

Safe Work Method Statement – Demolition of Load Bearing Structure

This safe work method statement is generic in nature can be used as a guide in developing your SWMS All PCBU's when undertaking high risk construction work are to have in place a Safe Work Method Statement (SWMS). Where there are differences in the control measures to employed between your and this SWMS the higher of the two control measures are to be implemented – this or your own SWMS. This SWMS needs to be reviewed against site conditions upon commencing work. Where site conditions prevent works to be carried out in accordance with this SWMS than another is to be written and Site Supervisor notified.

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| Name of PCBU/Principal Builder | | Name of Principal Contractor | Bay Building Services | |
| Work Activity: | Demolition of Load Bearing Structure | Work Location: | | |
| High Risk Construction Work: | <ul style="list-style-type: none"> Asbestos | | | |
| | <ul style="list-style-type: none"> Fall from height | Site Supervisor: | | |
| | <ul style="list-style-type: none"> Falling objects | Emergency Contact: | 1399 766 216 | Contact No: |
| Date of SWMS | 02/04/2018 | Review Date | | |
| Have workers been consulted about the SWMS? | All workers are required to be consulted with regards to the SWMS and control measures contained in the SWMS. | | | |
| Person Responsible for ensuring compliance with SWMS | Different PCBU's/Employers and Contractors will encounter different High Risk activities. All PCBU's/Employers are responsible for reviewing this SWMS against site conditions and ensure work occurs in accordance with the SWMS. | | | |
| Person(s) Responsible (for reviewing the SWMS) | PCBU's/Employers should review this SWMS and apply the control measures outlined for the various High Risk activities that they may undertake. Where works cannot occur in accordance with this or your own SWMS contact is to be made with the Site Supervisor. | | | |
| Work Step | Hazard for Works | Control Measures for the Hazards | | |
| Conduct pre-demolition planning | Falls from height Falling objects Impact on members of public | <p>Consult with the designer and/or the principal contractor if appointed where reasonably practicable, to obtain a written report specifying the hazards associated with the design and the structure in the planning stage of the demolition work. Specific hazards may be outlined in a demolition plan.</p> <p>The building or structure to be demolished and all its components should be maintained in a safe and structurally stable condition so as to prevent the unexpected collapse of part or all the structure.</p> | | |

Temporary braces, propping, shoring or guys may need to be added to ensure that stability of the structure is maintained.

The position, depth and type of basements, wells and underground storage tanks should also be determined as should the contents of any storage tanks.

Adjoining properties and structures also need to be considered, as do the existence of easements, right of way, boundary walls and other encumbrances.

Consider:

Effect on adjacent buildings or adjoining buildings

- Slope of land
- Changes of soil condition or ground stability
- Structures on adjacent blocks
- Structures that support adjacent buildings or blocks
- Access to adjoining or adjacent building or blocks
- Flooding or water penetration
- Damage to underpinned structures or areas
- Proximity of structure to overhead power lines and impact from demolition
- Existing underground tanks, cellars, and confined spaces

Methods used to demolish structure.

- Sequence of demolition including items, location and timing (e.g. glass, then frames- working from top down)
- Dust suppression
- Exposures e.g. hazardous materials, lead, silica, PCB's etc.
- Types of hazards at site
- Identify structural alterations in the house and assess method of demolition
- Wherever possible demolition of residential house should be demolished by mechanical means.

Ensure all relevant workers undertake training and receive instruction in the use of control measures. Include:

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- Correct use of equipment including selecting, fitting, use, care of and maintenance
- Correct use of tools used
- Use of supervision where required (e.g. new starters or new equipment).

Site Plan and Procedures. Consider:

- Site access and traffic management
- Safe access and egress to structures

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| | | <ul style="list-style-type: none"> - Security requirements including site fencing - Notification to service providers to disconnect electricity, gas, water etc. |
| Develop Demolition Plan - | <p>Hazards include:</p> <ul style="list-style-type: none"> - Fall from height - Uncontrolled collapse - Electrocution - Hazardous materials - | <p>Buildings and structures should generally be demolished in reverse order to their construction, that is, by 'sequential demolition'. In particular:</p> <ul style="list-style-type: none"> • sequential demolition should be carried out in reasonably even stages, commencing from the roof or top of the building or structure being demolished • multi-storey buildings or structures should be demolished storey by storey, and • masonry and brickwork should be taken down in reasonably even courses. <p>Develop Demolition Plan. Incorporate:</p> <ul style="list-style-type: none"> - Plan indicating the location of all services on site (gas electrical, chemical etc.) - Plan indicating all buildings, including underground basements, tanks etc. - Demolition methods (e.g. induced collapse, mechanical, manual) - Sequence of demolition including items, location and timing (e.g. glass, then frames- working from top down, which side to commence first, first penetration) - Methodology of demolition – identify commencing point and subsequent zones - Where structural items are identified an engineer is to confirm the structural sequence of demolition for maintaining stability e.g. vertical and horizontal members - All Plant and equipment required and suitability for task - Emergency management - Removal of debris - Loading / unloading zones. |
| Assess impact on adjoining buildings | <p>Uncontrolled collapse Struck by falling object</p> | <p>Ensure demolition plan takes into account impact of the demolition on the structural integrity of adjoining buildings. This may require the engagement of an engineer consideration should be given to:</p> <ul style="list-style-type: none"> - Changes in soil conditions as a result of the demolition work - Need for the use of shoring and underpinning and to the effects of changes in soil conditions as a result of the demolition work. - Requirement for lateral support for adjoining structures to be equal to or greater than any provided by the structure to be demolished - Before any lateral supports are disturbed provision should be made for the erecting of temporary supports and testing of their effectiveness before proceeding further - Assess impact of vibration or concussion during the demolition process on other buildings |

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| | | <ul style="list-style-type: none"> - Possible impact of flooding or water penetrating to any adjoin building. - Assess impact upon adjoining buildings or structures of an uncontrolled fall of unstable structure under demolition. Use of exclusion zones and spotter to prevent workers or others being in the vicinity of unstable structure. |
| Conduct pre-demolition inspection for asbestos containing materials | Asbestos present | <p>Before starting any demolition work inspect the structure for asbestos contain materials (ACM). For workplace where there existence an asbestos register review and note the location of any asbestos in the demolition area. Where an asbestos plan does not exist:</p> <ul style="list-style-type: none"> • Engage an approved analyst to carry out asbestos audit. No work is undertaken until the existence of asbestos or absence is confirmed. • If Asbestos is identified it must be removed and a Clearance Certificate obtained before commencing works. Removal of the asbestos is to be undertaken by an approved and licensed asbestos removal with appropriate trained Class A or Class B licensed personnel |
| Conduct pre-demolition inspection for Hazardous Substances & Dangerous Goods, lead, PCB's, synthetic mineral fibres | Exposure to hazardous materials adversely effecting health | <p>Hazardous Substances & Dangerous Goods Before starting any demolition work, all areas of the workplace including basements, cellars, vaults and waste dumps, should be examined to determine whether:</p> <ul style="list-style-type: none"> • there are any items which could be a fire and explosion risk • any previous use of the site might cause a risk because of the nature of and/or decomposition of materials, and • there are any toxic, radioactive or other hazardous chemicals present. <p>Any hazardous materials including explosives, should be clearly identified. Information about a chemical's hazards and control measures can be obtained from the chemical's Material Safety Data Sheet (MSDS) or the label of the chemical's container.</p> <p>The MSDS will give advice as to control measures for the chemicals handling and disposal of hazardous substances and all workers should be made aware of the presence of the hazardous substance and control measures for the handling and disposal of hazardous materials.</p> <p>Lead</p> <ul style="list-style-type: none"> - found in paint, old water pipes and other plumbing fittings, sheet lead, solders, lead flashing, lead light windows and glass. - The age of a structure may be directly related to the amount of lead that can be present |

| Approximate date of construction | Sources of lead hazards |
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| 1920 - 1978 | Paint |
| 1920 - 1978 | Plumbing |
| 1923 - 1986 | Automobile exhaust (may accumulate as ceiling dust) |

If it is suspected that the structure contains lead based paint, a test for the presence of lead should be conducted.

The precautions which should be taken when demolishing materials containing lead include:

- minimising the generation of lead dust and fumes
- cleaning work areas properly during and after work
- wearing the appropriate PPE, and
- maintaining good personal hygiene.

Synthetic Mineral Fibres : used extensively for insulation in building walls and ceilings as well as on items such as air-conditioning duct work. The specific material should be identified and control measures implemented relevant to the manufacturer's instructions and MSDS

PPE should be provided to workers and worn when insulation is being removed during the demolition process and dust should be suppressed by damping down.

Polychlorinated biphenyls (PCB)

- Found in electrical capacitors and transformers or when cleaning up spills and leaks.
- Appropriate control measures should be implemented when handling damaged capacitors to ensure that any spillage does not contact workers and is appropriately cleaned up and disposed of.
- Any equipment or parts containing PCBs should be placed in a polyethylene bag and then placed into a marked sealable metal container.
- If PCBs cannot be transported immediately for disposal, all containers should be stored in a protected area which prevents any discharge of PCBs to the environment.
- PPE including gloves made of materials that are resistant to PCBs (for example polyethylene, nitrile rubber or neoprene), should be provided to workers and worn when there is any likelihood of exposure to PCBs.

Review demolition area for live underground services inc. electrical, gas, and other services

Electrocution, chemical, gas, fire, explosion

Prior to demolition commencing:

All electric, gas, water, sewer, steam and other service lines not required in the demolition process should be shut off, capped, or otherwise controlled, at or outside the building line, before demolition work is started.

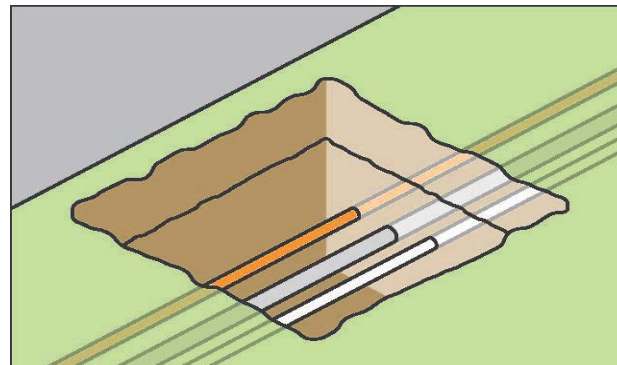
- Review Dial Before You Dig to identify where all underground services are. Engage competent & licensed persons to locate and isolate all services before demolition commences
- Prior to demolition identify services have been disconnected and capped at street connection
 - Overhead power connection to residential site has been removed
 - Underground power has been disconnected to street connection
 - Gas meter has been removed and underground pipe capped at street connection

Where underground services can not be isolated or removed:

- Where possible isolate location of underground services via site fencing
- Mark out services and areas where underground services located – ground flags.
- Identify on site signage location of underground services and distribute plans to workers.

The available information about existing underground essential services may not be accurate. Therefore it is important that demolition methods include an initial examination of the area to be demolished.

Figure 1 Underground essential services exposed by 'potholing'



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| <p>Operating plant or erecting scaffold near to overhead power lines when power can not be isolated</p> | <p>Electrocution</p> | <p>Mobile Plant Works which may penetrate the 3m 'No Go Zone' around the power line Contact with overhead power lines can pose a major risk. Before setting-up equipment in the vicinity of overhead power lines, determine:</p> <ul style="list-style-type: none"> - Exclusion zones - Safe distance required for exclusion zones - Requirements for Spotters. <p>Where works will require the vehicle equipment or load to penetrate the no-go zone a spotter is to be engaged.</p> <p>No one is permitted to work within the *3 meter 'clearance' zone i.e., any height above the cable or 3m either side unless they:</p> <ul style="list-style-type: none"> • are given 'permission' to work by the asset owner • have first done a site-specific risk assessment, and • have a trained spotter at the site <p>Installing Scaffold near to overhead power lines Where scaffold may penetrate the 'no-go zone' surrounding overhead power lines a permit from the relevant power company maybe required:</p> <ul style="list-style-type: none"> • 1.5m for in-running service cables • 4.6m for low voltage street cables <p>Control measures may include:</p> <ul style="list-style-type: none"> • Power isolated during the erection and dismantle of scaffold • Visual aids installed on power lines • Use of spotter during erecting and dismantle of scaffold • Use of hoarding on the scaffold during use |
| <p>Review Demolition area/surface to determine if underground tanks, cellars, & confined spaces are located on site</p> | <p>Falls, tripping, uncontrolled colapse</p> | <p>The existence of underground tanks, cellars, & confined spaces can impact on the demolition process and should be included into the demolition plan where identified:</p> <ul style="list-style-type: none"> • Consult with the property owner as to existence and possible location of underground tanks, cellars, or confined spaces • Mark out location of underground hazards • Put into place signage identifying location of the underground hazard <p>Where access is required to confined spaces a separate SWMS is to be developed identifying possible hazards and control measures in line with the COP for Confined Spaces</p> |

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| <p>Securing the work area preventing public access and exclusion zones</p> | <p>Struck by falling objects Fall from height Collapse of a structure</p> | <p>Public Access</p> <p>Where demolition work is adjacent to a public place, residential housing and there is a risk of work activities impacting on members of the public from falling debris or use of plant, a method of protection should be selected and:</p> <ul style="list-style-type: none"> • erected before the commencement of demolition work • kept in position at all times during the progress of the work, and • regularly inspected and maintained to prevent unauthorised access to the works area <p>Control measures to isolate the work from the public may include installing security fencing, containment sheets and mesh, an overhead protective structure, road closures and specified exclusion zones.</p> <p>Overhead protective structures should be provided for public walkways in conjunction with perimeter fencing. Overhead protection may be constructed from scaffolding, fabricated steel or timber and should be designed to withstand an appropriate load.</p> <p>Exclusion zones</p> <p>To protect workers undertaking demolition activities, exclusion zones should be considered to prevent unauthorised personnel entering work areas.</p> <p>A system to prevent falling objects impacting on workers should be implemented. In particular, any area where a falling object might reasonably be expected to land should be designated an exclusion zone. The enclosed and/or protected area should extend horizontally to a safe distance beyond the overhead work area.</p> <p>Planning for exclusion zones should take into consideration:</p> <ul style="list-style-type: none"> • erecting secure impassable barricades with adequate signage to prevent unauthorised pedestrian or vehicular access to the area • providing information to workers and other persons at the workplace advising them of the status of the exclusion zones, and • providing supervision so that no unauthorised person enters an exclusion zone. <p>Exclusion zones and safe distances may be required during:</p> <ul style="list-style-type: none"> • the stripping, removal and/or dropping of debris • the operation of demolition plant or equipment • pre-weakening activities for a deliberate collapse, and • the deliberate collapse or pulling over of buildings or structures. |
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| Demolishing | | <p>Monitor work position at all times. Ensure:</p> <ul style="list-style-type: none"> - No standing behind reversing vehicles - Sufficient distance from plant during operation - No work being conducted in established “no go zones” for pedestrians - Alertness at all times. Listen for: <ul style="list-style-type: none"> o Reversing alarms/beepers o Calls from Plant Operators - Work position in clear sight of plant operators - Be aware of exclusion zones and safety barriers / warning signage erected. - Follow traffic management plan requirements upon arrival. <p>Demolition process. Ensure:</p> <ul style="list-style-type: none"> - Follow demolition plan - Determine if demolition work to be completed by hand and review if this can be done by machine or in teams - Demolish sequentially - Generally demolish from top down (see plan)r - Walls demolished evenly if possible - Observe any usual movements in structure indicating possible structural instability - Drop zones isolated to protect from falling materials. |
| Manual demolition | | <p>Manual demolition. Ensure:</p> <ul style="list-style-type: none"> - Follow demolition plan - All PPE worn - Structure deemed safe to work on - Do not cut or attempt to remove items while item moving under load e.g. cutting reinforcement in concrete when breaking - Do not enter defined no go zones or areas where overhead work is in progress - All free standing walls braced - Trenches are adequately shored - Do not load floors with excess weight - Structural members cut as per engineers specification and /or plan - Consider tension in framework when dismantling. <p>Remove all glass prior to demolition</p> <ul style="list-style-type: none"> - Assess the size of the glass and frame. - Get help if glass needs to be secured while rubbers are being removed |

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| | | <ul style="list-style-type: none"> - Gloves and glass suction lifting aids are to be used. - Remove glass surrounds with hand tools. - All removed items will be placed in allocated area. <p>Ensure:</p> <ul style="list-style-type: none"> - Never work /stand on walls or other items being demolished - Always conduct external demolition work from safe working platforms not attached to the structure being demolished - Do not leave standing unsupported walls or other members (manage work flow to always allow time to complete task or make other arrangements to support structure in the interim) - Always maintain exclusion zone below work area when working at height - Continually monitor structure for stability. If unsure if structure safe to demolish check with supervisor and or engineer to confirm - Make supervisor/engineer immediately aware if unforeseen circumstances arise (e.g. missing or damaged structural members, excessive movement, sagging etc.) <p>Carry out regular monitoring and inspections as work progresses. Check for changes of hazards and risk levels associated with:</p> <ul style="list-style-type: none"> - Weather conditions - Soil conditions - Underground / overhead services - Hazardous Chemicals - Fire damage - Water damage - Temporary bracing - Shoring / underpinning - Trenches / voids - Building structure - Plant - Access / egress. |
| Manual demolition of roofs | Falls from height Struck by falling objects | <p>Where it is not reasonably practicable to demolish a roof using mechanical means or to remove the roofing from work platforms below the roof, then careful consideration should be given to the most suitable method of protection for workers engaged in the removal of the roofing.</p> <p>Prior to commencing roof demolition or dismantling consider:</p> <ul style="list-style-type: none"> • fall hazards are to be identified and controlled. Stair voids are to be protected via the use of void covers, roof edges via the use of roof guard rail, and unprotected edges via guard railing. Where this is not possible to the use of fall arrest/prevention systems may be considered. |

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| | | <ul style="list-style-type: none"> • methodology of removing roof trusses if required. The use of temporary work platforms or scaffold maybe required and to have adequate fall protection in place including mid rail, top rails, and kick boards. It is important that the removal of roof trusses does not cause wall instability. • structural stability assess stability of structure prior to access. This may mean the engagement of a suitably qualified person such as a structural engineer to assess the condition of the roof. • condition and strength of the roofing material and the identification of fragile roofing • identification of fragile panels or skylights in solid roofs to prevent fall through. This may include the use of barriers, guarding, and other identifying means e.g. warning tape (lower control) • crane access. May require the use of a ticketed dogman if crane operator can not visual see work's area and for slinging of loads. Other should not stand under slung loads • safe worker access and egress including stairs and ladders. When using ladder they are to secured in place, and maintaining three points of contact when in use • fall protection requirements including issues such as perimeter protection, use of temporary work platforms such as scaffold, the availability and strength of anchor points for static lines, inertia reels and lanyards and the suitability of roof structure for the use of safety nets • means of rescuing persons from safety nets or safety harnesses. Emergency procedures may include another person at site when using falling arrest systems and a method to retrieve arrested worker such as ladders, work platforms, boom lifts • the condition of any roof mesh or safety mesh. Where safety mesh is in place it's suitability as means of fall protection may need to be confirmed by the client, or, assessed by a suitably qualified person such as a structural engineer • methods of raising and lowering equipment and materials. Creating of exclusion zones where materials maybe thrown into skips or to the ground • electrical safety including the location of nearby power lines, and ensuring works do not penetrate the no-go zone around the power line. This may mean the isolation of power, obtaining a permit from the power authority, spotters, and visual aids warning of the power lines position. • worker competency and training needs. |
| Works on fragile roofs | Fall from height | Before working on the roof, the roof should be inspected to identify that it is structurally adequate to work on and whether there is any brittle material or if the roof has a fragile aspect to it (for example a skylight or worn section). |

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| | | <p>Brittle or fragile roofing material can include roofing made of asbestos cement, cellulose cement, glass panels, fibreglass, acrylic or other similar synthetic moulded or fabricated material used to sheath a roof or contained in a roof.</p> <p>If asbestos cement roofing is involved, the work must be undertaken in accordance with the asbestos related requirements associated with safe removal of asbestos in the relevant code of practice.</p> <p>Where it is necessary for work to be carried out or adjacent to any part of a fragile roof, you should:</p> <ul style="list-style-type: none"> • inspect the underside of the roof to determine the extent of the fragile roof material, the existence of any safety mesh and its fixings, and the structural soundness of the roof material • complete the work from a temporary work platform • provide temporary walkways as a means of access to and egress from any work area on the roof where permanent walkways are not provided • secure and fix cleats to walkways on high pitch roofs (for example where the slope of the roof exceeds 1:6) • provide temporary roof ladders for steep roofs (for example in excess of 35 degrees), and • provide other fall protection as necessary (for example work positioning or fall arrest system). |
| <p>Use of fall arrest systems for removal of roofing materials</p> | <p>Fall from height</p> | <p>Plan use of fall arrest/prevention systems</p> <p>Plan fall arrest system before set-up to eliminate danger areas such as:</p> <ul style="list-style-type: none"> - Crossing or tangling of connecting sub-systems <p>more than 1 worker</p> <ul style="list-style-type: none"> - Pendulum effect - Swing down - Swing back (if there is a risk of swing back – swinging back into building/structure – do not use fall arrest system). <p>Note: Pendulum effect and swing down effect occur when the line is able to slide back along the edge of the roof until vertical from anchor point to ground, so in a fall, person can hit the ground or the line can break.</p> <p>To eliminate pendulum/swing down:</p> <ul style="list-style-type: none"> - Install guard rails |

- Place anchor point at a right angle to the position of the line at the perimeter edge (mobile anchor)
- Install second anchor point and relay devices (intermediate anchor).

Ensure harness system does not introduce new hazards (eg: trip hazards, or restrict movement making work unsafe)

Ensure suitable harness type used. Use only full-body harness – no waist-type belts.

Ensure top dorsal position for harness connection point to fall arrest line. Front attachment only if line and rope grab device used on steel slope. Use as per manufacturer.

Ensure all parts of the safety harness system (ropes, belts, clips, hooks, karabiners, lanyards, shock-absorbing packs) are compatible. Check with manufacturer.

Note: Parts with the same brand name may not be compatible and could fail due to roll-out of hook/karabiners.

Ensure all work surfaces are able to support weight and allow suitable attachment for anchors.

Anchor points. Ensure:

- Ensure anchor points are certified and assessed as being suitable for the task
- Not more than 1 person using same anchor at same time (unless manufacturer permitted horizontal life line).

Use of Fall Arrest Systems to Prevent Fall from Roof

Set-up of fall arrest system:

- Maximum distance free fall before arrest must not exceed 2m
- Ensure sufficient distance between work surface and any surface below to enable shock absorber to fully deploy
- Do not use shock absorber on single story
- Do not use lanyard in combination with inertia reel – leads to increased free fall distance

Note: To calculate suitable distance, take into account:

- Distance between work surface and any surface below
- Original length of lanyard
- Maximum energy absorber extension
- Height of person
- Clearance allowance for dynamic stretch.

Ensure anchor point is as high as possible above work area. Never work above anchor point.

Inertia reels:

- Can only be used where there are no obstructions (unless manufacturer can demonstrate contact will not impair function)
- Do not use on steep pitched roof (does not lock during fall down pitched roof)
- Do not lock in place – not designed for continual support

Operator. Ensure:

- Physically fit and able to withstand possible fall
- Within weight limit (including clothing and equipment) of harness.

Use of Travel Restraint Systems to Prevent Falls from Roof

- Use to physically prevent someone from reaching the unprotected edge
- set out the lanyard to a predetermined length to gain access to the work area however prevent fall from the unprotected edge ie. Lanyard is shorter than the distance to the unprotected edge or the attachment point to the user is at the shorter length.
- If user is attaching themselves to the lanyard at point shorter than the unprotected edge the user is not to make any further adjustment unless an assessment is made as to the pendulum effect and this not to occur if the limit of travel point has been reached see Figure 3.
- set up the system so that user will be prevented from reaching the unprotected edge
- One example of inappropriate set up is shown in the right hand diagram in Figure 3.

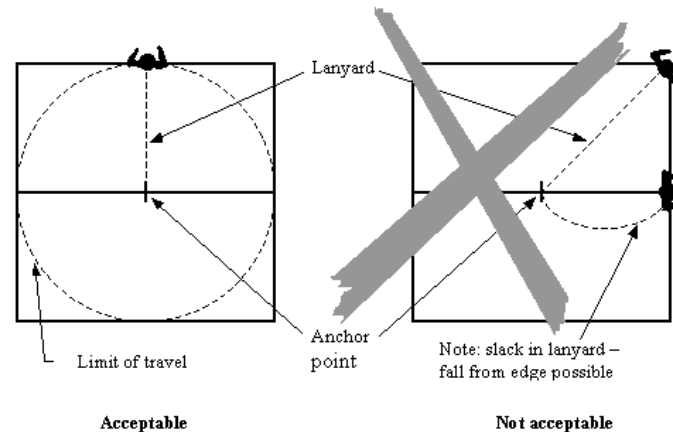


Figure 3 – Roof work using travel restraint

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| Manual demolition of walls | Uncontrolled collapse of structure Struck by falling object Falls from height | <p>Glass should be removed from the windows, doors or openings before the commencement of the demolition work.</p> <p>Walls and gables should be demolished course by course. All work should be performed from safe working platforms commencing from the top down. If platforms are >2m in height they are to be fitted with guard railing to prevent a fall. Workers should not work from the top of a wall or partition being demolished. A wall or partition should not be permitted to stand, unless it is effectively supported against collapse including being supported against lateral loads from wind and other forces.</p> <p>If the demolition work involves the demolishing course by course of any walls, columns, piers or other vertical structural members check that:</p> <ul style="list-style-type: none"> risks to persons and property from falling collapsing and rebounding material are eliminated or minimised, via the use of exclusion zones, spotters, or other means to ensure materials do not fall on others below the remaining portion of the building or structure, if any, can withstand any loads, impacts and vibration caused by felling or other environmental factors such as wind. |
| Manual demolition of floors and members | Uncontrolled collapse of structure Struck by falling object Falls from height | <p>All floors and other surfaces used to support workers, plant, equipment or materials should be assessed as capable of supporting the load.</p> <p>Suspended floors and their supporting members should not be loaded by workers, plant, falling or accumulated debris/materials to the extent that there is excessive deflection, permanent deformation or danger of collapse.</p> <p>If water is used, the increased weight of the watered debris should be taken into account.</p> <p>For further information refer to AS 260: <i>The demolition of structures</i>.</p> |
| Manual demolition of framework | Uncontrolled collapse of structure Struck by falling object Falls from height | <p>Before any framework is demolished or removed, all reasonably practicable precautions should be taken to prevent the rest of the building collapsing as a result.</p> <p>A competent person (a structural engineer maybe required) should undertake an assessment to determine the necessary supports required when cutting members. Members should not be cut unless they are supported safely and effectively. Measures should be taken to prevent sudden spring, twist, collapse or other movement of the framework when it is cut, released or removed.</p> |

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| | | <p>Any framework which is not demolished should be strong enough to remain safely in position, or should be guyed or otherwise supported to ensure that it will be stable in any adverse weather conditions.</p> <p>Framework members should be lowered in a controlled manner. Tag lines should be used on loads where necessary to control the load.</p> |
| Mechanical demolition | <p>Uncontrolled collapse of structure Struck by falling object Falls from height Struck by vehicle</p> | <p>Mechanical demolition involves the use of powered mobile plant, such as excavators, cranes, loaders and bulldozers. There may be a mix of hand and mechanical demolition methods applied.</p> <p>Mechanical Demolition. Ensure:</p> <ul style="list-style-type: none"> - All mobile plant suitable for task - All mobile plant is fitted with operator protection devices e.g. cabin impact protection - Effective communication between operators and relevant workers - Exclusion zones in place. <p>Mobile Plant working at height. Ensure:</p> <ul style="list-style-type: none"> - Correct machine for work - Demolished material removed from each floor - Buffers in place to prevent falls e.g. leave 900mm of wall standing on perimeter to prevent fall - Do not push material against walls - Consider vertical heights of columns, walls etc for falling debris. <p>Slings and chain pulling. Ensure:</p> <ul style="list-style-type: none"> - All connections anchored securely - Plant is designed and heavy enough for pulling load - Rope, slings or chains are rated for safe working load (SWL) - Rope, sling or chain is twice the length of the vertical height of structure/member pulled. |
| Mechanical demolition of walls | <p>Uncontrolled collapse of structure Struck by falling object Falls from height Struck by vehicle</p> | <p>When mobile plant (for example an excavator with hydraulic rock breaker) is used to demolish walls, at least 900 mm of the wall being demolished should be left intact above the floor level to provide a protective barrier at the perimeter of the building and around all lift wells, stair wells, light wells and any other places where persons or objects could fall. The remaining wall can later be safely demolished from the floor below. All remaining sections of walls should be identified and highlighted as buffers for edge protection.</p> <p>Guarding, hoarding and/or the exclusion zones should be used to protect workers and/or the public against the risk of being struck by falling debris and materials.</p> |

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| | | <p>Walls should not be laterally loaded by accumulated rubble or debris, to the extent that they are in danger of collapse.</p> <p>When plant is used to demolish vertical features such as columns or walls, the columns or walls should not be so high as to create a risk of debris falling onto the plant or operator.</p> <p>Any member to be severed (with grapples, shears or pulverising attachments) should either be effectively supported or, if allowed to fall, will not endanger persons, plant or damage the remaining structure.</p> <p>Exclusion zones should be established where necessary to protect the safety of people who are working on or in the vicinity of the demolition work. No person should be in any area near the mechanical demolition where there is a possibility of being struck by flying debris. Areas in which shears are operating should be kept clear of workers, because of the risk of smaller pieces of metal (for example bolts) flying off when sheared.</p> |
| Demolition of garages/structures adjoining neighbouring buildings or properties | <p>Uncontrolled collapse of structure</p> <p>Struck by falling object</p> <p>Falls from height</p> <p>Struck by vehicle</p> | <p>Exclusion zones should be established where necessary to protect the safety of people who are working on or in the vicinity of the demolition work. No person should be in any area near the mechanical demolition where there is a possibility of being struck by flying debris. Areas in which shears are operating should be kept clear of workers, because of the risk of smaller pieces of metal (for example bolts) flying off when sheared</p> |
| Demolition of co-joined structures | <p>Uncontrolled collapse of structure</p> <p>Struck by falling object</p> <p>Falls from height</p> <p>Struck by vehicle</p> | <p>As structural integrity of the adjoin property maybe affected a demolition plan in consultation with a suitably qualified engineer would be required.</p> <ul style="list-style-type: none"> - Allow for propping of adjoining property and regular inspection - Exclusion zones should be established where necessary to protect the safety of people who are working on or in the vicinity of the demolition work. No person should be in any area near the mechanical demolition where there is a possibility of being struck by flying debris. Areas in which shears are operating should be kept clear of workers, because of the risk of smaller pieces of metal (for example bolts) flying off when sheared. |
| Demolition of masonry brick arches | <p>Uncontrolled collapse of structure</p> <p>Struck by falling object</p> <p>Falls from height</p> <p>Struck by vehicle</p> | <p>Masonry and brick arches should be demolished in a sequence that allows for the removal of as much of the dead load material as possible without interfering with the stability of the main arch rings. The spandrel infilling should only be removed down to the springing line as the load-carrying capacity of many old arches relies on the filling between the spandrels. In multi-span arches, lateral restraints should be provided at the springing level before individual spans are removed.</p> |
| Removal of demolished materials | <p>Uncontrolled collapse of structure</p> <p>Struck by falling object</p> | <p>Debris should be progressively removed to prevent any build up that could affect the integrity of a suspended floor of the building or structure, affect workplace access and egress, become a fire hazard, or cause a health and safety hazard.</p> |

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| | <p>Falls from height Struck by vehicle</p> | <p>Demolished materials should not be allowed to fall freely unless they are confined within a chute (or similar enclosure), shaft and/or exclusion zone.</p> <p>A debris drop is a debris pile that is enclosed and where the risk of an object striking workers or the public has been eliminated. Debris drop zones should be clearly identified and any area where there is a risk that a worker or other persons at the workplace might be injured by falling or rebounding debris should be fenced or barricaded to prevent access.</p> <p>If demolished materials are allowed to fall through internal floor openings in multi-storey buildings, such as lift shafts and/or debris drop zones, the following should apply:</p> <ul style="list-style-type: none">• at the working level, each opening should be protected by an adequate vehicle buffer during the removal of debris by mobile plant, and guarded by suitable barriers at all other times. Vehicle buffers should be high enough to prevent the mobile plant from riding over them and solid enough to stop the fully loaded mobile plant, and• at all levels below the working level, access to the area through or onto which material is falling should be prevented, either by sealing off the opening with guarding from floor to ceiling, or by erecting signs and barricades to prevent persons coming near the openings. <p>Debris chutes should be designed and constructed to prevent the spillage of material and dust and to minimise noise while debris is passing through the chute. Vertical chutes should be fully enclosed with a cover or barrier at the top to prevent a person falling into the chute. Debris chutes should be adequately secured to the building or structure and to ensure that debris falls freely and does not become jammed in shafts or chutes. Securing of the chute should take into consideration the weight of the chute plus the accumulated load.</p> |
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