TOPAS
Traffic Open Products and Specifications

TOPAS 2540 A V5 Explanatory Notes

Introduction

Over many years several specifications have been developed for Traffic Signal Systems that are used for Temporary Traffic Management. Historically there were five main applications with different specs and functions which gave rise to some confusion for manufacturers, Highways Authorities and Traffic Management Companies.

A new approach is being developed where all the functional specifications are within a single specification (TOPAS 2540) with different Appendices for the applications. This approach is the same format as adopted for permanent signal control where there is a single specification (TOPAS 2500) which has all the functional controller applications set out in different Appendices.

This approach has many benefits;

For Highways Authorities: One single point of reference so for a given permit condition they can prescribe what form signalling is required for a given form of Temporary Traffic Management.

For Manufacturers: A removal of many of the inconsistencies that have crept in over many years in the different specifications to help harmonise design and manufacture processes.

For Companies that Supply Temporary Traffic Management Services: Easier training and deployment of equipment that is better suited to a given application with more consistent user touch-points.

For Contractors of Temporary Traffic Management Services: A single point of reference for the provision of signalling systems for which TM Services are procured.

The document circulated for review TOPAS 2540 A V5. It has been constructed as a 'straw man' document. That is to say:

- It is in the proposed format of the final document
- It has been constructed from the 5 known application specifications
- All the outdated references have been updated and replaced with the current ones
- Much of the functional content for each of the applications remains unchanged and has only been updated, corrected or aligned but not developed in any meaningful way.

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Different Stakeholders Have Different Needs for the Specification(s);

1. Do you have operational needs that are not readily addressed by current equipment that is compliant with the standard(s)?
2. Are there other Temporary Traffic Control applications that you would like to see included eg trams, cycle only, stages etc?
3. Is there insight from your connection to Temporary Traffic Management which can offer suggestions on improving the functional specification?
4. What features/functions provided by permanent traffic controllers that would be beneficial for Temporary Traffic Management signalling systems.
5. What content would help articulate Permit conditions or agreed deployment arrangements.
6. Are there any functional requirements that may improve the Safety or Effectiveness of signal operation?
7. If you contract Temporary Traffic Management services what revised specification content would help you specify these services?

Notes on Construction of TOPAS 2540A V5

1. Created by compiling TR2501, TOPAS 2502, 2503, 2537 & 2538.
2. This was created by taking the functional parts of these specifications (section 2 of each specification) and placing them in Appendices A to E respectively. Some errors and references have been updated.
3. Some of the easier common elements have been removed from the functional Appendices and placed in Section 2 eg fault categories, signal dimming, reliability etc.
4. All of the original specifications had an Appendix A as an Informative Guide which was moved to Appendix F in TOPAS 2540.
5. The Informative Guide common to all specs previously is now Appendix F. The content is unchanged. The contents need significant development to make the information helpful and instructive.
6. The main section of the specification, sections 1 to 3, was copied in principle from TOPAS 2500 ‘Specification for a Traffic Signal Controller’ to create a similar format specification.
7. The scope of TOPAS 2540 is clearly specified as signalling for Temporary Traffic Management under Chapter 8.
8. Signalling for Temporary Traffic Management can be either ‘Portable’ or ‘Temporary’ signals which is the cause of much confusion in the industry and TOPAS 2540 aims to resolve this issue.

(Change logs are available for TOPAS 2540A V2,V3,V4,V5)

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General Observations on the Current Content

Radio Communications

Each functional Appendix has a different requirement for the function of the radio communications. These have all been omitted and combined into section2.24 to 2.26. All modern signalling for Temporary Traffic Management uses radio communication based technology for operation for both the convenience and efficiency of use and deployment. The requirement for the radio functionality should focus on safety and signalling to drivers and pedestrians.

Radio functionality is inextricably linked to Fault Categories. Radio functional requirements can be linked to determinable rules such as:

- The legal sequencing of aspects on a signal should not vary from the requirements of TSRGD (with the exception of start-up sequences).
- Not allowing variations to the amber and red/amber times as stated in TSRGD.
- Prohibiting certain signal timings under fault conditions e.g. all red periods shall not exceed 100 seconds.

Fault Categories

Fault categories varied by a small amount across the 5 appendices. These have been omitted from the appendices and moved to one common set in Section 2. For convenience, the set of fault conditions from TOPAS 2502 have been adopted. These fault conditions require amending in conjunction with the radio communications requirements.

Fault categories for Red light failure may be unaffected (see also appendix F)

At least one new fault category is suggested, safe system shut down. It is referenced in the functional requirements but not stated as to what it is. It is a Category that should be called in the event of a low battery warning status for those systems that are self-powered by batteries or similar.

Red & Green Time Summary

Append	Description	Min Green	Max Greens	Max Grn Adj	Red	Red Adj
A	Haul Route	7 or 12	10 to 60	5 secs	1 to 50	Not in A2.13
B	PTS	7 or 12	10 to 60	5 secs	1 to 50	1 sec
C	Ped (Temp)	10	10 to 60	5 secs	2 to 5	1 sec
D	PTS + PEDS	7 or 12	10 to 50	5 secs	1 to 50	5 sec
E	Ped (PTS)	7 or 12	10 to 50	5 secs	2 to 5	1 sec

Note: Min Green times <7secs have been requested by Authorities.

Red Light Monitoring

All Appendices have this in various formats. It is also in Appendix F. Compress to one common requirement in Section 2.

Appendix F

This was included in the original specifications as a holding area for useful or relevant application advice on implementation of the control regimes available from the equipment or the services which are procured to these specifications.

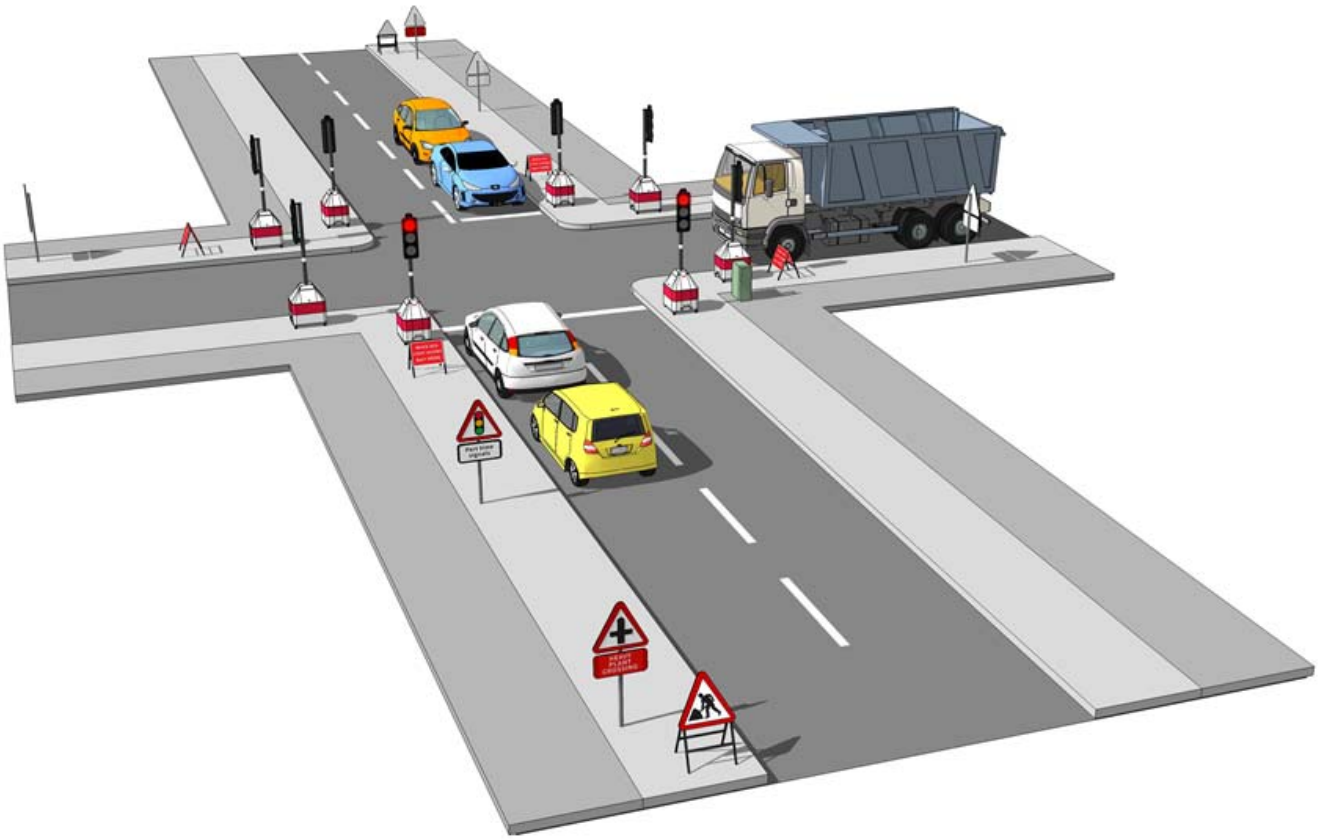
It is intended to keep Appendix F and update with such information that is relevant to Authorities, TM Companies or equipment providers. It is hoped this would help guide permit conditions and contracted services which is why the specification(s) are being consulted on in this format.

Overview of Applications

The last section shows some typical deployments for Temporary Traffic Management for both portable and temporary signalling equipment. The Appendix references for the diagrams apply to the appendices of TOPAS 2540A V5.

Overview on the Applications (indicative only)

Appendix A Haul Route Crossings



Typical Haul Route Crossing Deployment (Temporary Signals)

Please also Traffic Signs Manual Chapter 8 section D3.23

Many current Permits for Haul Routes reference MCE 0137A 1982 (obsolete)

Some installations use TSRGD 2016 Diagram 3000.1 (wrongly)

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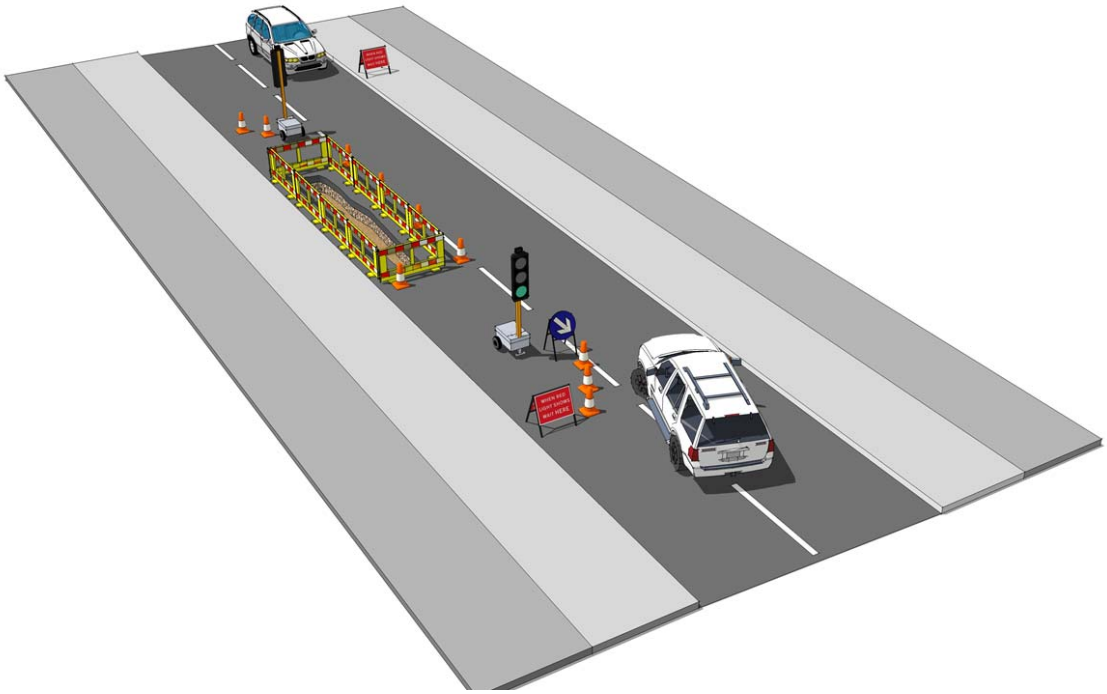
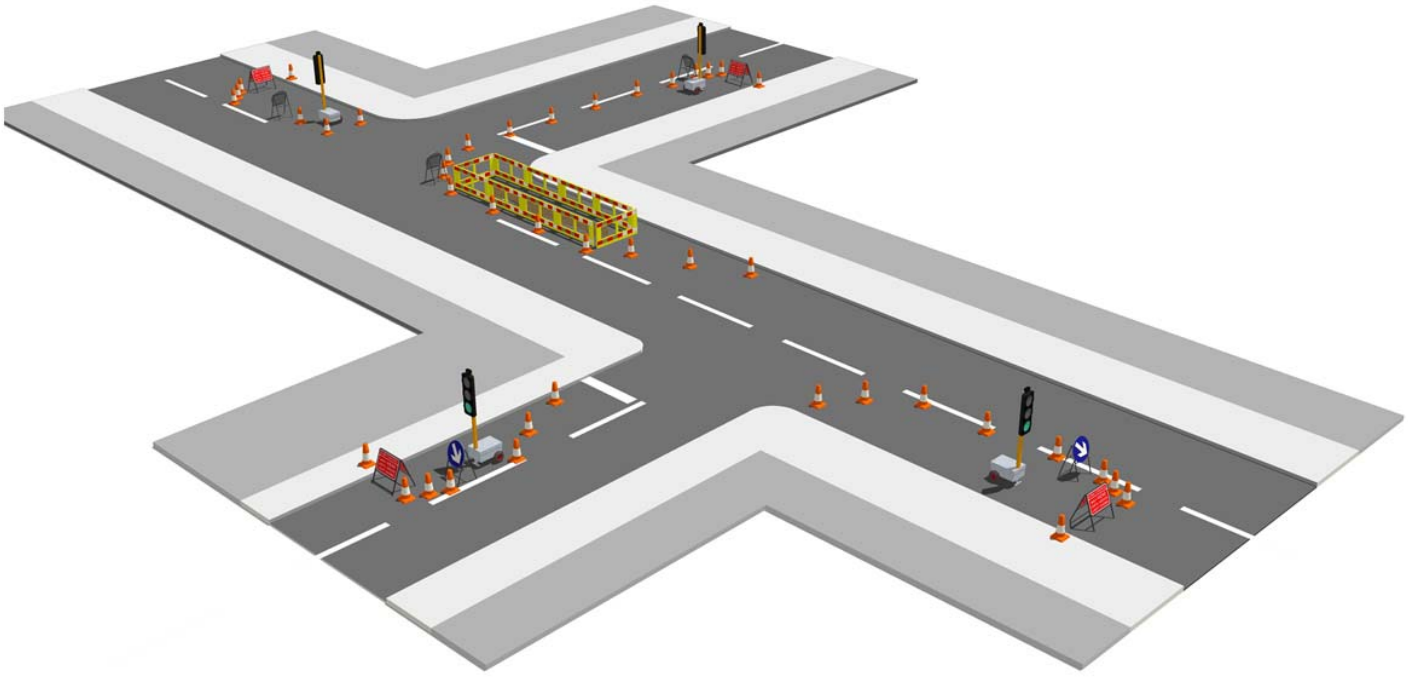
Appendix B Portable Traffic Signals

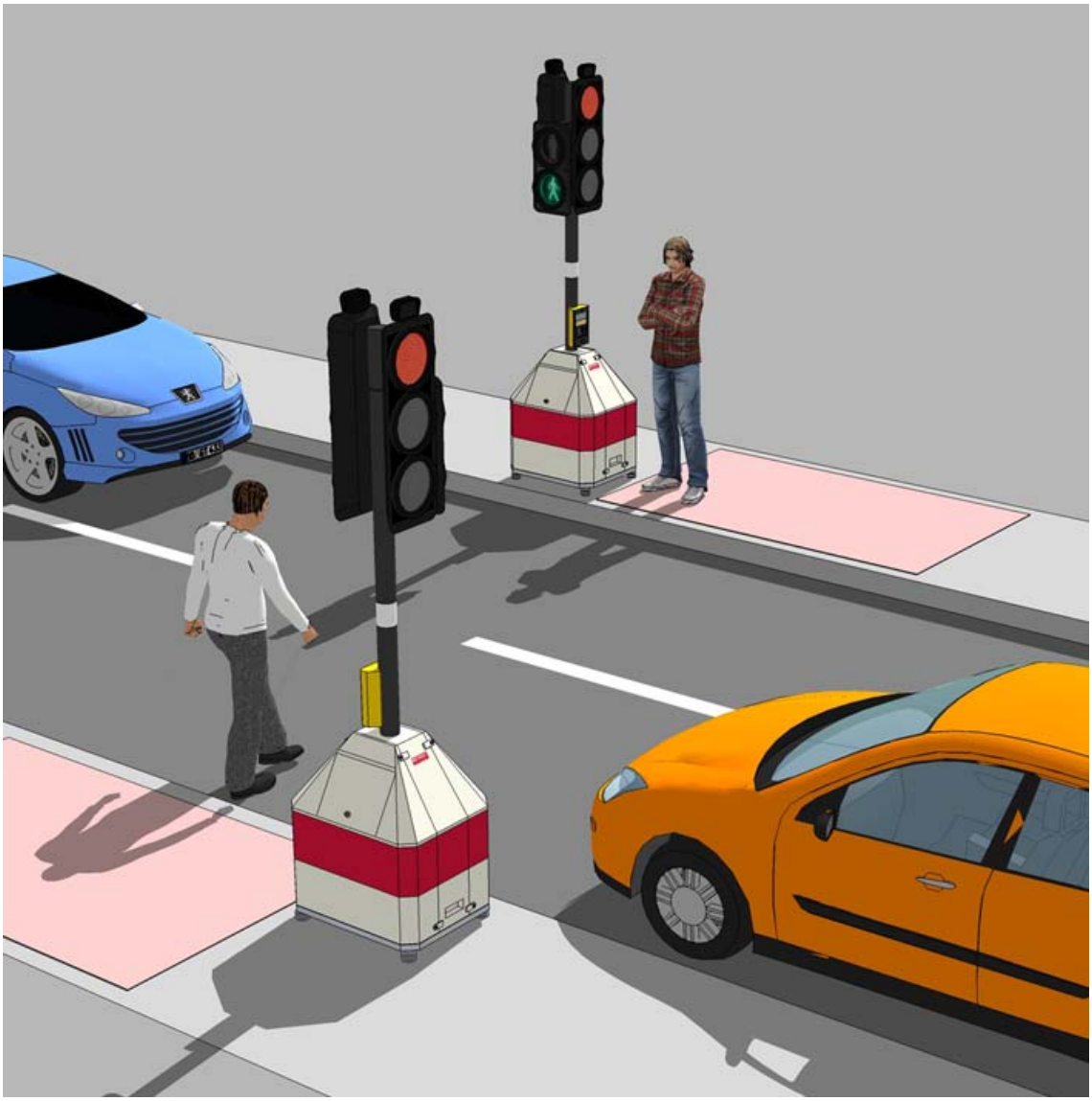


Typical 2-Phase Shuttle Working Portable Traffic Signal Deployment



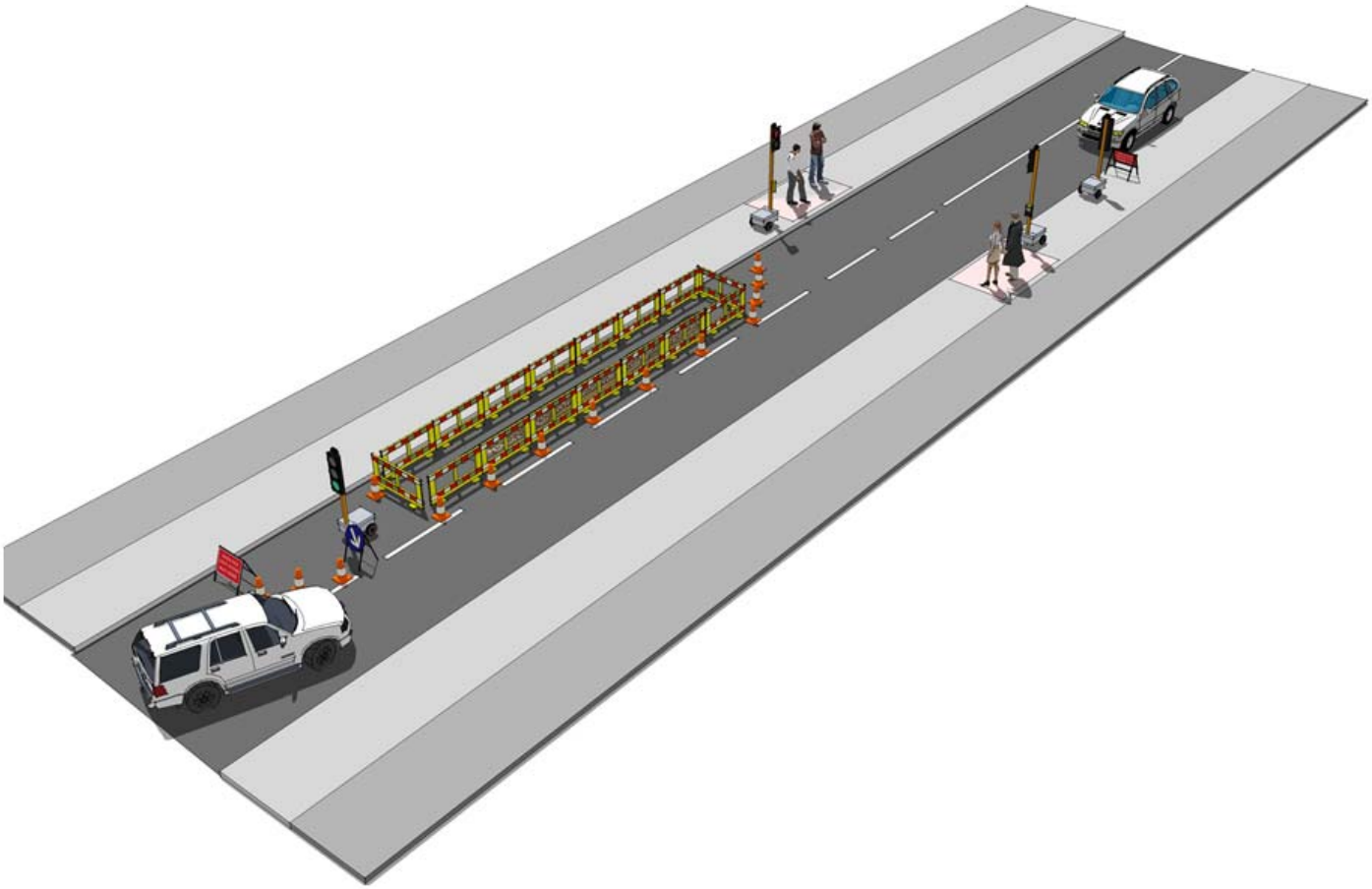
Typical Multi-Phase (4) Portable Traffic Signal Deployment

Appendix C Temporary Stand-Alone Pedestrian Facility



Typical facility shown with FSS but optionally available as NSS in Specification

Appendix D Pedestrian Facilities at Portable Traffic Signal Control



Pedestrian Facilities shown in a 2-Phase Shuttle Working Deployment (Appendix D)
(Shown with FSS but optionally available as NSS in Specification)

The 2-Phase is a common style of deployment and there is significant social media content from users about safety when used in the configuration shown. This is owing to the condition that when a Green Man is illuminated, vehicles can still be traversing the works which could be up to 300m long This also contrasts strongly with the deployment in Appendix E where a nearside primary and an off-side primary traffic (or off-side secondary) signals are specified for a portable pedestrian facility.

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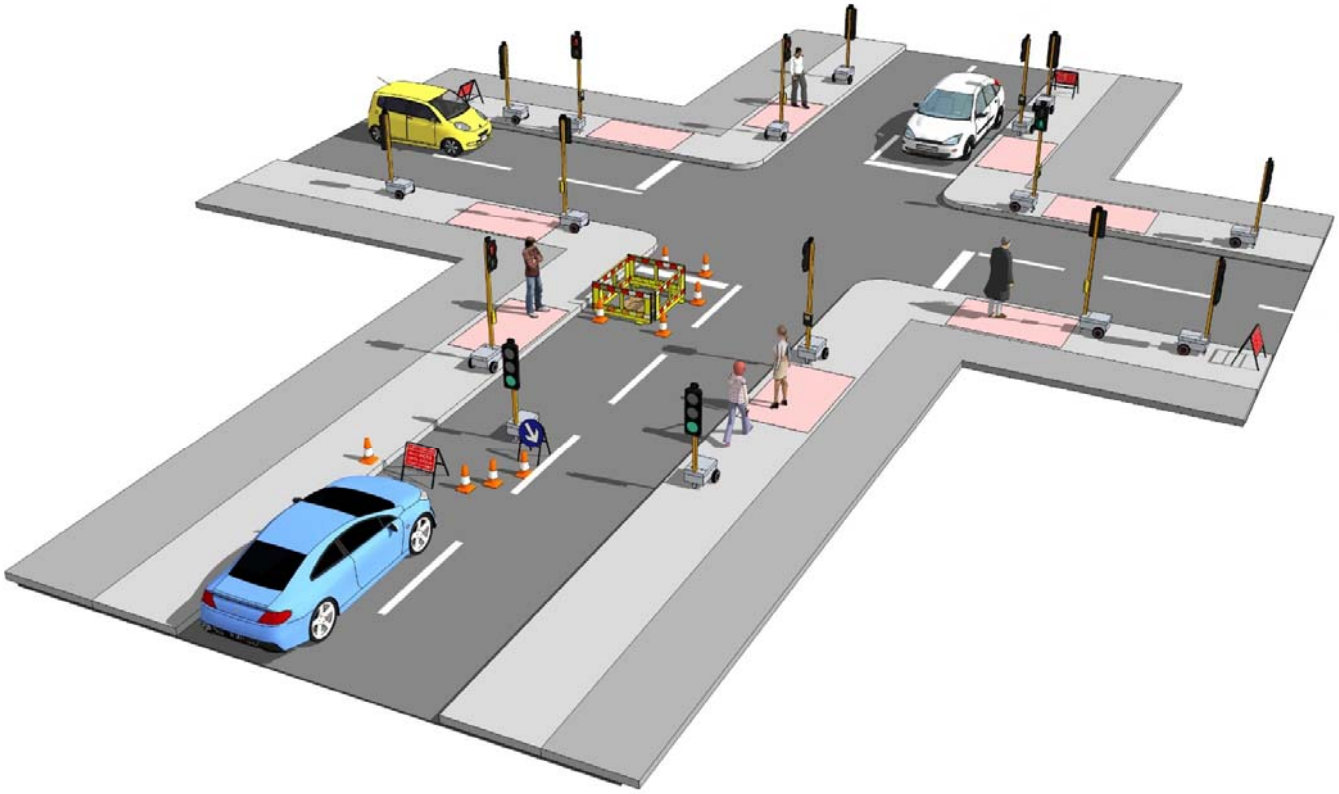

Pedestrian Facilities shown in Multi-Phase Deployment (Appendix D)
(Shown with FSS but optionally available as NSS in Specification)

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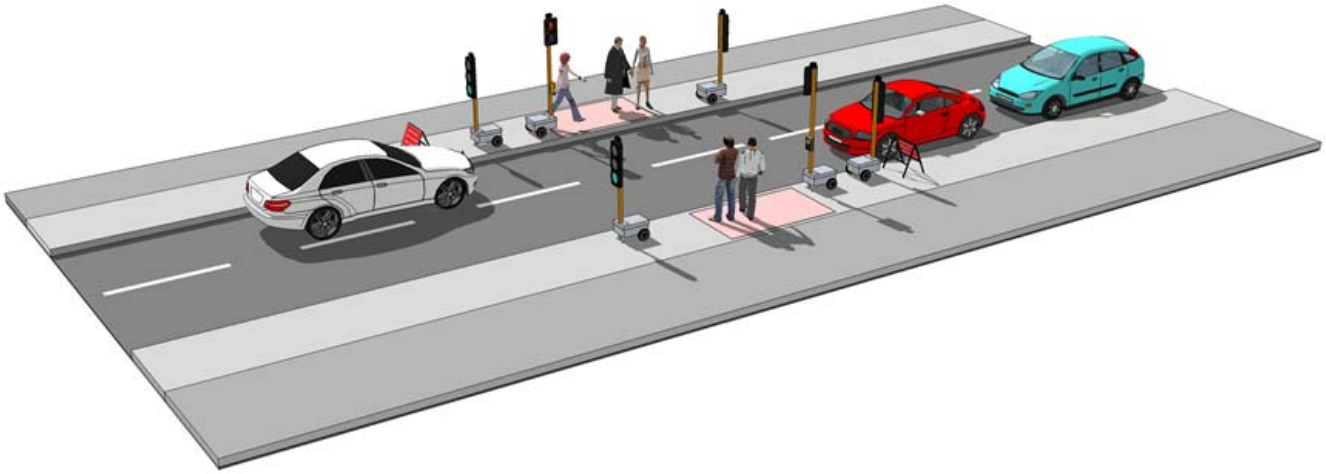
Appendix E Portable Stand-Alone Pedestrian Facility



Typical facility shown with FSS but optionally available as NSS in Specification

In essence, the only difference between Appendix E and Appendix C is the traffic signalling requirement change from TSRGD Diagram 3000.1 to Diagram 3000 respectively as the pedestrian signalling are both Diagram 4002.1 for FSS and Diagram 4003.1 for NSS. Functional requirements for both Temporary and Portable applications are nearly the same but also allowing for the provisions of sections 1.11 to 1.14.