	Death	Property/Vehicle damage Injury to others Personal injury Lost time Hospitalization Fatality	5C	2D	2D	4C	Only conduct cell phone activity when not involved in other activities (i.e.: in a stationary position, in a safe location away from equipment & traffic ... etc.)		2D	2D	2D	2D		
	Hit or struck by															

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HO Personnel - Non Field														
Office Work	Ergonomic - repetitive work	Computer work, improper desk setup	Person injury	Personal injury Stress Time loss Hospitalization Permanent Injury	3C	1D	1E	1E	Ensure proper ergonomic setup for work required as per H&S Manual, Section 3.4.4 - <i>Office Ergonomics</i> and Section 3.4.1.1 - <i>Office Ergonomics Factsheet</i>		2D	1E	1E	1E
	Slips, trip & falls	Cords, improper storage of office materials, climbing on furniture, electronic activity, stairs, building entrances & parking lots							Perform monthly safety audits & inspections to identify issues, use proper equipment to reach heights, monthly safety talks (ladder safety, ergonomics, WHMIS 2015 ... etc.)					
	Cuts/punctures	papercuts, staples							slow down actions and pay attention to the task at hand					
	Lifting, straining	Not using proper lifting techniques, improper storage							Limit the weight in each box, know your limits of what can lift alone, utilize proper lifting techniques as per H&S Manual, Section 3.4.5 - <i>Manual Material Handling</i>					
	Dealing with the difficult People	Phone calls from people unhappy with Department, fellow co-workers							Training on: dealing with difficult behavior, conflict resolution, effective communication, follow Administrative Manual Policy AD-2913 <i>Workplace Harassment</i> & OH&S Regulation 2018-82					
	Temperature & humidity	Uncomfortable temperatures for working (too warm/cold) & humidity levels (too dry/humid)							Monitor temperature and humidity levels and report extreme levels for adjustment to air system					
	Working with chemicals	Photocopier toner cartridges, cleaning solutions							Read & follow posted MSDS/SDS material prior to use of substances, follow manufacturer's recommendations on proper use, knowledge of WHMIS/SDS as per H&S Manual, Section 2.11 - <i>Hazardous Products & WHMIS</i> and Section 2.11.1 - <i>Safety Data Sheet/Material Safety Data Sheet</i>					

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Field & HO staff - Inspection & Site Visits														
Manufacturing of Concrete Beams, Pipe & Boxes	Noise	Not wearing hearing protection	Death	Personal injury Loss time Hospitalization Permanent injury Fatality	5C	3D	2D	4C	Ensure utilize additional proper PPE for the job (hearing protection ... etc.) as per DTI H&S Manual, Section 2.10 - <i>Hearing Protection</i> , limit time exposed - can you observe from a distance		2D	2D	2D	2D
	Dust	Not wearing respirator, improper ventilation							Ensure utilize additional PPE for the job (respirator ... etc.) as per DTI H&S Manual, Section 2.9 - <i>Respiratory Protection</i> and 3.5.3 - <i>CoP Respiratory Protection</i>					
	Slips, trips & falls	Clutter on shop floor, inattention to surroundings							Be aware and adhere to the manufacturing plants site hazard assessment plan, attend site orientation training and safety talks, don't multi-task					
	Hit or struck by	Flying debris, working near equipment, lift straps in poor condition, standing in blind spots, miscommunication							Be aware and adhere to the manufacturing plants site hazard assessment plan, attend site orientation training and safety talks, Education on where blind spots are for equipment, do not stand near equipment, stressing cables, concrete pours, loading/unloading operation, plan an escape route, make eye contact with operator/driver before proceeding					
Manufacturing of Steel Beams, Pipe & Multiplate	Noise	Not wearing hearing protection	Death	Personal injury Loss time Hospitalization Permanent injury Fatality	5C	3D	2D	4C	Ensure utilize additional proper PPE for the job (hard hat, boots, reflective vest, respirator, hearing protection ... etc.) as per DTI H&S Manual, Section 2.4 to 2.10 & 3.5.3		2D	2D	2D	2D
	Fumes	Not wearing respirator, improper ventilation							Be aware and adhere to the manufacturing plants site hazard assessment plan, attend site orientation training and safety talks, don't multi-task					
	Burns	Not wearing proper eye protection near welding, too close to steel cutter operation							Education on where blind spots are for equipment, do not stand near equipment, stressing cables, concrete pours, loading/unloading operation, plan an escape route, make eye contact with operator/driver before proceeding					
	Slips, trips & falls	Clutter on shop floor, inattention to surroundings												
	Hit or struck by	Working near equipment, lift straps/cables in poor condition, standing in blind spots, miscommunication												
	Sand blasting & painting	Not wearing respirator, improper ventilation, standing too close to operation							Knowledge of WHMIS/SDS as per H&S Manual, Section 2.11 - <i>Hazardous Products</i> & WHMIS and Section 2.11.1 - <i>Safety Data Sheet/Material Safety Data Sheet</i>					

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Field & HO staff - Inspection & Site Visits (Con't)															
Trestles, Installation & Excavation of Cofferdams, dewatering, pile/caisson driving Footings, Columns & Cap beams - formwork & rebar installation, concrete placements & testing Superstructure - beam placement, formwork & rebar installation, concrete placement & testing Removal of Concrete or existing Structures including but not limited to: shot blasting, bridge jacking, jack hammering, grinding concrete surfaces, painting	Slips, trips & falls	Uneven terrain, working at heights	Death	Personal injury Loss time Hospitalization Permanent injury Fatality					Ensure wear proper PPE for job (hard hat, boots, reflective vests, harnesses ... etc.), adjust for weather conditions (rainwear, rubber boots, winter protection, cleats ... etc.) as per DTI H&S Manual, Section 2.4 to 2.10, knowledge & training on Fall Protection systems & equipment as per H&S Manual, Section 2.3 - <i>Fall Protection Systems</i> , 2.3.1 - <i>Guide for Working on Elevated Work Surfaces</i> and Appendix C - <i>Working at Heights Flowchart</i>						
	Lifting, straining	Not using proper lifting techniques: testing concrete, making cylinders							Use proper lifting techniques (DTI H&S Manual, Section 3.4.5 - <i>Manual Material Handling</i>) and assistance devices						
	Drowning	Not tied off, not wearing pfd, improper safety lines							Ensure wear additional proper PPE for job (PFD, harness), ensure that the Contractor's rescue plan is in-place and know what procedure to follow if accident						
	Noise & dust	Not wearing hearing & respiratory protection, working around or near equipment							Ensure wear proper hearing & respiratory protection for job (DTI H&S Manual, section 2.10 - <i>Hearing Protection</i> & 3.5.3 - <i>Respiratory Protection</i>), limit time exposed - can you observe from a distance, Contact Contractor to utilize water truck to control dust (Item # 191 - <i>Application of Water</i>), knowledge of sandblasting as per H&S Manual, Section 3.5.5 - <i>Abrasive Blasting with Crystalline Silica</i>						
	Hit or struck by	Working near equipment &/or Traffic, standing in blind spots, falling debris, lift straps/cables in poor condition, miscommunication				5C	5C	4C	4C	Education on where blind spots are for construction equipment, make eye contact with operator/driver before proceeding, stand clear of lifting operations, Review Contractor's site safety plan, attend & participate in safety talks & tail gate meetings, be knowledgeable of DTI's H&S Manual and OH&S Act & Regulations	2D	2D	2D	2D	
	Collapse/failure	Improper construction: falsework, formwork, scaffolding, cofferdams, trestles, crane & excavation collapses ...								Ensure that all Contractor's formwork, falsework, scaffolding, cofferdams, trestles have been properly designed by a PEng and signed off as per Spec Item No. 956 - <i>Construction Drawings & Calculations</i> , advise Contractor & your immediate supervisor of any deficiencies immediately upon discovery.					
	Electrocution/explosion	Contact with powerlines (above & underground), natural gas lines, hook up of power sources, inadequate temporary panels, damaged cords ... Etc.								Ensure that Contractor locates all utilities on jobsite before commencing work, ensure Contractor utilizes a qualified electrician doing work, report any damage immediately and isolate area, be knowledgeable of hazards regarding working near powerlines					
	Suspension trauma	Miscommunication, not paying attention to surroundings								Wear proper PPE for job (fall arrest equipment), complete training in proper use of fall protection harness including leg straps before commencing work, be aware of how to activate Contractor's rescue procedure prior to commencing work					
	Confined/hazardous space	Not following SWP, not wearing proper PPE								Inspect from a distance if possible, be aware of Contractor's SWP, ensure that air quality is checked by Contractor prior to entering, be aware of how to activate Contractor's rescue procedure prior to commencing work.					
Exposure to injury by: plastic concrete, field painting operations	Miscommunication, not paying attention to surroundings								Wear additional proper PPE for Job (gloves, eye protection, respirator ... etc.), inspect at a distance when possible						

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Field & HO staff - Inpection & Site Visits (Con't)														
Clearing, grubbing, tree removal operations Production of Highway Aggregates, Shoulder material, blending sand ... etc. Loading, hauling, placement & compaction of Subbase & Base Removal & installation of Wildlife & Chain Link Fence Installation of Pipe (Plastic, Concrete, Steel & Multiplates) and Box Culverts Installation of underground services, sidewalk, curb & gutter Soil & Rock Excavation & placement, compaction, ditching Removal & installation of Lighting, Signs and Overhead Sign Structures Installation of Environmental Controls, environmental monitoring Scaling & Checking	Slips, trips & falls	Uneven terrain, working at heights, electronic activity, not keeping scale steps clear	Death	Personal injury Time loss Hospitalization Permanent injury Fatality Property damage Environmental damage	5C	5D	4C	4C	Ensure wear proper PPE for job (hard hat, boots, reflective vests, ... etc.), adjust for weather conditions (rainwear, rubber boots, winter protection, cleats ... etc.) as per DTI H&S Manual, Section 2.4 to 2.10 , knowledge of proper use as per H&S Manual, Section 3.3.2 - <i>Chain & Clear Saw Us</i> , proper housekeeping around scale house steps					
	Lifting, straining	Not using proper lifting techniques when gathering samples,							Use proper lifting techniques (DTI H&S Manual, Section 3.4.5 - <i>Manual Material Handling</i>) and assistance devices					
	Dust	Dry site conditions, working closely around equipment & traffic							Contact Contractor to utilize water truck to control dust (Item # 191 - Application of Water), wear proper PPE for job (DTI H&S Manual, Section 2.9 - <i>Respiratory Protection</i> and Section 3.5.3 - <i>CoP Respiratory Protection</i>)					
	Noise	Not wearing hearing protection, working around or near equipment							Ensure wear proper hearing protection for job (DTI H&S Manual, Section 2.10 - <i>Hearing Protection</i>), limit time exposed - can you observe from a distance					
	Hit or struck by	Working near equipment &/or Traffic, standing in blind spots, concrete placement, lift straps in poor condition, miscommunication, electronic activity							Education on where blind spots are for construction equipment, do not stand between equipment & traffic, stand clear of lifting operations, plan an escape route, make eye contact with operator/driver before proceeding, Review Contractor's site safety plan, attend & participate in safety talks & tail gate meetings, be knowledgeable of DTI's H&S Manual and OH&S Act & Regulations, adquate visibility of approaching trucks to scale house and means of exit					
	Environmental spills	Exposure to chemicals, solvents, not following env specifications, Acts & Regulation requirements							Ensure that Contractor follows the Environmental Management Manual (EMM), Sections 5.13 - <i>Storage of Petroleum Products</i> and 5.14 - <i>Storage of Other Hazardous Products</i> , Contract Standard & Particular Specifications and applicable Provincial and Federal Acts & Regulations, use appropriate additional PPE (Respirator, gloves ... etc.), knowledge of WHMIS/SDS as per H&S Manual, Section 2.11 - <i>Hazardous Products & WHMIS</i> and Section 2.11.1 - <i>Safety Data Sheet/Material Safety Data Sheet</i>					
	Drowning	Working near watercourses							Avoid collecting samples alone if possible otherwise develop CoP - working alone (DTI H&S Manual, Section 3.4.2 - <i>Working Alone</i>), wear additional PPE (PFD)					
	Flying debris, buried by	Hit by debris from Blasting, chipping, falling trees from clearing, improper trenching techniques, slope failures, crushing & clearing operations							Monitor activity from a safe distance, ensure that additional proper PPE (ex: safety glasses, face shield ... etc.), equipment (ex: trench box) and practices (ex: proper sloping requirements) are utilized for task, inspect/observe from a distance if possible, knowledge of proper excavation & trenching as per H&S Manual, Section 3.3.5 - <i>Excavation & Trenching</i> and Appendix B - <i>Trenching Poster</i>					
	Electrocution/explosion	Contact with powerlines (above & underground), natural gas lines, hook up of power sources							Ensure that Contractor locates all utilities on jobsite before commencing work, ensure Contractor utilizes a qualified electrician doing work, report any damage immediately and isolate area, be knowledgeable of hazards regarding working near powerlines					
	Exposure to radiation	Damage to Consultant's nuclear density gage machinery							Inspect from a distance if possible, ensure that Contractor is following WATCM, be aware of Contractor's and Nuclear Consultant's emergency response procedure					

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Field & HO staff - Inpection & Site Visits (Con't)																
Ditching, farm & cross-culvert installation	Slips, trips & falls	Uneven terrain, minimal shoulders, electronic activity	death	Personal injury Loss time hospitalization permanent injury fatality	5C	4D	3D	4C	ensure wear proper PPE for job (hard hat, boots, reflective vests, ear protection, gloves (sampling) ... etc.), adjust for weather conditions (rainwear, rubber boots, ... etc.) as per DTI H&S Manual, Section 2.4 to 2.10 & 3.5.3							
Fine Grading, Shouldering																
Milling, Partial & Full Depth Recycling, Pulverizing	Lifting, straining	Not using proper lifting techniques when collecting test samples						use proper lifting techniques (DTI H&S Manual, Section 3.4.5 - <i>Manual Material Handling</i>) and assistance devices, knowledge of removal of damaged rail as per H&S Manual. Section 3.3.6 - <i>Removing a Damaged Guide Rail</i>								
Tack Coat, Paving, Micro surfacing																
Chipseal (Contractors crew only)	Dust, fumes	Dry site conditions, working closely to paving operation						Contact Contractor to utilize water truck to control dust (Item # 191 - <i>Application of Water</i>), stand upwind from Paving/Chipseal type operations and limit time exposed, observe from a distance, wear proper PPE for job (DTI H&S Manual, Section 2.9 - Respiratory Protection and Section 3.5.3 - CoP Respiratory Protection)								
Removal & installation of guide post & rail																
Sampling - Cores, loose mix	Noise	Not wearing hearing protection, working closely to paving operation						Wear appropriate protective equipment as per DTI H&S Manual, Section 2.10 - <i>Hearing Protection</i> , limit time near distributor and paving machines - can you observe from a distance, be aware of your surroundings to avoid tripping.								
IRI testing	Burns	Working near hot tack and asphalt placement & sample collection						Wear appropriate additional protective equipment, limit time near distributor and paving machines - can you observe from a distance, be aware of your surroundings to avoid tripping		2D	2D	2D	2D			
Crack sealing																
	Heat stress, exhaustion, stroke	Working closely to paving operation						Limit time near equipment, follow DTI H&S Manual, Section 3.4.1 - <i>Heat Stress Control</i>								
	Excavation failure	Improper or lack of trenching techniques/equipment, soil condition						Ensure that Contractor follows standard & Particular contract Specifications and OH&S Regulations on excavation heights and trenching safety requirements								
	Hit or struck by	Working near equipment &/or Traffic, standing in blind spots, lifting straps in poor condition, flying debris, miscommunication, improper traffic control, electronic activity						Education on where blind spots are for construction equipment, do not stand between equipment & traffic, stand clear of lifting operations, plan an escape route, make eye contact with operator/driver before proceeding								
								Review Contractor's site safety plan, attend & participate in safety talks & tail gate meetings, be knowledgeable of DTI's H&S Manual and OH&S Act & Regulations								
								Ensure that signage plan conforms to WATCM, signage is inspected, reviewed and modified accordingly as required, enlist additional traffic calming devices when necessary								

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Task	HAZARD	CAUSES	TOP EVENT What is the harm the hazard could cause	CONSEQUENCES	PEOPLE	ASSET	ENVIRONMENT	REPUTATION	CONTROLS	COMMENTS /RECOMMENDATIONS	PEOPLE	ASSET	ENVIRONMENT	REPUTATION		
Field & HO staff - Inpection & Site Visits (Con't)																
District Lab Testing of: Concrete cylinders Asphalt briquettes & cores Loose mix samples Granular materials (i.e. sieves ... etc.)	Slips, trips & falls	Housekeeping, clutter, electronic activity	Severe burns & cuts	Personal injury Loss time Hospitalization Permanent Injury					Ensure wear proper PPE protection for job (hard hat, boots, gloves, eye protection ... etc.) as per DTI H&S Manual, Section 2.4 to 2.10, keep area clear of anything that can pose a tripping/slipping risk							
	Lifting, straining	Not using proper lifting techniques when handling test samples							Use proper lifting techniques (DTI H&S Manual, Section 3.4.5 - <i>Manual Material Handling</i>) and assistance devices							
	Fumes, dust	Applying sulfur capping compound, heating asphalt samples, grinding cylinder caps							Ensure wear additional PPE for job (gloves, safety glasses, respirator ... etc.), use overhead ventilation equipment, follow H&S Manual, Section 2.9 - <i>Respiratory Protection</i> and 3.5.3 - <i>CoP Respiratory Protection</i>							
	Burns, heat	Working with hot asphalt, applying capping compound, working closely to heating ovens							Ensure wear proper heat protection for job (oven milts, gloves, protective clothing ... etc.)							
	Cuts, abrasions, pinches	Improper use of guards, equipment							Follow equipment manufacturer's instructions on proper use & maintenance, advise supervisor of any damage to machinery & discontinue use until repaired							
	Noise	Working with testing equipment			4C	3D	2D	2D	Ensure wear proper hearing protection for job as per DTI H&S Manual, Section 2.10 - <i>Hearing Protection</i>		2D	2D	2D	2D		
	Splashes	Cleaning agents, lime water curing tanks							Use appropriate additional PPE (ex: safety glasses, gloves, respirator ... etc.), follow manufacturer's recommendations, SDS sheet information, knowledge of proper use of eye wash as per H&S Manual, Section 3.4.3 - <i>Emergency Eyewash & Shower</i>							
	Hit or struck by	Working near equipment, flying debris, on-site sample collecting, Traffic, standing in blind spots, miscommunication, compression machines, electronic activity							Education on where blind spots are for construction equipment, do not stand between equipment & traffic, plan an escape route, make eye contact with operator/driver before proceeding Ensure that cages are closed prior to compressing cylinders. If no cage, then ensure stand away from machine while running. Be knowledgeable of DTI's H&S Manual and OH&S Act & Regulations, Testing & certification manuals/guidelines, standard specs, SWP's ... etc.							

DTI Construction Branch Comprehensive Hazard Assessment					RISK POTENTIAL								RESIDUAL POTENTIAL			
Task	HAZARD	CAUSES	TOP EVENT What is the harm the hazard could cause	CONSEQUENCES	PEOPLE	ASSET	ENVIRONMENT	REPUTATION	CONTROLS	COMMENTS /RECOMMENDATIONS	PEOPLE	ASSET	ENVIRONMENT	REPUTATION		
Surveying Duties																
Survey Layout & Data collection (pre-design)	Slips, trips & falls	Uneven terrain, working at heights, electronic activity, material stockpiled outside of recommended angle of repose, improper removal practice	Death	Personal injury Loss time Hospitalization Permanent injury Fatality	5C	3D	2D	4C	Ensure wear proper PPE for job (hard hat, boots, reflective vests, ... etc.), adjust for weather conditions (rainwear, rubber boots, winter protection, cleats ... etc.) as per DTI H&S Manual, Section 2.4 to 2.10 & 3.5.3		2D	2D	2D	2D		
Cutting Trees & Brush																
Stockpile surveys (Granular, Winter Salt & Sand ... etc.)	Lifting, straining	Not using proper lifting techniques when carrying equipment & installing survey stakes							Use proper lifting & stake driving techniques (DTI H&S Manual, Section 3.4.5 - <i>Manual Material Handling</i>) and assistance devices							
	Dust, fumes, Noise, bio hazards	Dry site conditions, working closely to paving operation, working closely to equipment & traffic, bird droppings							Contact Contractor to utilize water truck to control dust (Item # 191 - Application of Water), limit time exposed, ensure wear additional PPE (hearing protection, respirator ... etc.) for job							
	Blinding	Driving stakes							Check stakes for knots/splits, use additional protective PPE (i.e. safety glasses, gloves)							
	Cuts & abrasions	Improper use of chainsaw/brush saw, driving stakes, surveying stockpiles in domes							Training on chainsaw/clearing saw, use additional protective PPE (i.e. face shield, gloves, pants ... etc.), follow manufacturer's operating instructions & maintenance requirements, knowledge of proper use as per H&S Manual, Section 3.3.2 - <i>Chain & Clear Saw Use</i> , Bio-hazards such as Section 3.5.6 - <i>Exposure to Bird & Bat Waste</i>							
	Hit or struck by	Working near equipment &/or Traffic, standing in blind spots, miscommunication, electronic activity			Education on where blind spots are for construction equipment, do not stand between equipment & traffic, plan an escape route, make eye contact with operator/driver before proceeding Follow SOP - survey of Salt/Sand stockpiles Review Contractor's site safety plan, attend safety talks & tail gate meetings, be knowledgeable of DTI's H&S Manual and OH&S Act & Regulations Ensure that signage plan conforms to WATCM, enlist additional traffic calming devices when necessary											
	Buried by	Material stockpiled outside of recommended angle of repose, improper removal practice			Advise Contractor &/or District Operations if material is not stockpiled correctly - do not complete work until corrected, look out for tripping hazards (i.e.: frozen material),											

Consequence Rating Criteria

Rating	People	Environment	Equipment and Assets	Community and Reputation
1 Minor	Single minor injury to one person. First aid or no treatment required. No lost time.	Reversible health effects of minor concern requiring first aid treatment at most.	Issues of non-continuous nature with promptly reversible impact or consequence (e.g. within shift). Low-level incident, site contained.	Below \$5,000 (or 0.1% of operational budget based at 50,000,000). Unsubstantiated, low profile or no media attention. One-off complaint which is resolved via existing procedures.
2 Moderate	Medically treated injury. Reversible injury. Requires treatment but does not lead to restricted duties.	Reversible health effects of concern that result in medical treatment but not restricted duties.	Issues of a non-continuous nature and minor impact and consequence. Low-level incident, site contained. Short term reversible (e.g. within days).	Between \$5,000- \$50,000 (or 0.1%- 0.5% of operational budget). Substantiated, low impact, low media profile. Unresolved, low level community dissatisfaction. Repeated community complaints.
3 Serious	Reversible injury or moderate irreversible impairment. Less than 10 days lost time.	Severe but reversible health effects &/or restricted duties. Results in a lost time illness of less than 10 days.	Issues of a continuous nature limited impact and consequence. Incident resulting in some site contamination. Medium term recovery impact.	Between \$50,000-\$500,000 (or 0.5%- 3.5% of operational budget). Threat to property by known extreme organisations. Substantiated, public embarrassment, moderate media profile (front page, one day). Repeated community complaint. Community demonstration. Impact on share price.
4 Major	Severe irreversible damage to one or more persons. Lost Time Injury greater than 10 days.	Severe and irreversible health effects or disabling illness. Results in a lost time of greater than 10 days	Compliance issue with large fine, media attention. Serious harm not immediately recovered. Significant site contamination or off-site impact. Long term recovery.	Between \$500,000-\$1,000,000 (or 3.5-10% of operational budget). Confirmed threats, without actions. Substantiated, public embarrassment, high impact, major media attention. Local or state media interest. Severe community dissent. Criticism from a non-government organisation (NGO) and / or government.
5 Catastrophic	Single &/or Multiple fatality. Permanent disabling injuries.	Life threatening or permanently disabling illness.	Issues of a continuous nature with major long-term impact and potentially serious consequences.	Above \$1,000,000 (or more than 10% of operational budget). Escalating threats or actions. Substantiated, public embarrassment, multiple impacts, long lasting widespread media coverage. Severe, prolonged community dissent.

		Consequence				
		1	2	3	4	5
		Minor	Moderate	Serious	Major	Catastrophic
Likelihood	A	The event is expected to occur				
	Almost Certain	Recurring event during the lifetime of a project / operation e.g. more than once per month				
	B	The event will probably occur				
	Likely	Event that may occur frequently during the lifetime of a project / operation e.g. at least once per year				
	C	The event should occur				
	Possible	Event that may occur during the lifetime of a project / operation e.g. once in 3 years				
	D	The event could occur				
	Unlikely	Event that is unlikely to occur during the lifetime of a project / operation e.g. once in 10 years				
	E	The event may occur only in exceptional circumstances				
	Rare	Event that is very unlikely to occur during the lifetime of a project / operation e.g. once in 15 years				