WAKA KOTAHI
NZ TRANSPORT AGENCY

TTM WORKER HANDBOOK

NZ TRANSPORT AGENCY

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New Zealand Government

Disclaimer

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More information

If you have further queries, call our contact centre on 0800 699 000 or write to us:

NZ Transport Agency
Private Bag 6995
Wellington 6141

This document is available on the NZ Transport Agency's website at http://www.nzta.govt.nz

Contents

TTM WORKER ROLES AND RESPONSIBILITIES

The TTM Worker Handbook is a resource for the TTM Worker training.

It includes key information about the TTM Worker role and guidelines for some of the key tasks that need to be completed when setting up, maintaining and removing temporary traffic management (TTM) at a worksite.

What the TTM Worker does

The TTM Worker assists with:

- Installing signs and cones

- Operating the stop/go paddle

- Removing signs and cones

- Installing and removing TTM equipment from a vehicle

Works under the direction of STMS

TTM Worker responsibilities

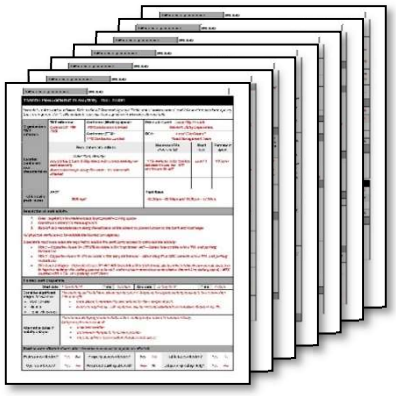
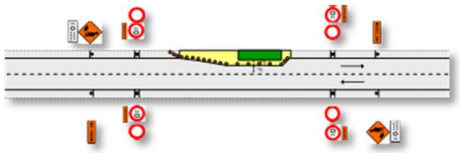
The TTM Worker responsibilities can be summarised as:

- Keep yourself safe
- Keep others safe
- Comply with your company's reasonable policies and procedures
- Follow the instructions of the STMS.

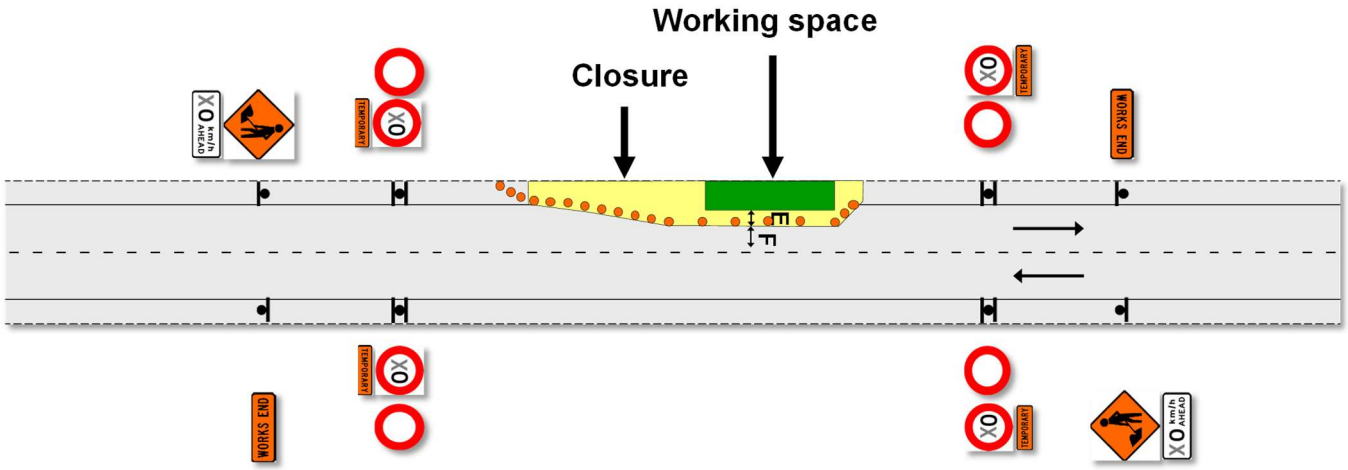
ABOUT TTM

The language we use

	Term	Description
	**PPE**	Personal protective equipment
	**TTM**	Temporary traffic management *(which includes the signs and cones)*
	**STMS**	Site traffic management supervisor
	**Road user**	Driver, cyclist, pedestrian

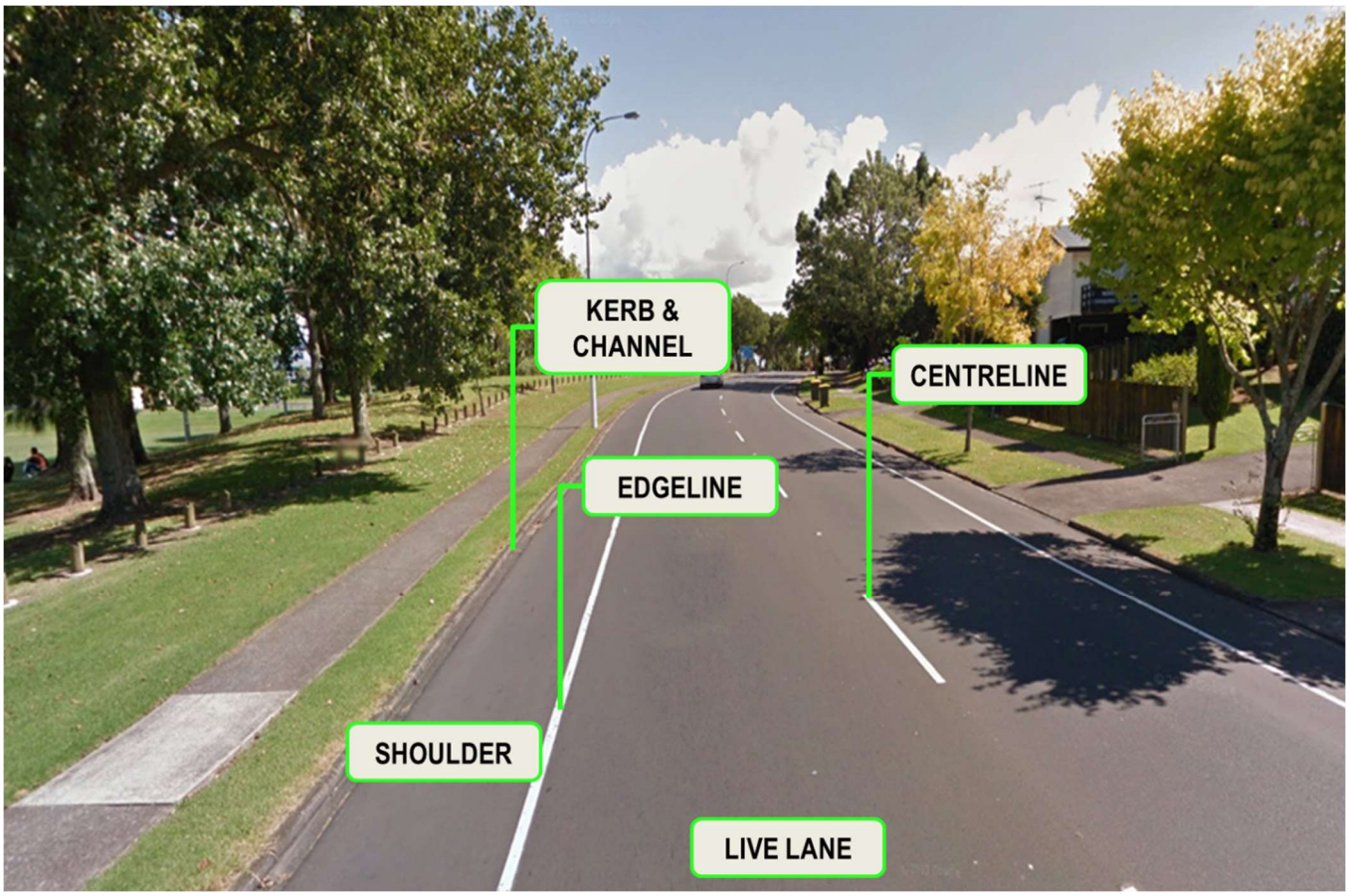
	Term	Description
	**TMP**	Traffic management plan
	**TMD**	Traffic management diagram
	**Working space**	Area where the work activity occurs There are no go zones between the working space and the traffic
	**TSL**	Temporary speed limit

About the worksite



Term	Explanation
Worksite	The area from the first sign to last the sign
Working space	The area available to complete the activity
Closure	The area that road users are excluded from. This normally includes the working space and any no go zones

Term	Explanation
Boundary	The outer limit of the road reserve (which goes from boundary to boundary across the road)
Back Berm	Grass area behind the footpath
Footpath	Normally a sealed surface for pedestrian use
Front Berm	Grass area between the footpath and carriageway
Carriageway	The road (including any shoulder areas) where vehicles normally drive

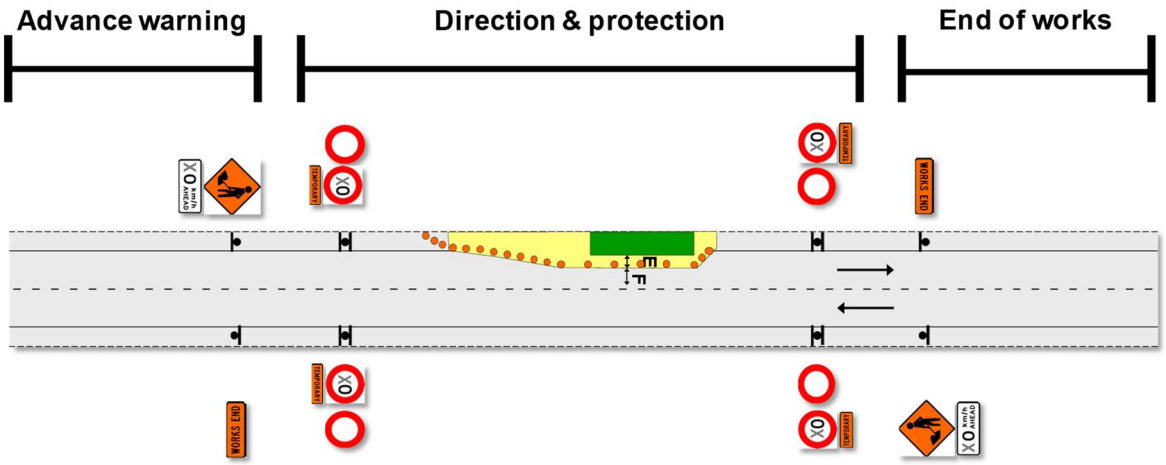


Term	Explanation
Kerb & channel	The outer edge of the carriageway could be a rollover kerb (vehicles can drive over it), mainly in cities or towns
Shoulder	The trafficable area outside the edgeline. Could be sealed surface or a gravel surface if it is level with the road
Edgeline	Solid line along the outside edge of a lane
Centreline	Line in the centre of the road dividing 2 lanes
Live Lane	A lane open to traffic

Framework for TTM at a worksite

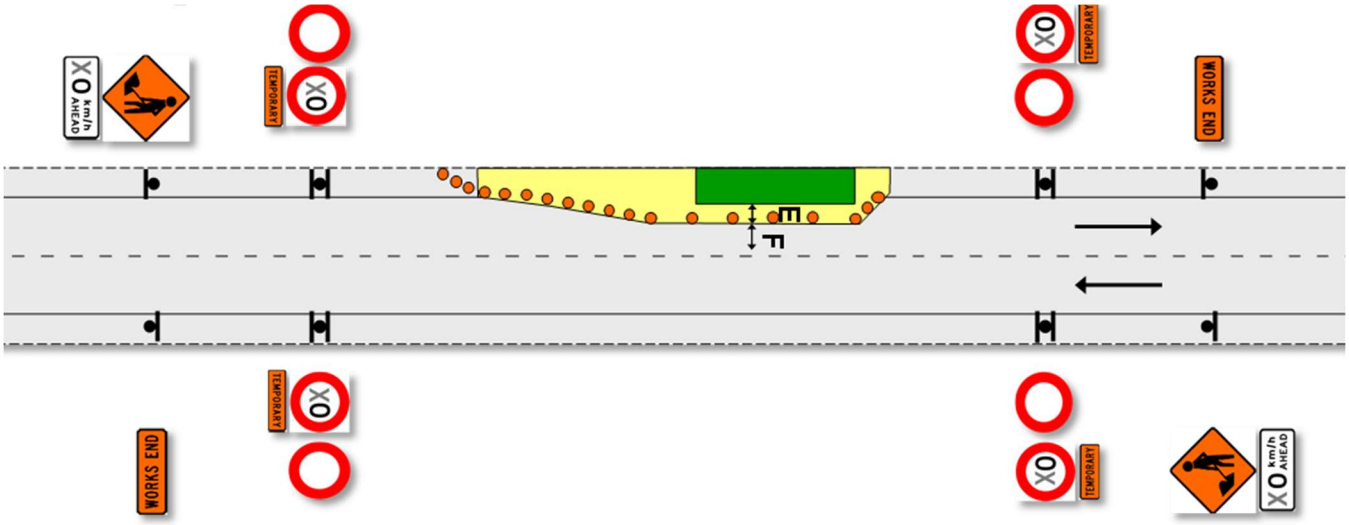
There is a basic framework to every worksite. The framework has 3 parts:

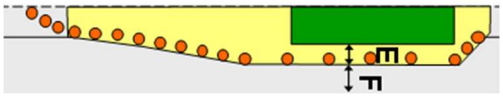
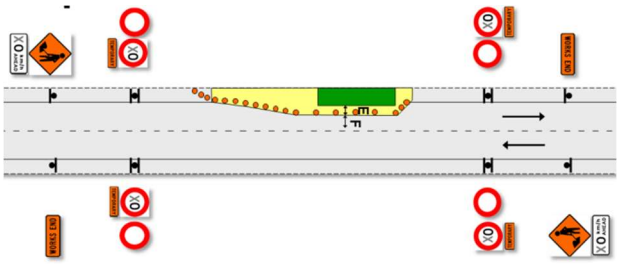
- Advance warning
- Direction and protection
- End of works.



Term	Explanation
Advance warning	Provide advance warning to road users of approaching hazards
Direction & protection	Guide road users safely past the hazards
End of works	Notify road users when they are safely through a worksite

Who is in charge at a worksite?



Activity	Who is in charge
If you are working inside the working space 	**Safety person** for the working space Follow their instructions for activities in the working space
If you are assisting with signs and cones 	The **STMS** for the worksite is in charge Follow their instructions

Each worksite has an STMS who is in charge of the TTM for that worksite.

The STMS wears the yellow vest.

The STMS has to be on site during:

- Setup of the TTM at the worksite
- Changes to the TTM at the worksite
- Removal of TTM from the worksite

Once the site is setup the STMS can delegate the site to a Traffic Controller (TC) to mind the site.

You will be working under the direction of the STMS (or delegated TC) - follow their instructions.

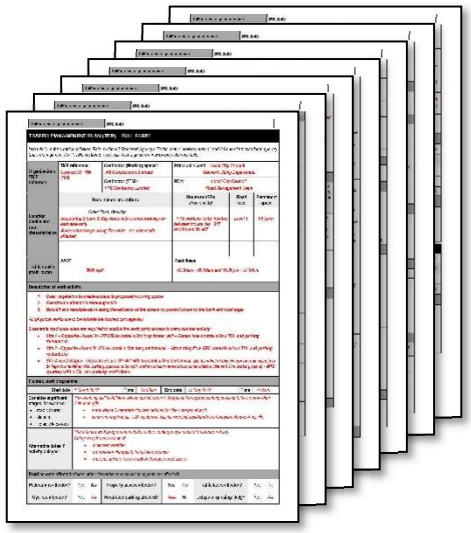
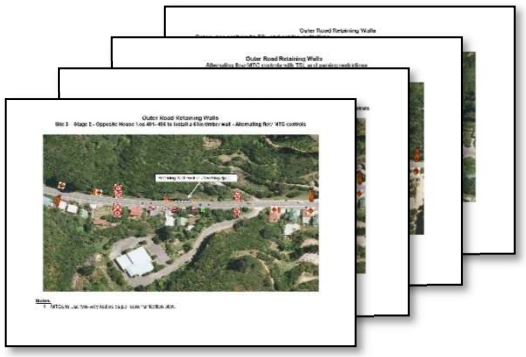
Note: The TC cannot make any changes to the TTM at the worksite without the STMS being present.

The traffic management plan form and diagrams

Every worksite that needs TTM has a plan for how the traffic management will be set out, maintained and removed.

This is called the TMP (Traffic Management Plan).

The TMP has 2 parts:

The text	The diagram or picture
	

The STMS will follow the TMP when they setup, modify or remove TTM at a worksite.

MANAGING RISK WHEN WORKING WITH TTM EQUIPMENT

Safety briefings

Health and safety briefings are essential for safety at work.

These briefings are known by many names:

- Prestart
- Toolbox
- Tailgate

You will receive a safety briefing:

- Before assisting with the set up of (or a change to) TTM at a worksite
- Before entering a working space
- Before assisting with the removal of TTM at a worksite

Briefings will generally cover:

- Tasks to be completed
- Hazards for the tasks and the working space
- How those hazards will be managed
- Who you report issues to (generally the person who completes the briefing)
- No go zones
- Emergency procedures (eg location of first aid kit, staff with first aid certificate and nearest medical centre)

Additional hazards

A hazard is any source of potential damage, harm or negative health effects on something or someone.

If after the briefing you identify an additional hazard, you need to report it straight away.

Types of things to report:

- Near misses
- Additional hazards
- Unsafe work practices
- Road user intrusion into working space

When to report:

- Straight away

Personal protective equipment (PPE)

Wear the correct PPE for the task you are completing.

You will be required to wear a hi visibility garment, which must be:

- Worn done up
- In good condition (check with the STMS if you have any doubts)

Depending on the task you are completing you may also require other PPE including:

Lifting and moving TTM equipment

Companies will have their own policies on lifting and moving objects at work – follow the company policies.

As a general guide a person can lift an object of 21kg to shoulder height.

Note: This guideline may vary depending on stature of the person.

How to do it right

- It is easier to lift a load close to the body than it is to lift it away from the body

- Stand reasonably close to the load, feet hip-width apart with one foot slightly forward pointing in the direction going forward
- Knees should be bent while maintaining good posture
- Get a secure grip on the load and use handles if provided
- Breathe in before commencing the lift
- Carry out the lift smoothly using the legs to take the strain, keeping the back straight, chin up, and arms close to the body

- Step off in the direction the advanced foot is pointing, keeping the load close to the body
- Avoid any jerky or twisting movements to avoid back/body strain

Recommendations for lifting TTM equipment

- Carry a maximum of 3 cones

- Carry a sandbag in each hand – provides balance

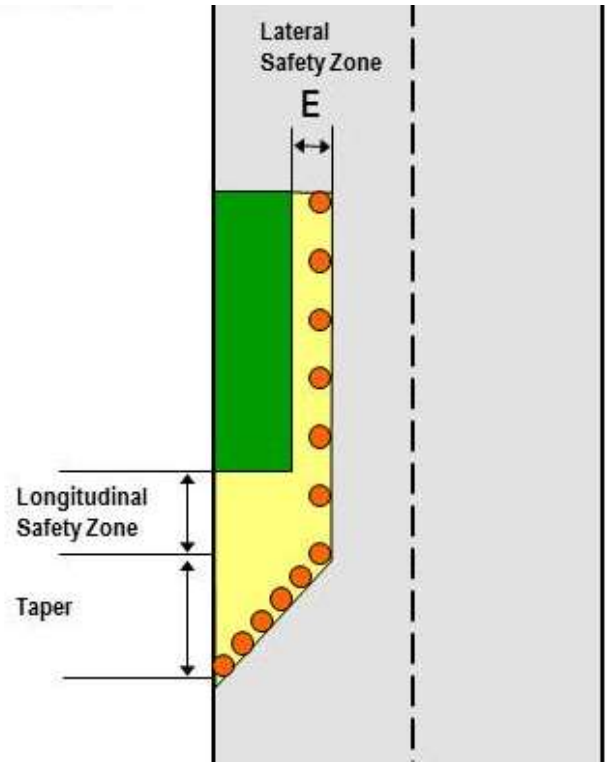
- Carry a sign stand and a sign base

- Carry a sign stand and a sign panel (up to 750 x 750)

- Only carry 1 1200 x 1200 sign panel

TTM no go zones

The TTM at a worksite protects the workers in the working space. There are **no go zones** between the working space and the traffic. These no go zones are the:

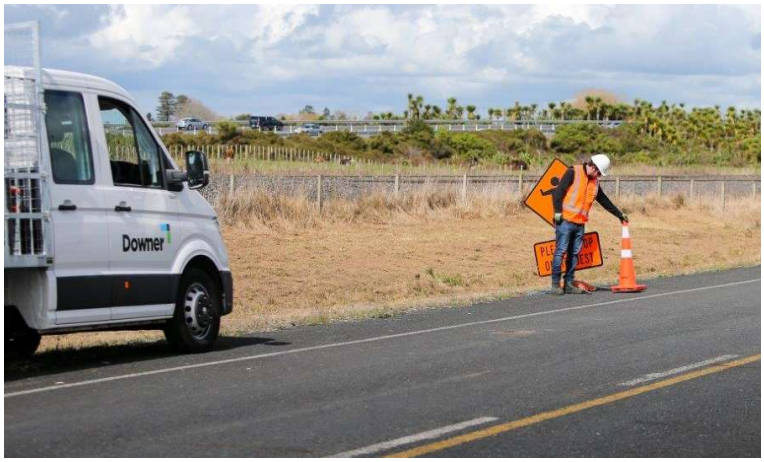
Zone	Description	Example
Taper	Cones on the angle which direct traffic around the working space	
Longitudinal safety zone	An emergency braking area in case the driver makes a mistake and does not drive around the working space	
Lateral safety zone	1m gap separating passing vehicles from workers, machinery and equipment in the working space	

These no go zones must be empty spaces:

- no work
- no parking
- no stockpiles
- no equipment

The only people allowed in these no go zones are TTM crew to set up TTM equipment.

Other no go zones

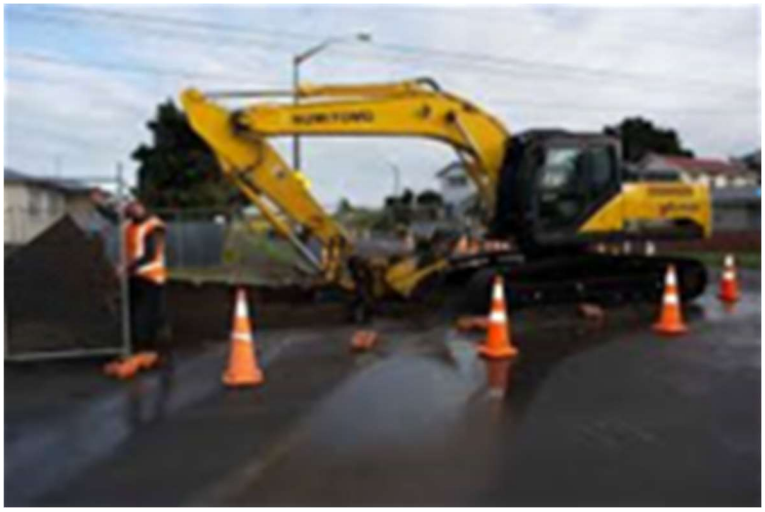


- 10m in front of a work vehicle during set up and removal of TTM

- The rear of a work vehicle (if there is no shadow vehicle protecting you)

- Directly behind a reversing vehicle

- In a vehicle blind spot

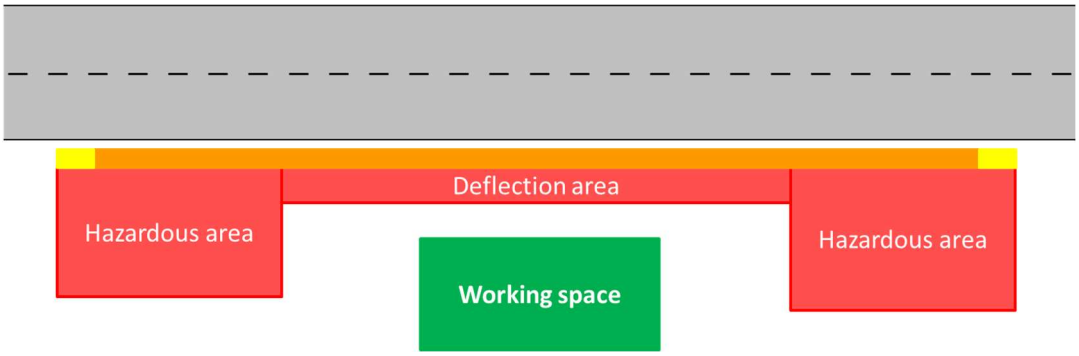


- Within the swing arc of a boom

- Beneath a load being lifted

- Truck route through or around the working space

- Within a barrier deflection or hazard area



Other risks when working with TTM equipment

Examples of risk	Examples of ways to reduce risk
Cutting or pinching hands on equipment 	• Wear gloves, don't run hand along edges of signs, be aware of pinch points and keep fingers away from them
Working at heights when on the back of a TTM work vehicle 	• Wear harnesses and restraints if they are provided • Keep the deck clear of items that may cause trips, slips and falls
Passing vehicles 	• Ensure you are protected from passing vehicles. Work beside (or 10m in front of) the TTM equipment vehicle • Only work behind the TTM equipment vehicle if there is a shadow vehicle

Trips, slips and falls

- Keep the deck clear of unnecessary mess and clutter
- Be aware of times when the deck and steps may be slippery
- Maintain 3 points of contact on steps
- Walk slowly and secure your footing

Strains and sprains

- Know your maximum lift and do not exceed this
- Use your environment to assist you with heavy lifts
- Lift with your knees and not your back
- When lifting heavy objects hold them close to your body

Injuring another worker

- Be aware of your proximity to other workers
- Do not blindly throw equipment

High wind

- Carry one sign at a time and have both hands on the sign

VEHICLE MOVEMENTS AT THE WORKSITE

Vehicle movements

Moving vehicles and machinery create risk.

Most companies have a **vehicle movement plan** to keep everyone safe.

Workers and others may be harmed by**:**

- Being trapped between a vehicle and a structure
- Vehicles colliding with each other or a structure
- Being hit by a vehicle
- Items that fall off vehicles (unsecured or unstable loads)
- Falling from a vehicle

Other things that may create risk**:**

- Intoxication or fatigue (extreme tiredness)
- Lack of water (dehydration)
- Medical events (for example, heart attacks)
- Slippery or unstable ground
- Low light or fog
- Mechanical failure (such as faulty steering or bad brakes)
- Driver distractions (such as cell-phones, noise, work pressures, home pressures)
- Vehicles operated outside their limits or capabilities – the wrong vehicle for the job
- Anything that might block the driver’s view

The consequences of being hit by a vehicle can be severe.

For example:

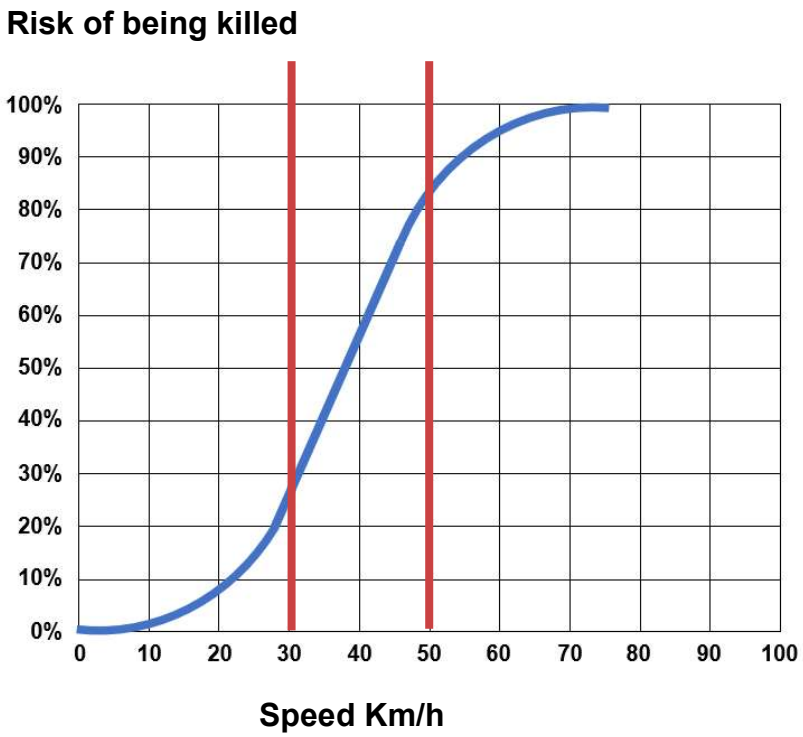
- You may suffer crush injuries, fractures, or even die
- You may have a lengthy and painful recover period
- Your job may be at risk

Risks increase with speed

NZTA has completed research into injuries at crashes. Set out below is a graph showing the risk of being killed if a person on foot is hit by a vehicle.

The risk of being killed increases as speed increases.

Speed	Risk of being killed
20km/h	10%
30km/h	27%
50km/h	85%
70km/h	100%



How to reduce your risk

- Ensure you comply with your company's procedures and vehicle management plan
- Attend (and understand) the site briefing – ask questions for things you don't understand
- Only operate vehicles that you have been trained to use
- Ensure there is a spotter every time vehicles are reversing
- Ensure reversing warning devices are working
- Comply with any on site speed limits
- Always walk on marked pedestrian walkways when provided - avoid walking in or through vehicle unloading areas

- Ensure your high visibility garment is in an acceptable condition. If it is not, get a replacement
- Never cross behind a vehicle which is reversing, showing white reversing lights or sounding a warning
- Keep well clear of site access and exit points
- Stay out of No-Go zones
- Park in designated parking areas
- Report fatigue of yourself or others
- Report unsafe practices

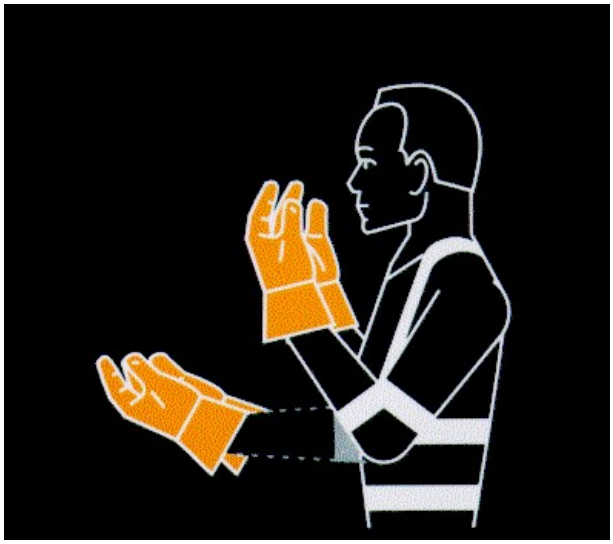
Acting as a spotter for vehicle movements

Ensure you know the following before the vehicle movement starts:

- What the vehicle movement will be (eg backing, relocating)
- Speed of the vehicle (walking pace)
- Finishing position of vehicle
- Where you are to stand during the vehicle movement:
- Visible to the driver/operator of the vehicle
- Never stand in a live lane or site access point

Your role as the spotter

- Ensure the path remains clear (stop the manoeuvre if required)
- Ensure other personnel remain well clear of the intended path of the vehicle
- Ensure no one attempts to mount or dismount while the vehicle is moving
- Guide the driver (left, right, backwards, forwards, stop)
- Use hand signals and/or an RT to communicate with the driver
- The driver follows your instructions – so make directions clear and decisive

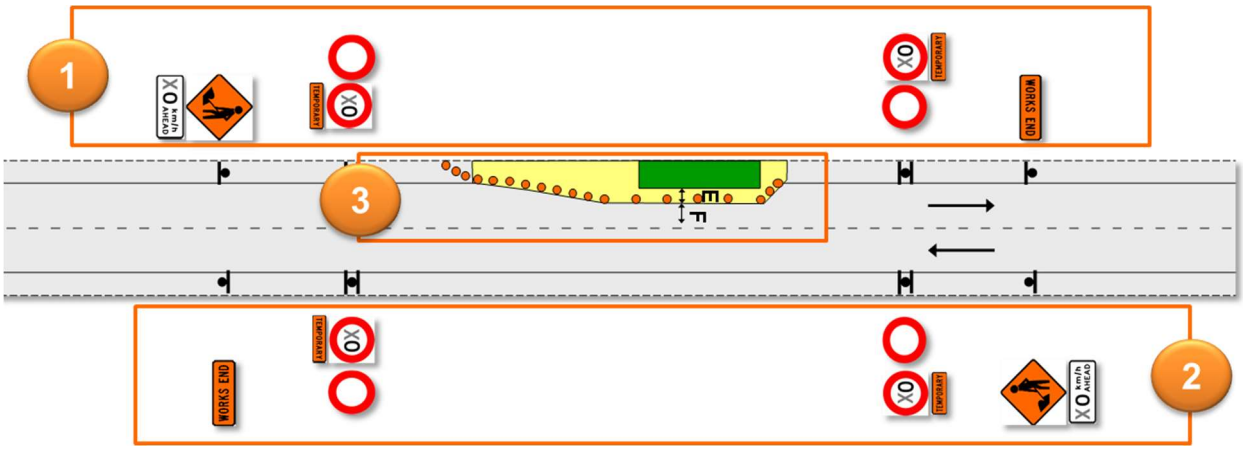


ASSISTING WITH SITE SET UP

Order of setup of TTM

Generally TTM is set up in the following order:

Order	Comments
1	**Signs (and cones off the lane) on one side of the road**
2	**Signs (and cones off the lane) on the other side**
3	**Cones on the lane.**



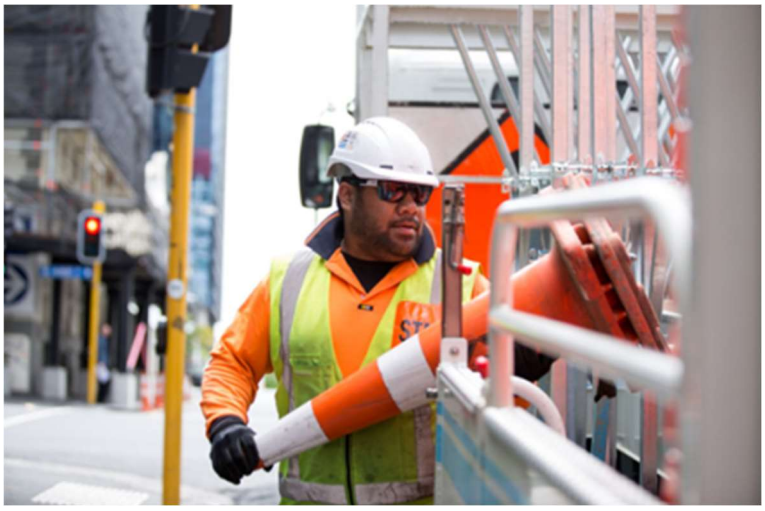
The STMS will tell you the set up order as part of the safety briefing for the activity.

Work FROM a TTM equipment vehicle

This involves riding in the cab of the vehicle and exiting it once the vehicle is stationary. You will be working on foot on the ground but occasionally getting on and off the vehicle to get TTM equipment that is not easily accessible from the ground.

When working from a TTM equipment vehicle:

- If you are a passenger in the vehicle, exit the vehicle on the non-traffic side
- In some situations, the driver will angle the front of the vehicle away from traffic to allow you more room to exit the vehicle safely
- Only load and unload equipment when the vehicle is stationary



- Ensure you are protected:
  - work on the non-traffic side of the vehicle
  - do not stand at the rear of the vehicle unless there is a shadow vehicle

When getting on or off the TTM equipment vehicle:

- Ensure you have 3 points of contact on the steps
- Never step off of a moving vehicle

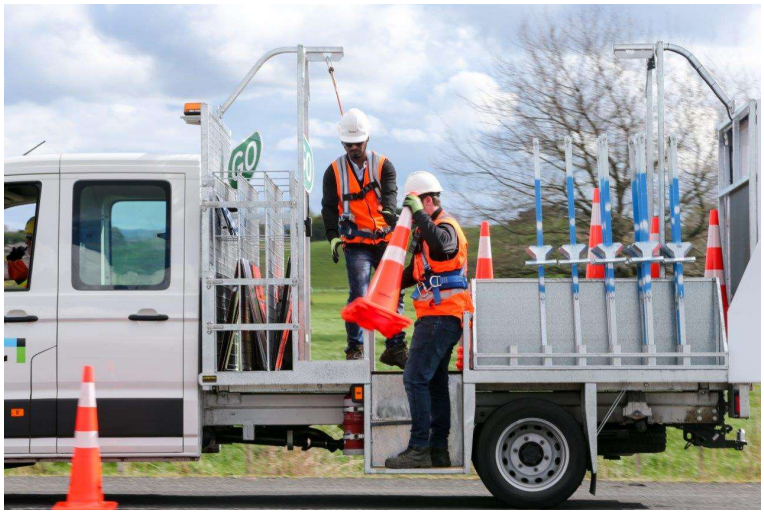
Working ON a TTM equipment vehicle

This involves working on the rear deck of a slow-moving vehicle during the site setup. You will be getting on and off the stationary vehicle to set up TTM equipment.

When getting on or off the TTM equipment vehicle:

- Ensure you have 3 points of contact on the steps
- Never step off of a moving vehicle

- Keep the rear deck clean and tidy to avoid slips, trips and falls



- Use harnesses and restraints (where provided)

- Ensure there is a shadow vehicle protecting the vehicle you are working on (unless it is your company's policy to dispense with shadow vehicle in certain road environments)

- Follow your company procedures for riding on the rear of the vehicle

Where to install TTM equipment

TTM equipment is installed either:

- To the non-traffic side of a work vehicle

- 10m in front of the work vehicle

- To the rear of a work vehicle with a shadow vehicle in place

BEING A SPOTTER FOR AN INSPECTION ACTIVITY

About inspection activities

Inspection activities are those where the inspector is on foot and undertaking a simple task.

The inspection can be on the shoulder or on the lane.

If the inspection is on the lane:

- The inspector must move from live lanes to avoid traffic
- They must not expect traffic to drive slowly or drive around them

The person in charge of the inspection activity will tell you when a spotter is required. Generally, a spotter is required when the inspector is on the live lane (or on some roads, when the inspector is close to a live lane).

The spotter's job

A spotter's job is to make sure the inspector is off the road before the vehicle reaches them. Make sure the inspector follows your instructions and moves off the road straight away.

The spotter and the inspector need to pick a spot down the road to be the trigger point when the spotter tells the inspector to get off the road due to an approaching vehicle.

The trigger point needs to allow time for:

- Reaction time of the spotter
- Reaction time of the inspector
- Time for inspector to get off the road
- And some extra time if something goes wrong (contingency time)

An example

The situation

An inspector is on the lane of a **100km/h** road. They have to walk 3.5m to be clear of the road.

A vehicle is approaching.

The calculations

Distance for the Inspector to walk to a safe position off the carriageway (walking pace average 1.3m/sec).

Approach speed of vehicle is 100km/h (27m/sec).

The shortest trigger point for the inspector to start walking off the road could be 100m.

This is the **absolute minimum** and does **not take into account** reaction time of the spotter, reaction time of the inspector and some extra time if something goes wrong.

A safer distance may be 150m.

Other points to consider

Some other points to consider:

- Speed of vehicles – are they going faster than the anticipated speed
- Exit point for the inspector
- Escape route for the spotter
- Where to look (both directions for a two-way road)

Test the trigger point

Once you have agreed the trigger point, **TEST IT.**

One option for testing is for the inspector to walk along the edge of the road for the same distance they will be on the lane during their inspection.

When a car reaches the trigger point the spotter tells the inspector to start moving.

See if the inspector can get back to the start point before the car passes. If there is not a safe margin of time, extend the trigger point and test again.

DEALING WITH PEOPLE

Good communication with the key people is essential to getting the job done to a high standard.

We call the key people the stakeholders. This includes road users, residents and businesses.

A key component of communication is keeping people informed about **reasons** for delays and/or disruption.

Overall outcome and approach to communication

The overall outcomes of communication is that:

- People are kept informed
- There are no surprises.

Tips for good communication

When you communicate:
• Be positive and courteous
• Listen to what they have to say
• Provide information, make agreements and deal with conflict where required
• Use appropriate language

When you provide information:
• Explain reasons for delays and/or disruption
• Make your statements short and to the point

When making an agreement, restate
• What is to be done
• Who will do it
• When it will be done

Example

OK. I will talk to my supervisor about providing 24-hour access to your property. I will come back to you with an answer by 11.00 today.

Dealing with conflict

Conflict may occur between yourself and:

- A stakeholder (eg a resident)
- The contractor inside the working
- Members of the TTM crew you are part of

Tips to deal with conflict and anger

Here are some simple steps to help you deal with conflict:

- Let them have their say *(don't interrupt)*
- Allow them time to let off steam
- Don't get angry

- When they are ready, look for a solution
- Make agreements

Involve the STMS where necessary

And here is an easy way to remember how to handle conflict:

H	**Hold back**
E	**Empathise**
L	**Listen**
P	**Provide a solution**

SETTING UP A SIGN

There are 2 types of signs that may need to be set up:

Type A (smaller sign)	Type B (larger sign)
	

You may end up working as a team with another TTM Worker to install signs, however you still need to know how to complete each step of the task.

When close to the lane, always face oncoming traffic.

Identify the best place to install the sign:

- Level ground
- Type A (smaller) sign .5m from travelled path
- Type B (larger sign) 1.25m from travelled path
- Keep cycle lanes clear

An example of how a sign can be installed is as follows:

B	**Base**
B	**Ballast (bag)**
S	**Stand**
S	**Sign(s)**
C	**Cone**

Some companies will have their own preferred order for installing each part of the sign set up.

For example, some companies may install the cone first for additional protection of the worker. Other companies may install the ballast (bags) after the sign is set up. Follow your company's preferred order of installing a sign.

Example	Notes
Base	
	• Select level ground – stable base, stable sign • Feet can be placed on kerb to get base level • If legs of base are bent, don't use it • Ensure base is correct size for sign being used (Type A or B) • When placing base, keep fingers away from joints (pinch points) • Normally place base with widest part of legs facing towards the road. This can be changed if there are strong cross winds
Ballast (bag)	
	• Check with the STMS as to how many bags to use (depends on the expected wind) • If placing one bag, put it close to the centre of the base • If placing a bag on each leg, place the bags towards the outer end of the leg (but still on the leg)
Stand	
	• Ensure clip locks are facing towards approaching traffic

Example	Notes
Sign(s)	
	• Only use clean signs with limited damage • Make sure you are installing the correct sign • Make sure the sign is facing towards oncoming traffic
Cone	
 	• Put a cone on the traffic side of the sign • If sign is overhanging a pedestrian walkway, place cone on the walkway side as well – ensure there is still 1.2m of clear footpath for pedestrians

Key points about sign setup

Requirement	Example
Signs must be visible to road users	 
Signs must face the right way	
Signs must not block footpaths	

Requirement	Example
Cone placed at the base on the traffic side	For any Type A sign which is left out at night  
Cone when stand placed on footpath	 Stand cannot create a trip hazard If sign or feet of the stand are placed on a footpath, ensure footpath still has at least 1.2m of clear path for people to use

Differences with setup of Type B sign

Difference
• Base is heavier • More ballast (bags) required • Bigger stands – extra care when moving the stand • Heavier signs – some signs may be a 2 person lift • Some companies add extra cones on traffic side of the sign

REMOVING A SIGN

Key points about sign removal

- Operate from a safe position when removing sign
- When close to the lane, always face oncoming traffic
- Remove sign and supplementary plate and stow them in correct place on vehicle
- Remove ballast (sandbags) and stow in correct place on vehicle
- Remove stand and base and stow in correct place on vehicle

INSTALLING TAPER ON FOOT

Tapers can be installed in shoulder areas or on the lane. Sometimes tapers are installed from a vehicle. **Both methods will be covered where this is required within your company.**

The STMS will tell you the length of the taper and the spacing of the cones.

Key points about installing a taper on foot

- Operate in a safe manner when installing taper
- Ensure you will be safe while installing taper on foot. The STMS will advise you how you will be protected as you complete this task. Options may include:
  - Protection by stop/go
  - Shadow vehicle blocking the lane
  - Installing the taper while there are no vehicles approaching

Note: There would need to be clear road of 300m on high speed roads (70km/h and over) and at least:

- *State highway* - 150m on low speed roads (60km/h and less)
- *Non-state highway* - 75m on low speed roads (60km/h and less).

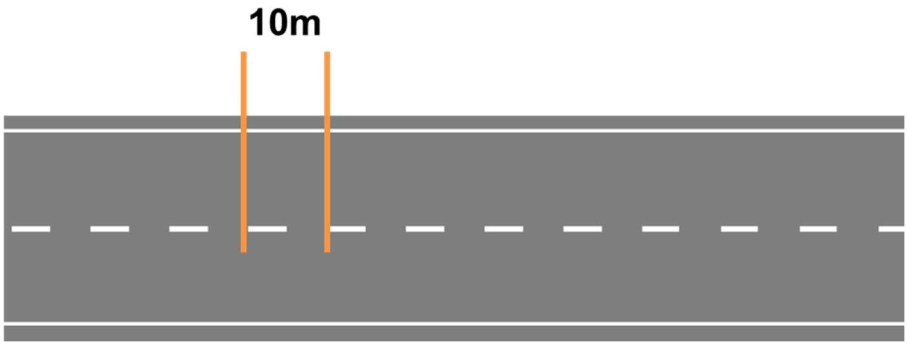
Key points about installing a taper on foot

Place a cone for the start of the taper

Establish where your last cone will go by either:

- Pacing out length of taper along the edgeline
- Using centrelines to calculate distance

TIP – 10m from start of centreline to start of the next centreline



Get it in

Place the cones in a straight line from narrowest part of the taper to the widest part

Install cones at spacings below:

- 2.5m on roads 60km/h and under
- 5m on roads 70km/h and over

Note: The cone spacing in the taper will always be 2.5m for stop / go, priority give way or portable traffic signals

Then get it right

Adjust the alignment of any cones in the taper that are not in a straight line (or at the right spacing)

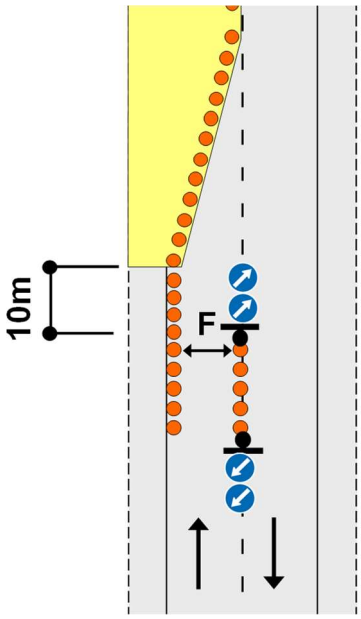
Note: Spacings can be closer together but not further apart than the cone spacing for the speed of the road

INSTALLING CONES ALONGSIDE WORKING SPACE ON FOOT

Key points about installing cones alongside working space on foot

- Operate from a safe position when placing cones
- When close to the lane, always face oncoming traffic
- Work out start and finish points for cones
- The STMS will tell you the correct spacing for the cones alongside the working space
- Generally, these cones will be placed at:
  - 5m for 60km/h and under
  - 10m for 70km/h and over
- **Get it in** - Place cones in straight line from the end of the taper to the end of the working space
- **Get it right** – Check cones are in straight line and at the correct spacing. Amend if required

INSTALLING CONE THRESHOLD ON FOOT



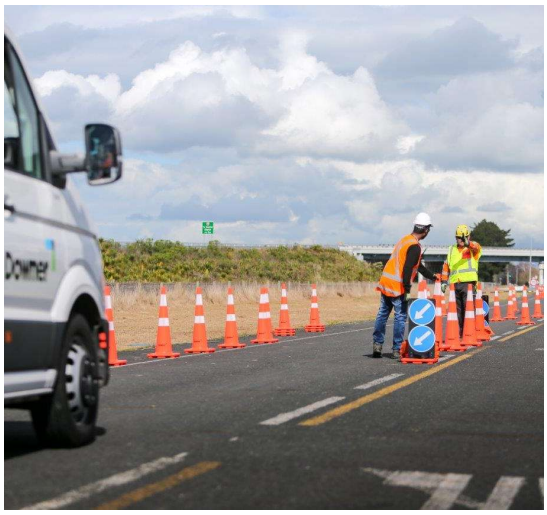
The cone threshold is the 2 lines of cones (one on the edge and one on the centreline) at alternating flow set outs.

They help slow vehicles down on the approach to the control point.

The STMS will tell you how many cones to include in the threshold and the spacings.

Allow a 10m offset in the centreline of cones if heavy vehicles are expected.

Install an RD6L sign (the arrows) on the first cone each end of the centreline cones.



Key points about installing a cone threshold on foot:

- Operate in a safe manner when installing cone threshold
- Stand out of the lane and install cones along edge of road at the correct spacings
- Check the cones are straight and adjust if required
- Ensure you will be safe while installing centreline of cones in the threshold. The STMS will advise you how you will be protected as you complete this task. Options may include:
  - Protection by stop/go
  - Shadow vehicle blocking the lane
  - Installing the cones while there are no vehicles approaching

    Note: There would need to be clear road of 300m on high speed roads (70km/h and over) and at least:
    - *State highway* - 150m on low speed roads (60km/h and less)
    - *Non-state highway* - 75m on low speed roads (60km/h and less)

MANUAL TRAFFIC CONTROL

About manual traffic control

We use manual traffic control (MTC) on one lane each way roads when there is only one lane available for traffic to get past the working space. The MTC controls traffic so that it flows in one direction first then flows in the opposite direction (alternating flow).

The MTC will use a range of equipment to control traffic, including:

Stop/Go paddle	eStop	Portaboom
		

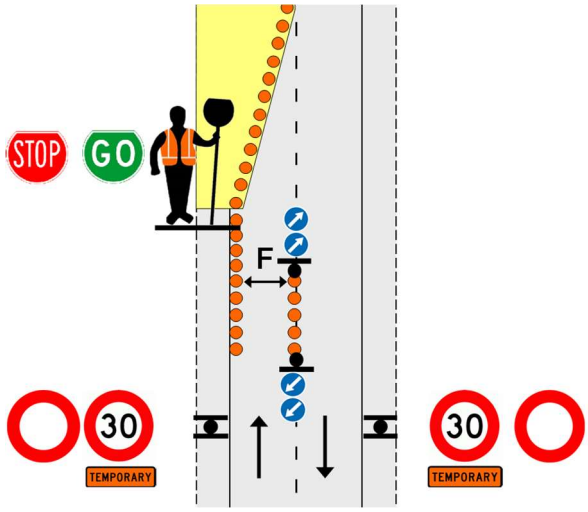
MTC – Stop/Go paddle

Refer to the Civil Contractors NZ Manual Traffic Controller's Handbook as an alternative resource.

Location of MTC - Stop/Go paddle

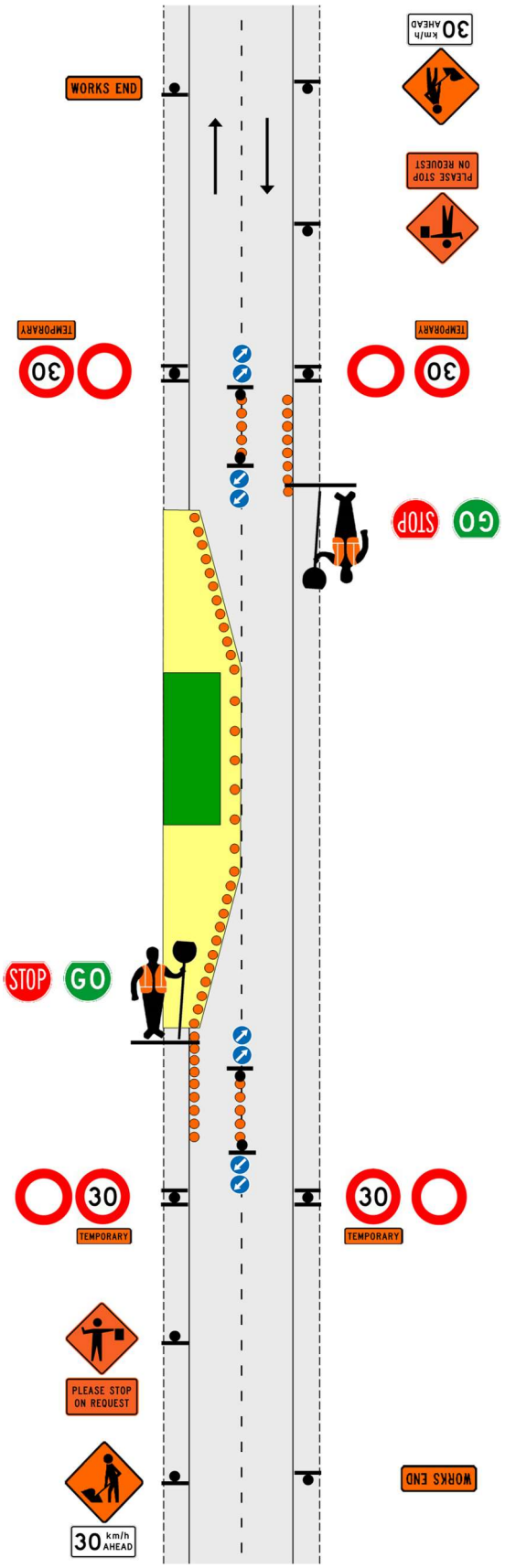
An MTC using a Stop/Go paddle must not stand or operate unprotected in a live lane.

Stand on the side of the road between the 1st and second cone of the cone threshold.



Summary of MTC essentials

The principles for layout for alternating flow operations are set out below:



- Advance warning of **road workers** at each end of the worksite
- A **30km/h ahead** sign can be installed under the road workers sign
- A sign warning of manual traffic control ahead and supplementary plate **PLEASE STOP ON REQUEST** are placed at each end of the worksite
- These signs must be covered or removed immediately MTC operations cease
- Place a 30km/h TSL gated (except for LV roads) across the road
- Provide positive traffic management in the form of cones on the centreline and edgeline (at least 5 cones placed at 2.5m centres under 65km/h and 5m centres over 65km/h)
- Where the speed exceeds 70km/h, this may be extended to 10 or more cones
- A cone may be placed in front of the first vehicle once it has stopped. This prevents drive-offs
- Where tapers are required, these must be at least 30m (with cones at 2.5m centres)
- An end taper is mandatory to prevent drivers who are queue jumping entering the end of the closure
- Additional delineation devices should be used to assist the MTC provided they do not create a hazard to road users
- The wearing of clothing that obscures an MTC's view of approaching vehicles (excluding PPE) and the use of devices that reduce the awareness of an MTC to the sound of approaching vehicles are forbidden

Tips for the MTC using a Stop/Go paddle

Critical safety points include:

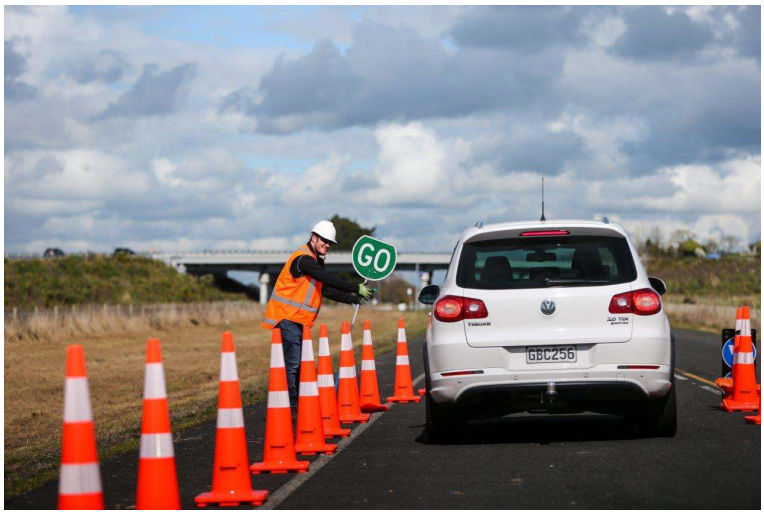
- Make sure you can hear approaching traffic
- Do not use a mobile phone to take calls or to text
- Stay off the live lane (never enter a live lane unprotected)
- Face traffic on your approach (never turn your back to oncoming traffic)
- Be in control of your position - dominate it (firm/strong hand signals

- Know where your escape route is
- If emergency services approach the worksite, the MTCs must stop traffic on all approaches and signal the emergency vehicle through
- Make positive eye contact

- Can place a cone in the lane once the vehicle has stopped
- Do this from the edge of the lane
- Do not step into the lane to remove the cone
  Be aware - When removing the cone to release traffic, some drivers will proceed forward as soon as the cone is removed, even if the sign still says STOP

Operation of Stop/Go paddle

- Stand behind the cones
- To stop traffic turn the paddle to **STOP** and face the traffic
- Raise the other hand into the stop position with the palm towards the traffic



- To move traffic, turn sideways then turn the paddle to **GO**
- Use the arm nearest the traffic to wave road users on with a sweeping movement across the body in the direction of travel

- MTCs must avoid creating a tailback where waiting vehicles are queueing so far back within the worksite that they become a hazard to vehicles approaching around bends
- Moving traffic as often as possible will minimise this problem
- On winding roads, it may be necessary to move the MTC and advance warning signs further back from the worksite to an area where vehicles can be stopped without causing a hazard

Night work

- We avoid using stop/go at night because of the risks to the MTC
- If it cannot be avoided, the MTCs must be on an area illuminated by artificial lighting
- Lighting must be used to illuminate:
  - The working space
  - Manual traffic controllers
- Lighting must not create a disabling glare for road users
- If there is not enough light, then MTCs must not be used

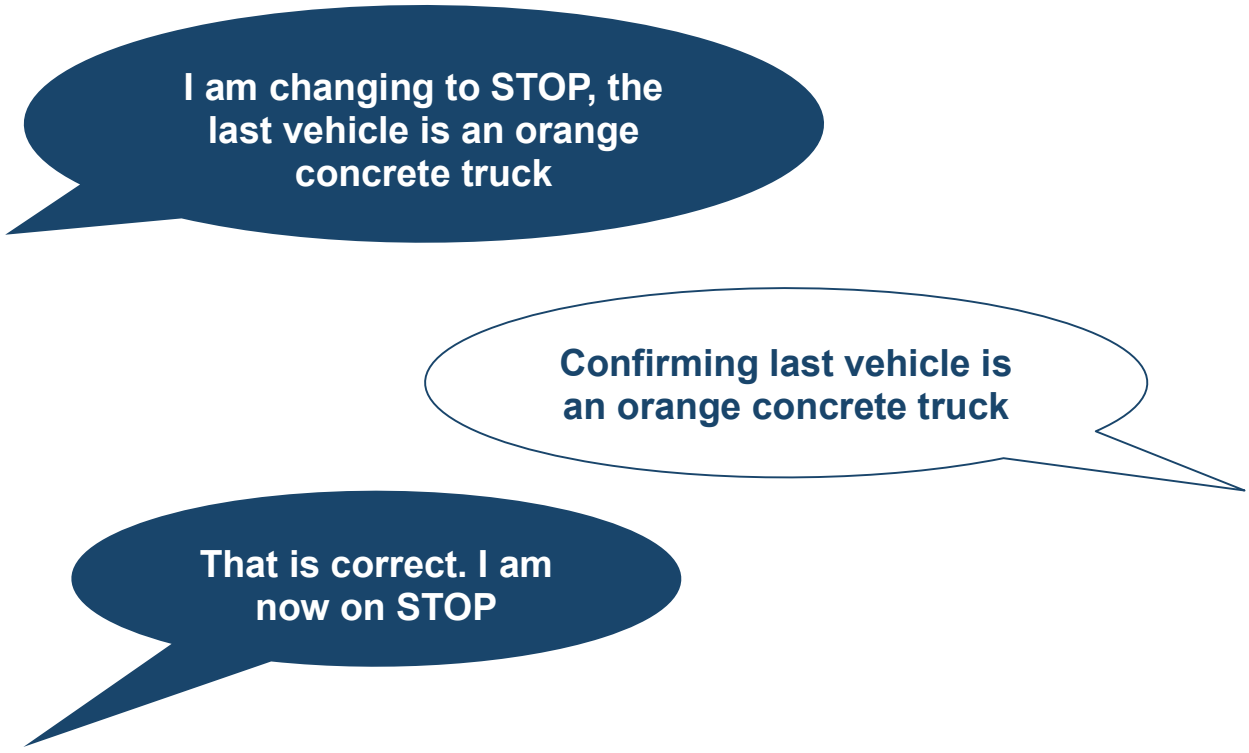
MTC using other equipment to control traffic (eg eStop, Portaboom)

Other equipment	Guidelines
	• Follow the manufacturers instruction book to set up and check the equipment • Ensure you know how to operate the equipment and the remote control • When checking the equipment, face it away from traffic • When equipment working correctly, move the equipment to the correct location for controlling traffic • To operate the equipment, stand in a safe position clear of the lane • Stay close to the equipment – within the range of the remote • Keep the other MTC aware of any drive throughs where a driver has not stopped when required • Have a Stop/Go paddle close by in case there is a fault with the equipment
	

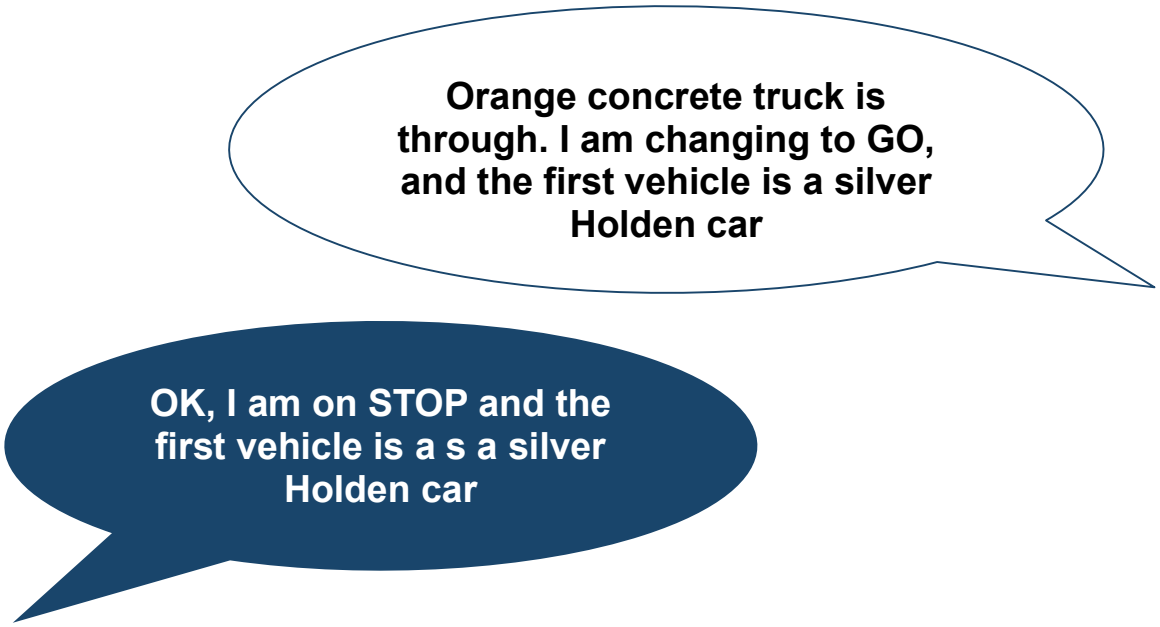
Radio communication for MTC

- Handheld radios are recommended for communication between MTCs (even if there is line of sight). One of the MTCs should be the lead in the conversations
- When identifying the last vehicle to the other MTC, use 2 or 3 points of identification (make/model, colour, last 2 digits of the number plate)

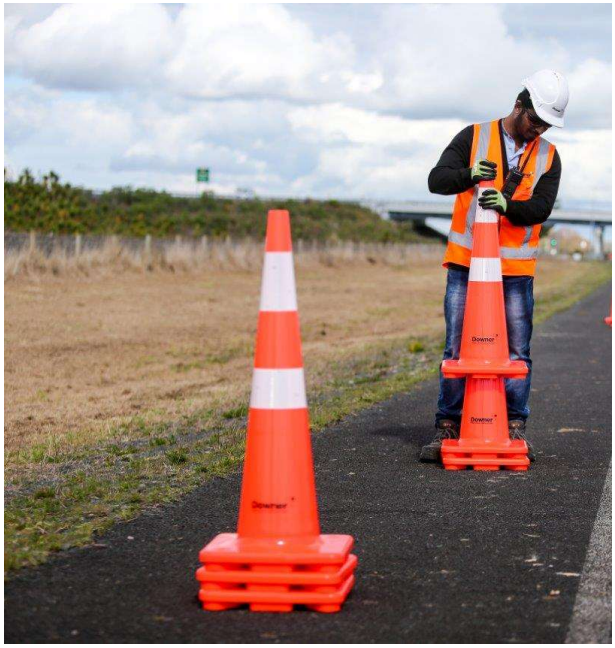
See example below of what to say:



Once the orange concrete truck has passed



REMOVING CONES ALONGSIDE WORKING SPACE ON FOOT



Key points about removing cones alongside working space on foot

- Operate in a safe manner when removing cones alongside working space
- Work from the working space side of the cones
- Remove cones from the furthest end working towards the taper
- Stack cones off the lane ready for pick up

REMOVING TAPER ON FOOT

Key points about removing a taper on foot

- Operate in a safe manner when removing taper
- Ensure you will be safe while removing the taper on foot. The STMS will advise you how you will be protected as you complete this task. Options may include:
  - Protection by stop/go
  - Shadow vehicle blocking the lane
  - Remove the taper while there are no vehicles approaching

    Note: There would need to be clear road of 300m on high speed roads (70km/h and over) and at least:
    - *State highway* - 150m on low speed roads (60km/h and less)
    - *Non-state highway* - 75m on low speed roads (60km/h and less).
- Work from inside the taper to remove cones
- Remove cones from the widest part of the taper working towards the narrowest end of the taper
- Stack cones off the lane ready for pick up

REMOVING CONE THRESHOLD ON FOOT

Key points about removing a threshold on foot

- Operate in a safe manner when removing cone threshold
- Ensure you will be safe while removing the cone threshold on foot. The STMS will advise you how you will be protected as you complete this task. Options may include:
  - Protection by stop/go
  - Shadow vehicle blocking the lane
  - Remove the taper while there are no vehicles approaching

    Note: There would need to be clear road of 300m on high speed roads (70km/h and over) and at least:
    - *State highway* - 150m on low speed roads (60km/h and less)
    - *Non-state highway* - 75m on low speed roads (60km/h and less)
- Stack cones off the lane in piles ready for pick up

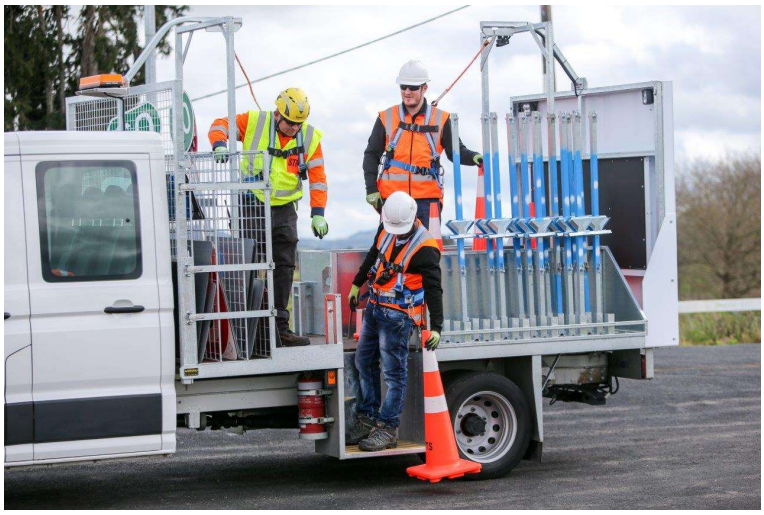
INSTALLING CONES FROM A VEHICLE

Ensure there is a shadow vehicle protecting the vehicle you are working on (unless it is your company's policy to dispense with shadow vehicle in certain road environments).

There are 2 roles for TTM Workers when installing cones. These are often called the **feeder** and the **placer.**

When **feeding** cones:

- Put cones in the same place for the placer to grab
- Ensure the placer does not have to wait for a cone
- If cones in a stack get stuck, get cones from the next stack
- Communicate issues to the placer



When **placing** cones:

- Ensure cones are placed at correct spaces (use rhythm and reference points on the truck)
- Follow the lead of the vehicle instead of the road markings
- Reach out the same distance and place cones alongside the vehicle, the driver sets the line for the cones
- Communicate issues to the driver

REMOVING CONES FROM A VEHICLE

Ensure there is a shadow vehicle protecting the vehicle you are working on (unless it is your company's policy to dispense with shadow vehicle in certain road environments).

There are 2 roles. These are often called the **Picker** and **Stacker.**

When picking cones

- Keep up
- Be consistent and communicate where you will be passing your cones
- Communicate issues to the driver and stacker

When stacking cones

- Establish plan for stacking your vehicle
- Ensure cones are stacked neatly
- Do not fall behind
- Communicate issues to the picker