OPERATIONS SHEET

Location: Cashew Rd PC Near Bukit Panjang Pri School Int. No: 14264

Prepared by: Chen Eng Heng Date: 19 / 08 / 2022 Signal ID: 342

Checked by: Clayton Lim

Approved by: Simon Ho

1. **Relocate PC**
2. **Change Walking Speed from 1.0 to 0.8m/sec**

Wef. 1st April 2005

Pg. 1

**PHASING DIAGRAM**

*Bukit Panjang*

*Primary School*

PB1

PB1

*Towards*

*Upper Bukit Timah Rd*

Cashew Road

Cashew Road

2

3 PED1

1

**\*SG4 – Audio Tactile**

Location: Cashew Rd PC Near Bukit Panjang Pri School Int. No: 14264

|  |  |  |
| --- | --- | --- |
| A |  | **NOTES:-**   * If phase change switch is equal or more than TSM15, controller is to send out MSS15 flag * A PHASE IS PLACED ON PERMANENT DEMAND IN ALL MODES. * PED 1 is introduced when Push Button **PB1**  is activated * IN POLICE CONTROL MODE, RUN A AND B PHASE ONLY. * IN MASTERLINK MODE, IF Y- FLAG IS ON PED 1 IS AUTO CALLED. * IN FLEXILINK MODE, IF Y+ FLAG IS ON PED 1 IS AUTO CALLED. * DURING PED1’S WALK, CLEAR PUSH BUTTON 14’S DEMAND. * SG4 AUDIO TACTILE IS CONTROLLED BY Z+ FLAG |
| 1  2 | |
| B |  |
| 3PED1  (PB1) | |
| C |  |
| 1  2 | |
| D |  |
| 3PED1  (PB1) | |

# **DETECTOR FUNCTION**

Pg. 2

Location: Cashew Rd PC Near Bukit Panjang Pri School Int. No: 14264

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Detector /PUSH****BUTTON No** | **CALL PHASE** | **LOCKING** | **NON LOCKING** | **SET VIG ON PHASE** | **EXTEND PHASE** | **SPECIAL** | | **DETECTOR ALARMS** | | | **PLAN REFERENCE** |
| **FAULT SIMULATION** | | |
| **CALL & EXTEND** | **CALL ONLY** | **DISABLE** |
| 1 |  |  |  |  |  |  | |  |  |  |  |
| 2 |  |  |  |  |  |  | |  |  |  |  |
| 3 |  |  |  |  |  |  | |  |  |  |  |
| 4 |  |  |  |  |  |  | |  |  |  |  |
| 5 |  |  |  |  |  |  | |  |  |  |  |
| 6 |  |  |  |  |  |  | |  |  |  |  |
| 7 |  |  |  |  |  |  | |  |  |  |  |
| 8 |  |  |  |  |  |  | |  |  |  |  |
| 9 |  |  |  |  |  |  | |  |  |  |  |
| 10 |  |  |  |  |  |  | |  |  |  |  |
| 11 |  |  |  |  |  |  | |  |  |  |  |
| 12 |  |  |  |  |  |  | |  |  |  |  |
| 13 |  |  |  |  |  |  | |  |  |  |  |
| 14 |  |  |  |  |  |  | |  |  |  |  |
| 15 |  |  |  |  |  | PHASE CHANGE SWITCH |  |  |  | **✓** |  |
| 16 |  |  |  |  |  | POLICE CONTROL SWITCH |  |  |  | **✓** |  |
| PB1 | B, D | ✓ |  |  |  | ***PUSH BUTTON PED1*** | |  | ✓ |  |  |
| PB2 |  |  |  |  |  |  | |  |  |  |  |
| PB3 |  |  |  |  |  |  | |  |  |  |  |
| PB4 |  |  |  |  |  |  | |  |  |  |  |
| PB5 |  |  |  |  |  |  | |  |  |  |  |
| PB6 |  |  |  |  |  |  | |  |  |  |  |
| PB7 |  |  |  |  |  |  | |  |  |  |  |
| PB8 |  |  |  |  |  |  | |  |  |  |  |

TICK IF DETECTOR FAILURE CAUSES AN ALARM ON DET. 16.

# **INTERGREEN, PEDESTRIAN TIMES AND SPECIAL FUNCTIONS**

Pg. 3

Pg. 4

Location: Cashew Rd PC Near Bukit Panjang Pri School Int. No: 14264

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **PHASE** | **CLEARANCE MOVEMENT** | **CLEARANCE DISTANCE** | **INTERGREEN** | | |  | **PED NO.** | **PHASE** | **WALK** | | **CLEARANCE TIME** | |
| **AMBER** | **RED** | **TOTAL** |  | **DISTANCE (m)** | **GREEN TIME** | **1** | **2** |
| A |  |  | 3 | 3 | 6 |  | 1 | B/D | 15m | 6 | 19 |  |
| B |  |  | 3 |  | 3 |  | 2 |  |  |  |  |  |
| C |  |  | 3 | 3 | 6 |  | 3 |  |  |  |  |  |
| D |  |  | 3 |  | 3 |  | 4 |  |  |  |  |  |
| E |  |  |  |  |  |  | 5 |  |  |  |  |  |
| F |  |  |  |  |  |  | 6 |  |  |  |  |  |
| G |  |  |  |  |  |  | 7 |  |  |  |  |  |
|  |  |  |  |  |  |  | Pedestrian Walking Speed: **0.8**      m/s | | | | | |

# **SPECIAL FACILITIES**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SIGNAL GROUP** | **HOUR** | **MINUTE** | **SECOND** | **FUNCTION** | **REMARKS** |
| SG 4 | 21 | 0 | 0 | Audio Tactile Off | Controlled by Z+ Flag |
| 6 | 30 | 0 | Audio Tactile On |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

# **PRE-EMPTION**

|  |  |  |  |
| --- | --- | --- | --- |
| **SIGNAL GROUP** | **PHASE** | **FUNCTION** | **REMARKS** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

# **CONTROLLER TIMESETTING**

Location: Cashew Rd PC Near Bukit Panjang Pri School Int. No: 14264

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **PHASE** | **A** | **B** | **C** | **D** |  | | **ALTERNATE TIME SETTING** **(RANGE 0-200)**(‘B’ ENTER) | | | |
|  | **INTERVAL** | **1** | **2** | **3** | **4** | **Range** |  |
| **RED/YELLOW** | 1 |  |  |  |  | 0 – 5 |  |
| **LATE START** | 2 |  |  |  |  | 0 – 20 |  | **ALT. NO** | | **TIME** | |
| **MINIMUM GREEN** | 3 | 10 | 6 | 14 | 6 | 5 – 20 |  | 11 | | 22 | |
| **INCREMENT** | 4 |  |  |  |  | 0 – 5 |  | 12 | |  | |
| **MAX. V. I. G.** | 5 |  |  |  |  | 0 – 40 |  | 13 | |  | |
| **MAX. EXT. GREEN** | 6 | 32 |  | 0 |  | 0 – 150 |  | 14 | |  | |
| **EARLY CUT-OFF** | 7 |  |  |  |  | 0 – 20 |  | 15 | | 50 sec | |
| **AMBER** | 8 | 3 | 3 | 3 | 3 | 3 – 7 |  | 16 | |  | |
| **ALL RED** | 9 | 3 |  | 3 |  | 0 – 15 |  |  |  |  |  |
| **SPECIAL ALL RED** | 10 |  |  |  |  | 0 – 15 |  |  |  |  |  |
| **GAP 1** | 11 |  |  |  |  | 0 –10 |  |  |  |  |  |
| **GAP 2** | 12 |  |  |  |  | 0 –10 |  |  |  |  |  |
| **GAP 3** | 13 |  |  |  |  | 0 –10 |  |  |  |  |  |
| **GAP 4** | 14 |  |  |  |  | 0 –10 |  |  |  |  |  |
| **HEADWAY 1** | 15 |  |  |  |  | 0 – 5 |  |  |  |  |  |
| **HEADWAY 2** | 16 |  |  |  |  | 0 – 5 |  |  |  |  |  |
| **HEADWAY 3** | 17 |  |  |  |  | 0 – 5 |  |  |  |  |  |
| **HEADWAY 4** | 18 |  |  |  |  | 0 – 5 |  |  |  |  |  |
| **WASTE 1** | 19 |  |  |  |  | 0 – 50 |  |  |  |  |  |
| **WASTE 2** | 20 |  |  |  |  | 0 – 50 |  |  |  |  |  |
| **WASTE 3** | 21 |  |  |  |  | 0 – 50 |  |  |  |  |  |
| **WASTE 4** | 22 |  |  |  |  | 0 – 50 |  |  |  |  |  |
| **MAXIMUM 1** | 23 |  |  |  |  | 0 – 150 |  |  |  |  |  |
| **MAXIMUM 2** | 24 |  |  |  |  | 0 – 150 |  |  |  |  |  |
| **MAXIMUM 3** | 25 |  |  |  |  | 0 – 150 |  |  |  |  |  |
| **MAXIMUM 4** | 26 |  |  |  |  | 0 – 150 |  |  |  |  |  |

# Maximum V. A. Cycle Time:

✓

# In Flexilink Operation,

# If Z- flag = C (255), A phase’s Max Extension Green = TSM 11

✓

# In Isolated Operation,

# A phase = Max. Ext. Green

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **PEDESTRIAN NO.** | **1** | **2** |  |
|  | **INTERVAL** | **17** | **18** | **Range** |
| **DELAY** | 1 |  |  | 0 – 20 |
| **WALK** | 2 | 6 |  | 0 – 40 |
| **CLEARANCE 1** Pg. 5 | 3 | 19 |  | 0 – 40 |
| **CLEARANCE 2** | 4 |  |  | 0 – 10 |
| **PAC** | | 7 |  |  |
|  |  |  |  |  |

# **CO-ORDINATION DATA**

Pg. 5

Location: Cashew Rd PC Near Bukit Panjang Pri School Int. No: 14264

# **SPECIAL FUNCTIONS**

|  |  |
| --- | --- |
| **SIGNAL** | **FUNCTION** |
| Y- FLEXI | Continuous |
| Y- MASTER | AUTO CALL PUSH BUTTON PED 1 |
| Y+ FLEXI |
| Z- FLEXI | A PHASE ALTERNATE MAXIMUM EXTENSION GREEN (TSM11) |
| Z- MASTER |  |
| Z+ FLEXI | SET SG4 AUDIO TACTILE ON |
| Z+ MASTER |
| R- FLEXI |  |
| R+ FLEXI |  |
| Q- FLEXI |  |
| Q+ FLEXI |  |
| Z1 MASTER |  |
| Z MASTER |  |
| Z MASTER |  |
| Z MASTER |  |

# **LOOK AHEADS AND RELEASES**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Phase Sequence 1** | | |  | **Phase Sequence 2** | | |
| **PHASE** | **LOOK AHEAD** | **RELEASE** |  | **PHASE** | **LOOK AHEAD** | **RELEASE** |
| A | NO |  |  | A | NO |  |
| B | NO | Auto |  | B |  |  |
| C | NO |  |  | C |  |  |
| D | Yes to A | Auto |  | D |  |  |
| E |  |  |  | E |  |  |
| F |  |  |  | F |  |  |
| G |  |  |  | G |  |  |

# The following phases can be inhibited in Flexilink by omitting the call pulses in the plan data

|  |  |
| --- | --- |
| **NO** | **PHASE SEQUENCE** |
| 1 (No ) | A B C D |
| 2 ( ) |  |

# **GLIDE INTERSECTION DATA**

Pg. 6

Location: Cashew Rd PC Near Bukit Panjang Pri School Int. No: 14264

# **Note:** The data shown on this page should be entered when the intersection is first placed on line. This data is not necessarily used for Master Link operation.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | SLOT 19 | = 4, 1, 1 | | | | | | E.g. x, y, z. x = No of Phases y = No of Split Plans z = No of PEDs | | | | | | | | | | | | | | | | | | |
|  | | INT = 14264 | | |  | | | | | | | | | | | | | | | | | | | | | | | |
|  | | VC = 5 | | |  | | Date: | | | | | | | | | | Date: | | | | | | | | | |  | |
|  | | CS = | | |  | | PP1 = 0, 0 ^A | | | | | | | | | | PP1 = | | | | | | | | | |  | |
|  | | COM = Port 3 / 2 | | |  | | PP2 = 0, 0 ^A | | | | | | | | | | PP2 = | | | | | | | | | |  | |
|  | | PK = | | |  | | PP3 = 0, 0 ^A | | | | | | | | | | PP3 = | | | | | | | | | |  | |
|  | | S# = 2 | | |  | | PP4 = 0, 0 ^A | | | | | | | | | | PP4 = | | | | | | | | | |  | |
|  | | LM = F | | | **Note:** Always LM = F initially | | | | | | | | | | | | | | | | | | | | | | | |
|  | | RMN = | | |  | | | | | | | | | | | | | | | | | | | | | | | |
|  | | DCL = | | |  | | **Variation Parameter (VP)** | | | | | | | | | | | | | | | | | | | | | |
|  | | VOLS = | | |  | | VP1 = | | | | | VP8 = | | | | VP15 = | | | | VP22 = | | | | VP29 = | | |  | |
|  | | VP# = | | |  | | VP2 = | | | | | VP9 = | | | | VP16 = | | | | VP23 = | | | | VP30 = | | |  | |
|  | | AT = 6 | | |  | | VP3 = | | | | | VP10 = | | | | VP17 = | | | | VP24 = | | | | VP31 = | | |  | |
|  | | BT = 3 | | |  | | VP4 = | | | | | VP11 = | | | | VP18 = | | | | VP25 = | | | | VP32 = | | |  | |
|  | | CT = 6 | | |  | | VP5 = | | | | | VP12 = | | | | VP19 = | | | | VP26 = | | | | VP33 = | | |  | |
|  | | DT = 3 | | |  | | VP6 = | | | | | VP13 = | | | | VP20 = | | | | VP27 = | | | | VP34 = | | |  | |
|  | | ET = | | |  | | VP7 = | | | | | VP14 = | | | | VP21 = | | | | VP28 = | | | | VP35 = | | |  | |
|  | | FT = | | |  | | | | | | | | | | | | | | | | | | | | | | | |
|  | | GT = | | |  | | |  | |  |  | | | | | | |  |  | | |  | | | | | | |
|  | | W1 = 0 | | |  | | |  | |  | W4 = | | | | | | |  |  | | |  | | | | | | |
|  | | W1T = 22 | | | P- | | |  | |  | W4T = | | | | | | | P- | P+ | | |  | | | | | | |
|  | | W2 = | | |  | | |  | |  | W5 = | | | | | | |  |  | | |  | | | | | | |
|  | | W2T = | | | P- | | | P+ | |  | W5T = | | | | | | | P- | P+ | | |  | | | | | | |
|  | | W3 = | | |  | | |  | |  | W6 = | | | | | | |  |  | | |  | | | | | | |
|  | | W3T = | | | P- | | | P+ | |  | W6T = | | | | | | | P- | P+ | | |  | | | | | | |
| **SPLIT PLANS** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  |  | | | **1** | | **2** | | | | | **3** | | **4** |  |  | | | | | | **5** | | **6** | | **7** | **8** | | |
|  | **SF** | | |  | |  | | | | |  | |  |  | **SF** | | | | | |  | |  | |  |  | | |
|  | **FEATURES** | | |  | **FEATURES** | | | | | |
| A | PD FG NG B | | | < 0 >B | |  | | | | |  | |  |  |  | | | | | |  | |  | |  |  | | |
| B | FS C | | | 28# C | |  | | | | |  | |  |  |  | | | | | |  | |  | |  |  | | |
| C | PD FG NG D | | | 20# D | |  | | | | |  | |  |  |  | | | | | |  | |  | |  |  | | |
| D | A | | | 28# A | |  | | | | |  | |  |  |  | | | | | |  | |  | |  |  | | |
| E |  | | |  | |  | | | | |  | |  |  |  | | | | | |  | |  | |  |  | | |
| F |  | | |  | |  | | | | |  | |  |  |  | | | | | |  | |  | |  |  | | |
| G |  | | |  | |  | | | | |  | |  |  |  | | | | | |  | |  | |  |  | | |

# **PLAN DATA**

Pg. 7

Location: Cashew Rd PC Near Bukit Panjang Pri School Int. No: 14264

# **PLAN**

# (‘E’ ENTER)

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| 0 | **CL** |  |  |  |  |  |  |  |  |  |  |
| 1 | **A** |  |  |  |  |  |  |  |  |  |  |
| 2 | **B** |  |  |  |  |  |  |  |  |  |  |
| 3 | **C** |  |  |  |  |  |  |  |  |  |  |
| 4 | **D** |  |  |  |  |  |  |  |  |  |  |
| 5 | **E** |  |  |  |  |  |  |  |  |  |  |
| 6 | **F** |  |  |  |  |  |  |  |  |  |  |
| 7 | **G** |  |  |  |  |  |  |  |  |  |  |
| 8 | **R-** |  |  |  |  |  |  |  |  |  |  |
| 9 | **R+** |  |  |  |  |  |  |  |  |  |  |
| 10 | **Y-** | C | C |  | C | C | C | C |  |  |  |
| 11 | **Y+** |  |  |  |  |  |  |  |  |  |  |
| 12 | **Z-** | N | N |  | N | C | N | N |  |  |  |
| 13 | **Z+** | C | C |  | C | N | N | C |  |  |  |
| 14 | **Q-** |  |  |  |  |  |  |  |  |  |  |
| 15 | **Q+** |  |  |  |  |  |  |  |  |  |  |
| 16 | **XSF (9-16)\*** |  |  |  |  |  |  |  |  |  |  |
| 17 | **XSF (1-8)\*** |  |  |  |  |  |  |  |  |  |  |

# \* A digit hexadecimal number which signifies which XSF bits are used; e.g. AO signifies bits 14 & 16 are set.

# **NOTE:** C = Continuous (255) N = Not Used (254)

# **PLAN SCHEDULE**

# (‘F’ ENTER)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CODE** | **HOUR** | **MINUTE** | **PLAN** |  | **CODE** | **HOUR** | **MINUTE** | **PLAN** |
| 8 | 0 | 0 | 5 |  | 7 | 12 | 0 | 4 |
| **8** | **6** | **30** | **1** |  | 7 | 15 | 0 | 2 |
| 8 | 9 | 0 | 7 |  | **7** | **21** | **0** | **6** |
| 8 | 12 | 0 | 2 |  | 7 | 23 | 0 | 5 |
| 8 | 17 | 0 | 4 |  | 1 | 0 | 0 | 5 |
| **8** | **21** | **0** | **6** |  | **1** | **6** | **30** | **7** |
| 8 | 23 | 0 | 5 |  | 1 | 9 | 0 | 7 |
| 7 | 0 | 0 | 5 |  | 1 | 14 | 0 | 2 |
| **7** | **6** | **30** | **1** |  | **1** | **21** | **0** | **6** |
| 7 | 9 | 0 | 7 |  | 1 | 23 | 0 | 5 |

**Pedestrian and Vehicle Signal Groups Interlock Table**

Pg. 8

Location: Cashew Rd PC Near Bukit Panjang Pri School Int. No: 14264

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Phase A** | **Phase B** | **Phase C** | **Phase D** | **Phase E** | **Phase F** | **Phase G** |
| **SG 1** | SGAR | RED | SGAR | RED |  |  |  |
| **SG 2** | SGAR | RED | SGAR | RED |  |  |  |
| **SG 3** | DON’T | WALK | DON’T | WALK |  |  |  |
| **SG 4** | AUDIO TACTILE | | | |  |  |  |
| **SG 5** |  |  |  |  |  |  |  |
| **SG 6** |  |  |  |  |  |  |  |
| **SG 7** |  |  |  |  |  |  |  |
| **SG 8** |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SG 9** |  |  |  |  |  |  |  |
| **SG 10** |  |  |  |  |  |  |  |
| **SG 11** |  |  |  |  |  |  |  |
| **SG 12** |  |  |  |  |  |  |  |
| **SG 13** |  |  |  |  |  |  |  |
| **SG 14** |  |  |  |  |  |  |  |
| **SG 15** |  |  |  |  |  |  |  |
| **SG 16** |  |  |  |  |  |  |  |

Legend:

GAR Green, Amber, Red

GEAR Green, Amber, Red (With ECO)

RED Red

SGRN Special Green

SOFF Special Off

WALK PED Walk, Clearance 1 and Clearance 2

SWALK Special PED Walk, Clearance 1 and Clearance 2

DON’T PED Red

Pg. 9

Appendix A

**Signal Groups Conflict Matrix**

Location: Cashew Rd PC Near Bukit Panjang Pri School Int. No: 14264

(‘C16’ ENTER)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SG | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** |
| **1** |  |  | X |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **2** |  |  | X |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3** | X | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **4** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **5** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **6** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **7** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **8** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **9** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **10** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **11** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **12** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **13** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **14** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **15** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **16** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Pg. 10