

**SAFE WORK PROCEDURE**

(Performance criteria – perfection in job, no injury to persons or damage to property)

- 1. DEPARTMENT : Town Engineering Project
- 2. SECTION/LOCATION : PH#3 Road & Drain
- 3. JOB TITLE : **Mechanized Excavation/ Back filling**
- 4. JOB DURATION : Start Date:

- DOC. No. :JUS/TEP/SWP/03
- Name of Working Agency :
- Work Order No. :
- End Date :

Sl. No.	Job steps	Hazards	Initial Risk Level	Identified Controls	Final Risk Level	Responsible person	Reference to document/Standards /Criteria and Remarks
	Parking/placement of Excavator / JCB / Dumper at excavation point at site	1) Injury to person/road accident due to hit by Vehicle or Damage to equipment or property	I	1.1.1) Six Direction hazards and standard checklist must be identified and filled. And flagman to be provided to guide traffic in desire lane. 1.1.2) Proper guidance of vehicle for parking/placement by flagman/helper. 1.1.3) Ensure that workmen stand outside the vehicle movement / parking area which should be barricaded and only authorized entry allowed inside barricading 1.1.4) Ensure that sufficient space to be available for Excavator / JCB / Dumper & people movement. 1.1.5) Before starting the job physical condition of the M/C or vehicle shall be checked and only good condition M/C shall be used at site. 1.1.6) Movement of any person within the swing area of the excavator during operation is strictly restricted by flag man.	M		<b>EXCAVATION- JUS-SS-ENGG. 05 WORK PERMIT SYSTEM – JUS-SS-GEN 19 LOOSE CLOTHING- JUS-SS-GEN 02 FOOT PROTECTION- JUS-SS-GEN 03 HAND PROTECTION- JUS-SS-GEN 04 EYE PROTECTION- JUS-SS-GEN 05 HEAD PROTECTION- JUS-SS-GEN 06 BARRICADING- JUS-SS-ENGG. 02 PERSONAL PROTECTIVE EQUIPMENT- JUS-SS-ENGG. 01</b>
	Barricading the area where excavation to be done	2.1) Future accident due to improper barricading may be cause fall of person vehicles	I	2.1.1) Open excavated area /Pit must be barricaded by using rigid Protective barricading Material Like CGI Sheet by providing both side rod (20-25 mm Dia) of the sheet, Frame firmly grouted/nailing & pegging minimum 250 mm into the ground. 2.1.2) Minimum Height of Barricading from the ground level to be 1 M . 3. Projected part of Rod to be covered by using 2.1.3)Bar cap, or ant suitable material. 2.1.4) The hard barricading shall be 1 m distance from the edge of excavated pit/trench. 2.1.5) If the excavation is beside the road, white paint as well as fluorescent tape to be put on the hard barricading for proper visibility during day & night.	M		

				<p>2.1.6) Red light/Reflector sticker and illumination to be provided as per requirement and as per the instruction of site supervisor</p> <p>2.1.7) Area Illumination to be ensured for good visibility during night /night work.</p> <p>8. Cautionary display board to be provided to alert traffic as well as public.</p>			
	<p><b>Mechanized Excavation/ Back filling</b></p>	<p>3.1) Burn /Electrical shock Injury due to damage of underground utilities/ Services</p>	<p><b>I</b></p>	<p>3.1.1) Clearance for Mechanized Excavation should be taken prior to working from the concerned department - Service</p> <p>3.1.2) Workers shall be instructed to be careful if any slab, brick are exposed as electrical cables may be underneath and should immediately inform to JUSCO supervisor</p> <p>3.1.3) The excavation will be done carefully in presence of site supervisor of the work.</p> <p>3.1.4)If the condition of cables is damaged, Electrical Department staff should be called to see the condition.</p> <p>3.1.5) If any cable is punctured during excavation, Inform Concern person /Department.</p> <p>3.1.6) If any underground concrete structure like brick work found at work time at first stopped the work and inform to site supervisor &amp; engineers for further clearance</p> <p>3.1.7) Use ECL &amp; EPL(Cable detector) to identification of Under Ground Utilities</p> <p>3.1.8) Work area to be demarcated by lime or something for excavation.</p> <p>3.1.9) GIS Clearance must be obtained from the concern agency with site layout/Drawing of underground utilities.</p> <p>3.1.10) No Trial trench to be done by JCB or any means of Mechanical.</p> <p>3.1.11) No JCB to be engaged to remove roots of tree. Only manual tree roots to be removed.</p> <p>3.1.12) Before mechanized excavation/engaged JCB/Excavator ensure that trial trench has been done and do mechanized excavation is permitted below trial trench depth.(Trial trench/Manual excavation to be done 200 more /Extra from desire level to avoid contact of bucket teeth with underground utilities. (Box Cutting/Zig Zag Cutting to be done 200 MM more than desire level) Cable must be exposed Manually throughout of the area.</p>	<p><b>M</b></p>		

				<p>3.1.13) Do not engaged JCB/Excavator beyond out of trial trench area.</p> <p>3.1.14) excavator/JCB operator to be communicated about the underground utilities and care to be taken while excavation..</p> <p>3.1.15) during excavation Claw /Support of machine should not be placed on cable.</p> <p>3.1.16) If any cable is found during excavation cable should be exposed Manually.</p>		
	<b>Checked the license of Operator</b>	3.2) Accident due to hit by m/c, vehicle or because of untrained Operator	<b>I</b>	<p>3.2.1) The operator must be experienced, trained &amp; must have a valid Vehicle License (for Heavy Vehicle)</p> <p>3.2.2) No one shall be allowed in the swing area of the M/C and Swing area to be barricaded</p> <p>3.2.3) Persons shall not be allowed to move around the Excavator / JCB / Dumper.</p> <p>3.2.4) The movement path/route of the Dumper shall be well planned and to be explained to the driver before start of work and the vehicle shall be guided accordingly while carrying the excavated soil to the dumping area.</p> <p>3.2.5) Physical condition of Machine must be checked to avoid any incident.</p>	<b>M</b>	
		3.3) Falling of person/Material inside the excavated pit/trench	<b>I</b>	<p>3.3.1) Excavated Soil must be kept at minimum 1.5 m /safe distance away from excavation edge</p> <p>3.3.2) Person shall not be allowed to move around the excavated pit/trench</p> <p>3.3.3) Excavated must be Protective barricaded.</p> <p>3.3.4) Loose boulders should not be kept at the edge of pit.</p> <p>3.3.5) Use all mandatory PPE's like Safety helmet/Jacket, Shoes ,goggle</p>	<b>M</b>	
		3.4) Collapse of soil	<b>I</b>	<p>3.4.1) Excavated material should be stacked at a safe distance (min 1.5 m away from the edge)</p> <p>3.4.2) Slope cutting &amp; benchmark cutting should be ensured during excavation and no vertical cutting is allowed.</p> <p>3.4.3) Cutting shall be done from top to bottom. No undercutting of side of</p>	<b>M</b>	

				<p>excavation shall be allowed.</p> <p>3.4.4) Excavation Checklist to be checked as per checklist No <b>JUS-SS-ENGG. 05</b></p> <p>3.4.5) Adequate protection to be provided to protect employees from loose rock or soil that could pose a hazard by falling or rolling from an excavation face. Such protection shall consist of scaling to remove loose material; installation of protective barricades at intervals, provision of nets as necessary on the face to stop and contain falling material; or other means that provide equivalent protection.</p> <p>3.4.6) Cutting shall be done from top to bottom. No undercutting of side of excavation to be allowed.</p> <p>3.4.7) Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operations, support systems such as shoring, bracing, or underpinning shall be provided to ensure the stability of such structures for the protection of employees.</p> <p>3.4.8) Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees shall not be permitted without approval of site in charge.</p> <p>3.4.9) Sidewalks, pavements, and appurtenant structure shall not be undermined unless a support system or another method of protection is provided to protect employees from the possible collapse of such structures.</p> <p>3.4.10) Six direction hazard must be identified and accordingly action to be taken to prevent incident.</p> <p>3.4.11) Excavation Net /Shoring to be done as per side/soil condition to avoid collapse and buried to people.</p>			
		3.5) Physical injury	<b>I</b>	<p>3.5.1) All required PPE (safety shoes, goggles, helmet, and fluorescent jacket) should be used.</p> <p>3.5.2) Work men should be skilled for particular activity at least six month</p>	<b>M</b>		

				experienced in excavation/backfilling		
		3.6) Dust Hazards	<b>I</b>	3.6.1) When the excavation activity causes dust generation which can be harmful to the employees, necessary action must be taken to suppress it (e.g. spraying water) or employees must wear proper PPE (nose mask) while working in such atmosphere.	<b>M</b>	
		3.7) Hazard due to the adjacent structures becoming unstable by excavation	<b>I</b>	3.7.1) Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operations, support systems such as shoring, bracing, or underpinning shall be provided to ensure the stability of such structures for the protection of employees. 3.7.2) Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees shall not be permitted without approval of site in charge. 3.7.3) Sidewalks, pavements, and appurtenant structure shall not be undermined unless a support system or another method of protection is provided to protect employees from the possible collapse of such structures.	<b>M</b>	
		3.8) Hazards associated with water accumulation	<b>I</b>	3.8.1) Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation. The precautions necessary to protect employees adequately vary with each situation, but could include special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of a safety harness and lifeline. 3.8.2) If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operations shall be monitored by a competent person to ensure proper operation.	<b>M</b>	
		3.9) Toppling of Excavator / JCB while doing the excavation	<b>I</b>	3.9.1) The Excavator / JCB's outrigger shall not be placed at the edge of the excavated pit. These shall be at least 1.5 m away from the edge of the excavated pit or can vary	<b>M</b>	

			<p>depending on the soil condition.</p> <p>In the slope area, depending on the gradient and soil condition, the operator of the vehicle shall take its own precautionary measures operate the m/c safely.</p> <p>3.9.2) No backward movement during upward journey on ramp.</p> <p>Over loading of excavated earth should be restricted.</p> <p>3.9.3) Do not swing the arm or turn the m/c while traveling on the slopes.</p> <p>Slope stability to be checked the engineer of the concerned agency seeking permission for the excavation.</p> <p>3.9.4) Bucket must be 20 to 30 centimeter raised above the ramp level during marching uphill and downhill.</p> <p>3.9.5) Usage of Mobile phone by the operator in cabin during operation not allowed.</p> <p>3.9.6) No loaded bucket to be allowed during exit and entry of excavator over the ramp.</p> <p>3.9.6) Lighting more than 30 lux will be provided during the night time</p>			

**Prepared By:**  
JUSCO Line Engineer

**Approved By:**  
Line Manager

**Checked By:**  
Safety Officer

**I have read and understood the safe working procedure and I commit to follow it while executing the job. I will ensure that all my workmen are trained on this SWP before starting the job.**

**Signature of the Contractor**

**Note**

1: This Safe work procedure shall be prepared by owner department countersigned by contractor's representative and safety department.