

PART R55**INSTALLATION OF TRAFFIC SIGNALS****CONTENTS**

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Attachment R55A: Site Wiring Layout (Sample Only)

1. GENERAL

This Part specifies the requirements for the installation of traffic signals.

"**LV/ELV Cables**" means cables complying with AS 2276.1.

"**LV Cables**" means cables complying with AS 5000.

"**Detector Feeder Cables**" means cables complying with AS 2276.2.

SCATS[®] is the name of the Sydney Co-ordinated Adaptive Traffic Signal system, registered by Transport for New South Wales.

Documents referenced in this Part are listed below:

AS 2276	Cables for Traffic Signal Installations
AS 2339	Traffic Signal Posts and Attachments
AS 3000	Electrical Installations
AS 5000	Electric Cables – Polymeric Insulated
AS 2144	Traffic Signal Lanterns
AS 2578	traffic signal controllers

The work must comply with the following documents:

- (a) Traffic Signal Drawings;
- (b) Signal Duct Layout Drawings;
- (c) Site Wiring Diagram;
- (d) Cable Connection Schedule;
- (e) Detector Wiring Chart;
- (f) SA Power Networks Service Rules and Conditions of Supply; and
- (g) the following standard drawings:

Drawing No	Sheet No.	Title	Amendment No.
S-4055	49	Traffic Signals for Railway Crossings - Combination TS/Road Lighting Mast Arm	0
	50	Pits, Concrete Lids and Surrounds	0
	51	Pits and Lockable Lids	1
S-4500	1	Detector Loop Layout	0
	2	Cable Layout	2
S-4512	3	Pavement Mounted Controller Base Details	0
S-4514	1	Post Mounted Controller, Foundation Details	1
S-4515	1	Post Foundation Details	4
S-4516	2	Push Button Bracket for Stobie Poles	2
S-4517	1	Upper Mounting Assembly for Traffic Signal Post	4
S-4518	2	Terminal Box, Post Mounted	3
S-4537	3	Traffic Signal Posts and Base Plate	6

DPTI standard drawings are available from the following web site: <http://www.dpti.sa.gov.au/standards>.

Where this Part requires approval by DPTI, that approval will be provided by the Traffic Operations Group, Norwood Office.

2. ELECTRICAL INSTALLATION AND TESTING

All electrical installations must be carried out by an electrical worker who is licensed to perform any electrical works. The installations must comply with AS 3000 and the Service Rules and Conditions of Supply of SA Power Networks.

Prior to the commencement of this work, the Contractor must provide evidence of the Licence and a **HOLD POINT** shall apply.

3. TRENCH WORK, CONDUITS AND PITS

The work must comply with the following:

- (a) Part R06 "Under-road Boring";
- (b) Part R07 "Trench Excavation and Backfill";
- (c) Part R08 "Reinstatement of Existing Pavements"; and
- (d) Part R53 "Supply and Installation of Conduits and Pits".

4. CONSTRUCTION OF FOOTINGS

4.1 General

Cast-in-place concrete must comply with Part CC26 "Normal Class Concrete".

Unless specified otherwise, all footings must be constructed of unreinforced Normal class concrete, Grade N20. The top surface of concrete must be finished with a wooden float to a smooth even surface.

4.2 Signal Post Footings

Signal post footings must be constructed as shown on Drawings No. S-4515, sheet 1.

4.3 Mast Arm Footings

Mast arm footings and reinforcement must be constructed in accordance with the Traffic Signal Drawings.

A **HOLD POINT** must apply at the completion of excavation and prior to the construction of the footing to assess the suitability of the soil to support the footing.

4.4 Signal Controller Footings

The signal controller footing plus surround must be of the type shown on the Duct Layout Drawing and must be constructed as shown on the following Drawings:

Signal Controller Base Details with Telstra Entry Drawing No. S-4512, sheet 3

Holding Down Bolts for Traffic Signal Posts Drawing No. S-4515, sheet 1.

The front of the housing is detailed on the Signal Duct Layout Drawing.

5. **CABLING**

5.1 **Cable Installation**

5.1.1 **General**

LV/ELV cables must be used for traffic signal multi-core power cables for both low voltage and extra low voltage applications. LV cables must be used for low voltage applications.

Installation of cables must be as detailed in the Site Wiring Diagrams, Cable Connection Schedules and in conjunction with the Signal Duct Layout Drawing. All cables must be continuous and without joins except at termination points.

The Contractor must submit a Site Wiring Diagram prior to the installation of any cabling. The Site Wiring Diagram must detail:

- (a) type of signal pole;
- (b) cable size and connection schedules;
- (c) pole, lantern and pedestrian signal groups; and
- (d) connections to audio and camera installations as applicable.

Site Wiring Diagrams and Cable Connection Schedules must be submitted in the format as shown in the sample in Attachment R55A. Submission of the Site Wiring Diagram and Cable Connection Schedules shall constitute a **HOLD POINT**.

Cables must be drawn through signal ducting using draw cords and must be installed through pits and ducts without causing damage to the cable. Excessive strain must not be placed on any individual core, individual cable or group of cables during the drawing in process. A draw cord must remain in the conduit after the installation of the cable to enable installation of additional cables in the future.

5.1.2 **Signal Post and Controller Cables (LV/ELV Cables)**

The length of signal post cable tails required on installation at the base of signal posts and signal controllers must be as follows:

Signal Post Base	5.5 m
Signal Controller Base	1.8 m

After termination all spare cable must be stored in the base of the signal post and signal controller.

5.1.3 **Detector Feeder Cables**

Detector feeder cables must be drawn around the signal site in separate ducts to LV and LV/ELV cables unless otherwise specified on the Duct Layout Drawing. The length of detector feeder cable tails required on installation at the signal controller base and detector pit must be as follows:

Signal Controller Base	2 m
Detector Pit	0.5 m

After termination all spare cable must be stored in the base of the signal controller and the detector pit.

5.1.4 **Consumer Mains Cable (LV Cable)**

A consumer mains service cable must be drawn in between the SA Power Networks supply service point, the underground service pit and the signal controller base as shown on the Duct Layout Drawing and in accordance with SA Power Networks Drawing E1163/B.

Where the electrical supply service point cannot be located conveniently close to the signal controller and the consumer mains cable is drawn to the signal controller base via the underground cable draw-in pits, this cable must be drawn in through a separate duct to all other cables unless otherwise specified on the Duct Layout Drawing and fixed with insulated saddles to the walls of such pits and clearly labelled as "CONSUMER MAINS SERVICE" in each pit.

The length of consumer mains cable tails required on installation at the signal controller base, underground service pit and the electricity supply authority service point must be as follows:

Signal Controller Base	0.75 m.
Underground Service Pit	0.75 m each end of active core only. Neutral core continuous.
Electrical Service Point	1.5 m.

After termination all spare cable must be stored in the base of the signal controller, the underground service pit and the Electricity Supply Authority service point.

5.1.5 Telecommunications Cabling

Prior to completion of the installation, a telecommunications cable (provided by Telstra) must be drawn from the Telstra pit shown on the Duct Layout Drawing to the line terminating box on the side of the signal controller housing.

A cable tail of 0.4 m in length must be provided at the terminating box, any excess cable must be neatly coiled in the Telstra pit.

5.2 Cable Termination

5.2.1 General

Cable cores must be terminated in such a manner to ensure that no movement of wires is possible.

All cables must be terminated and labelled as detailed in the Site Wiring Diagrams and Cable Connection Schedules.

Labels must be permanent in nature and stamped or embossed to avoid loss of identification. Hand written labels must not be used.

5.2.2 Signal Posts

(1) Upper Mounting Bracket Assembly

The signal post cable must be secured to the terminal plate with cable ties. The cores must be separated into LV and ELV groups. The resulting LV and ELV core forms must be tied and further restricted to prevent movement of the core forms. All work must be in accordance with Drawing No. S-4517.

(2) Post Mounted Terminal Box

Cables to mast arms, signal posts and other locations where an upper mounting bracket assembly cannot be utilised must be terminated in a post mounted terminal box.

Cores must be separated into LV and ELV allocations and terminated in the terminal strip as per the Site Wiring Diagram and Cable Connection Schedules and must be tied and restrained to prevent movement of the LV and ELV core forms as per Drawing No. S-4518, sheet 2.

5.2.3 Consumer Mains

(1) DPTI / SA Power Networks Underground Service Pit

The active core tails must be terminated by crimping to the submersible line fuse holder (SA Power Networks Part No. URD 65). Fuse holding clips must be placed onto the wall of the pit at a point 150 mm below the pit lid as shown on Drawing No. S-4530, sheet 5.

The main earth stake must be laid in a trench in the ground through the hole provided in the pit base and must provide a clearance from the pit lid of 150 mm.

(2) Signal Controller

The active and neutral cores of the consumer mains service cable must be terminated at the signal controller power distribution panel and the main earth core terminated to comply with the MEN system of earthing.

5.2.4 LV/ELV Cables at the Signal Controller

LV/ELV Cables must be located and secured under the cable retaining clamps at the bottom of the controller frame. The outer sheath must be stripped back to the top of the retaining clamps and cable cores separated into LV and ELV allocations. Each cable must be clearly labelled to indicate the number of the pole to which it is connected.

LV and ELV cores must be formed and separately tied with cable ties and run to the relevant terminal strips within the controller. Segregation between LV and ELV cable forms must be maintained.

5.2.5 Lanterns

Traffic signal vehicle and pedestrian lanterns must be terminated to LV terminals.

Traffic signal vehicle and pedestrian lanterns must be terminated at the terminal strip located on the upper mounting bracket assembly. Where the lanterns are mounted on a support other than a signal post with an upper mounting bracket assembly, the lantern cables must be terminated in a post terminal box located on the support.

Termination to LV and ELV terminal strips in either the upper mounting bracket assembly or post terminal box must be as detailed in the Site Cable Termination Chart.

5.2.6 Push Button and Audio Tactile Driver Unit

Push Button assemblies must be terminated to ELV terminals at the terminal strip located on the upper mounting bracket assembly or as detailed in the Site Cable Termination Chart. Where the push buttons are mounted on a support other than a signal post with an upper mounting bracket assembly, the push button cables must be terminated in a post terminal box located on the support.

The cable harness from the audio tactile amplifier assembly must be terminated to the LV and ELV terminal strips on the upper mounting bracket assembly or post mounted termination box as detailed in the Site Cable Termination Chart.

5.2.7 Detector Feeders

Detector feeder cable screens must be insulated and joined by crimping drain wires into a through crimp connector and extended with an insulated earth core to a terminal earth point.

The detector feeder cables must be neatly formed, tied with cable ties and labelled to identify the loop to which it is connected.

5.2.8 Spare Cable Cores

Spare cores from signal post cables must be separated from terminated cores, tied with cable ties and connected through crimp connector and extended with an insulated earth core to a terminal earth point.

5.2.9 Telecommunications

The Contractor must arrange with the Telecommunications Service Provider for the installation of the telecommunications service into the line-terminating box on the side of the traffic signal controller housing.

6. INSTALLATION OF EQUIPMENT

6.1 General

Signs clearly labelled "Signals Not Operating" (T1-SA1185) must be installed on all signal posts at the same time as the lanterns are installed and must remain in place until the signals are commissioned.

6.2 Signal Posts

The type of signal post installed must be as shown on the Traffic Signal Drawings. Post details are shown on Drawing No. S-4537, sheet 3.

The threaded lower end of the signal post and the threaded collar on the prefabricated post base plate, together with the holding down bolts in the base foundation must be treated with a rust inhibiting lubricant prior to erection of the post.

The base plate must be firmly bolted down to the concrete foundation. Non-corrosive metal packing shims must be used to ensure that the signal post is vertical. The signal post must be tightened down to the base plate.

As mechanical means are used to tighten the signal post into the base plate, care must be taken to ensure that the galvanized outer surface of the signal post is not damaged.

The push button assembly mounting holes must be located correctly to match the alignment requirements for push buttons.

6.3 Vehicle Signal Lanterns

Lanterns must be attached to the signal post by upper and lower mounting brackets assemblies using appropriate galvanized mounting straps.

Where lanterns are to be attached to other supports (e.g. stobie poles), brackets must be supplied by the Contractor.

The lantern assembly including visors and backing boards must be positioned 300 mm clear of the kerb line and sited as detailed on Drawing TES 8569 "Traffic Signal Aiming of Lanterns".

Three aspect lanterns must be installed so that the centre of the red lens is 4.0 m above the footpath or median surface unless otherwise specified on the Traffic Signal Drawings.

Adjacent aspects must be mounted so that doors giving access to internal lamps open away from each other.

Disk and arrow signal faces must be arranged so the same coloured signal aspect is horizontally aligned, and located in a six aspect lantern configuration. Right arrows must be on the right of the corresponding disk and left arrows should be to the left of the corresponding disk. Where the signal face comprises less than three aspects, the vacant positions must be blanked out.

6.4 Pedestrian Signal Lanterns

Lanterns must be attached to the signal posts using appropriate galvanized mounting straps and two lower mounting brackets.

The lantern assembly including visors must be positioned 300 mm clear of the kerb line and sited so that pedestrians have a clear view of the signal from the opposite side of the carriageway.

The lantern must be installed with the centre of the walk lens 3 m above the foot pavement or median surface.

6.5 Mounting of Vehicle and Pedestrian Lanterns

Vehicle and pedestrian lanterns must be secured to their respective lower mounting brackets with a locking mechanism as detailed in AS 2339.

6.6 Push Button Mounting Assemblies

The push button assembly must be positioned such that the face of the device is parallel with the direction of cross walk and the arrow points in the direction of crosswalk.

Push button assemblies must be attached to signal posts indicated on the Traffic Signal Drawings.

Where push button assemblies are attached to other supports, mounting brackets must be used as shown on Drawing No S-4516, sheet 2.

Where push button assemblies are mounted on supports other than signal posts the centre of the push button must be 1 m above the walking surface.

Where the push button assembly is mounted on a support other than a signal post it must be terminated directly to the nearest ELV termination strip as detailed in the Site Wiring Diagram and Cable Connection Schedule. The cable connecting the push button assembly to the post mounted termination box must be placed into a PVC sheathed flexible metal conduit (ANACONDA or similar). This conduit must be attached to the push button by means of a flexible metal conduit terminator. The flexible conduit must be securely attached to the support to prevent any movement of the conduit.

6.7 Audio Tactile Devices

6.7.1 Audio Tactile Push Button Assemblies

All pushbuttons must be audio tactile. The audio tactile push button assemblies must be installed where shown on the Traffic Signal Drawings in the same manner as standard push button assemblies.

Audio tactile signal arrows must be positioned horizontally and point to the far side of the road in the direction that a disabled person is expected to walk.

6.7.2 Audio Tactile Driver Unit

The audio tactile driver must be mounted on the same support nominated for the audio tactile push button assembly it controls, otherwise on the closest suitable signal support. The brackets supplied as part of the housing must be used to mount the audio tactile driver at a height of 4 m above the footpath or median surface.

6.8 CCTV Camera Supports

Where a CCTV camera is required to be mounted to a traffic signal post the support bracket must be in accordance with Drawing No. WM10201F.

6.9 Flexible Conduits to Equipment

Flexible black PVC conduits from the upper mounting bracket assembly or termination box to lanterns and audio tactile drivers must be tied together and securely fixed using approved UV protected cable ties to the signal post or other support to prevent excessive movement. The flexible conduits must be free from distortion and must be positioned away from strap brackets and other supports likely to cause mechanical damage in the event of the equipment being hit by a vehicle.

The flexible conduit must extend 50 mm inside the final assembly cap.

7. TRAFFIC SIGNAL CONTROLLER

7.1 General

The signal controller must be installed as shown on the Signal and Duct Layout Drawings. The Traffic Signal Controller cabinet must be mounted on the controller base as detailed on Drawing No. S-4512, sheets 3.

The Contractor must provide DPTI with the Programmable Controller Personality Module/s (PCPM) to contain the personalities for the controllers. The Contractor must formally request that DPTI undertake programming of the personalities. DPTI requires 8 weeks from the formal request for personality programming to the delivery of programmed (PCPM) to the Contractor.

The formal request must be accompanied by The Traffic Signal Operational Performance Report and traffic signal plans approved by DPTI, which clearly show the required phasing. Provision of this documentation shall constitute a **HOLD POINT**.

7.2 Installation

The signal controller must be placed in position and bolted down to the frame.

Where required, the white telecommunications duct must be extended within the controller housing and joined to the line terminating box. The draw cord must be drawn into the line terminating box.

8. PROVISION OF TELECOMMUNICATIONS FOR SCATS®

8.1 SCATS® Communication

All traffic signal controllers must be connected to SCATS® via a DPTI approved method which will normally involve an IP-Wan service or a connection directly to the DPTI fibre optic cable network. The form of the connection will be approved by DPTI.

8.2 New traffic signal sites

The traffic signal controller(s) must be fitted with all the hardware necessary to connect into SCATS®. The Contractor is responsible all costs associated with the communications connections and for the provision and connection of the modem and the Telecommunications Service Providers 'dial-IP' data service, which includes:

- (a) SCATS compatible Dial-up Modem hardware;
- (b) Telecommunications IP-WAN access; and
- (c) Traffic Site specific parameters.

The provision and connection into the DPTI's fibre optic cable network includes:

- (a) Installation of conduit and fibre optic cable from the specified DPTI access pit and the traffic signal controller;
- (b) Splicing or patch panel connections in the DPTI's network; and
- (c) SCATS compatible modem / network hardware.

8.3 SCATS Compatible Dial-Up Modem or Network Hardware

The Contractor is responsible for the procurement, installation and programming of the SCATS compatible dial-up modem / network devices.

8.3 Telstra ip-WAN Access.

The Telstra IP-WAN access consists of a PSTN telephone service. The Contractor must apply to Telstra for a PSTN telephone line on behalf of DPTI. The Contractor must quote the following product codes when making the Telstra PSTN application:

- (a) Easy call barring (product code: ECCWNO)
- (b) Contract pricing (product code: TLI100)

8.5 Traffic Site specific parameters

The Contractor must liaise with a DPTI Metropolitan Traffic and Road Operations Section representative to determine:

- (a) IP-WAN username and password;
- (b) traffic site IP-address; and
- (c) LCM Smartcard configuration parameters.

9. DETECTOR LOOP INSTALLATION

9.1 General

Detector loops must be installed as specified on the Drawings. Loop types are detailed on Drawing No. S-4500, sheet 1. Loops located at the intersection stop bar must be the quadruple type, while other loops must be the passage type. Loop cable must be polypropylene insulated detector loop cable.

A slot must be cut to the pattern shown, and of the dimensions detailed, on Drawing No. S-4500, sheet 1 to suit the individual detector loop requirements. The cut depth detailed on Drawing No. S-4500, sheet 1, must be strictly adhered to where cuts intersect to prevent any variation in level between cuts. All cuts must be straight, over-run of cuts must be to the minimum to maintain the 50 mm depth where cuts intersect.

The Contractor must remove the cutting residue from the vicinity of the loop slots and within the loop slots, prior to the installation of loop cable, in a controlled manner that will not disperse the cutting residue into the surface drainage system.

The loop cable must be laid in the slot in accordance with diagrams on Drawing No. S-4500, sheet 1 and care must be taken to ensure that no damage is caused to the cable. Where loop cable enters the detector pit, individual loop cables must be twisted together to ensure there are no secondary loops formed in the detector pit. Loop cables entering the detector pit must be cut to a length of 0.5 m.

The loop cable must be securely held in the slot and the slot sealed with a sealant which is compatible with both the loop cable insulation and the road surface. Approved sealant must be applied in accordance with the manufacturer's instructions.

Loop cables must be connected to relevant detector feeder cables by soldering. The exposed screen drain wire must be cut off level with the outer sheath and left unconnected. The resulting connection must be encapsulated in a waterproof medium to prevent corrosion of the electrical joint. This encapsulation must also include the outer insulating sheath of the detector feeder cable. All loops must be identified in the pit by means of labelling (refer Clause 7.2.1 "General") on the feeder cable.

9.2 Testing and Acceptance

The Contractor must verify the integrity of detector loops immediately following installation of the loop cable and again on connection of the loop feeder cables.

10. SWITCH-ON

10.1 General

Prior to the switching on of any traffic signals the Contractor must:

- (a) allow in the pre switch-on program at least 2 days testing with the Principal;
- (b) liaise with the Principal to arrange a suitable date for switch-on following completion of electrical testing;;
- (c) ensure that the SCATS® co-ordination plans have been installed by the Principal and confirmed as operational by the Principal;
- (d) Provide the Electrical Certificate of Compliance; and

- (e) Ensure that the lantern alignments have been reviewed prior to switch-on. (This is in addition to the requirements for the Site Acceptance Test.)

The Contractor must attend the switch on to complete the works. After the signals have been switched on and operation has been transferred to SACTS the Contractor must remove all temporary traffic control devices and associated equipment from site.

10.2 Site Acceptance Test

At switch-on the Contractor must undertake a Site Acceptance Test. The Contractor must produce a Site Acceptance Test Schedule detailing the results of the following tests:

- (a) each traffic signal post, pedestal and the attached equipment is satisfactorily erected and is properly aimed at the appropriate traffic;
- (b) lanterns can not be easily seen by traffic on the wrong approach;
- (c) the controller responds to the demands from each vehicle, pedestrian and other detector;
- (d) the controller is communicating with the SCATS® ; and
- (e) the installation does not allow any unsafe situation.

11. HOLD POINTS

The following is a summary of Hold Points referenced in this Part:

CLAUSE REF	HOLD POINT	RESPONSE TIME
2.	Provision of Electrical Workers Licence prior to commencement of electrical work	2 hours
4.3	Inspection after excavation of mast arm footing	1 working day (metro) 2 working days (other locations)
5.1.1	Submission of a Site Wiring Diagram.	5 working days
7.1	Provision of formal request and accompanying materials for traffic signal controller programming.	8 weeks for delivery of traffic signal personality

12. VERIFICATION REQUIREMENTS AND RECORDS**12.1 Test Records**

The Contractor must undertake the testing specified in this Clause and supply written evidence of compliance with the lot package.

CLAUSE REF.	SUBJECT	PROPERTY	TEST PROCEDURE	TEST FREQUENCY	ACCEPTANCE LIMITS
9.2	Detector Loop Integrity	Loop Continuity	Measure with continuity tester	Each Loop	Full continuity
		Insulation Resistance	Measure the insulation resistance between the loop circuit conductors and a good earth point with the two conductor ends comprising the loop circuit connected together	Each Loop	The insulation resistance between the loop circuit conductors and a good earth point must be 10 Megohms or greater measured at a test voltage of 500 V DC applied for at least a minute
		Inductance of loop circuit	Measure with no vehicles over or traversing the loop and with no other adjacent loop circuit energised	Each Loop	Not more than 20% from the theoretical value

12.2 Other Records

The Contractor must supply the following records:

CLAUSE REF.	SUBJECT	RECORD TO BE PROVIDED
10.1	Switch On	Electrical Certificate of Compliance
10.2	Switch On	Site Acceptance Test Schedule

ATTACHMENT R55A: SITE WIRING LAYOUT (Sample Only)

LOCATION: GRAND JUNCTION ROAD / PROSPECT ROAD													
TS160			PSC 'C'									Date: 06/11/2007	
Main cable size			64	J. BOX 1		J. BOX 2		J. BOX 3			J. BOX 4		
Pole cable size				18	18	18	18	18	18	18	18	18	18
Pole Numbers				10	1	2	3	4	5	6	7	8	9
Group	Cont	Function											
SG1	A3	Green	1										
	A4	Amber	2										
	A5	Red	3										
SG2	A6	Green	4										
	A7	Amber	5										
	A8	Red	6										
SG3	A9	Green	7										
	A10	Amber	8										
	A11	Red	9										
SG4	A12	Green	10										
	A13	Amber	11										
	A14	Red	12										
SG5	B3	Green	13	1			1	7				7	
	B4	Amber	14	2			2	8				8	
	B5	Red	15	3			3	9				9	
SG6	B6	Green	16					10				10	
	B7	Amber	17					11				11	
	B8	Red	16					12				12	
SG7	B9	Green	19										
	B10	Amber	20										
	B11	Red	21										
SG8	B12	Green	22			1				1	1		
	B13	Amber	23			2				2	2		
	B24	Red	24			3				3	3		
SG9	C3	Green	25										
	C4	Amber	26										
	C5	Red	27										
SG10	C6	Green	28										
	C7	Amber	29										
	C8	Red	30										
SG11	C9	Green	31		1	4					4		
	C10	Amber	32		2	5					5		
	C11	Red	33		3	6					6		
SG12	C12	Green	34										
	C13	Amber	35										
	C14	Red	36										

LOCATION: GRAND JUNCTION ROAD / PROSPECT ROAD													
TS160			PSC 'C'									Date: 06/11/2007	
Main cable size			64	J. BOX 1		J. BOX 2		J. BOX 3			J. BOX 4		
Pole cable size				18	18	18	18	18	18	18	18	18	18
Pole Numbers				10	1	2	3	4	5	6	7	8	9
Group	Cont	Function	37										
P1	D12	Walk	38							4	7		
	D14	Don't Walk								5	8		
	F28	Push Button	56							15	15		
P2	D9	Walk	39		4	7							
	D11	Don't Walk	40		5	8							
	F1-2	WAIT											
	F27	Push Button	57		15	15							
P3	D6	Walk	41				4		4				
	D8	Don't Walk	42				5		5				
	F1-3	WAIT							15				
	F26	Push Button	58				15						
P4	D3	Walk	43	4								4	
	D5	Don't Walk	44	5								5	
	F1-4	WAIT											
	F25	Push Button	59	15								15	
	E3	PB Return	60	16	16	16	16	////	16	16	16	16	////
	A2	240VActv											▶
	A1	Neutral											▶
	=	Earth											▶
		Spare	45	6	6	9	6	13	6	6	9	6	13
								14					14
								15					15
			55	14	14	14	14	16	14	14	14	14	16

LOCATION: GRAND JUNCTION ROAD / PROSPECT ROAD

TS160

Date: 06/11/2007

