P43 Traffic Signal Specification Update

Jeff Greenough

Jacobs

Challenging today.
Reinventing tomorrow.

Specific Changes

- UPS inclusion, includes generator socket.
- Cycle loop removal and replacement with ref to external input.
- Standards references updated.
- Rationalisation of the pole plans
  - Removal of CCC specific poles, these are to be in the CCC regional specification
  - Review to include alternative design mast arm

UPS

In addition to the specification we have added a prioritisation chart.

APPENDIX O – UPS PRIORITISATION CHART

Factors	Description	Weighting	Max Points	Total
Intersection Factors	-	-	-	-
a. Intersection Legs	Where an intersection has more than 4 legs, add 1 point	20	1	20
b. Right Turn Bays	For each right turn lane at the intersection, add 1 point (maximum 4)	5	4	20
c. Geometry	Where an intersection has poor sight distance, e.g. irregular horizontal geometry or steep gradients, add 1 point	15	1	15
d. Speed	Where the posted speed limit of any leg is equal or greater than 60km/h, add 1 point	25	1	25
e. AADT	Where the total AADT of the intersection exceeds: 10,000, add 1 point; 20,000, add 2 points; 30,000, add 3 points; 40,000, add 4 points	10	4	40
f. Pedestrians	If the pedestrian count exceeds 100 in any hour, add 1 point	25	1	25
Historical Factors	-	-	-	-
g. Power Outage	For each power related signal outage longer than 15 minutes within the last 5 years, add 1 point (maximum 5)	10	5	50
h. Crashes	For each serious or fatal crash within the last 5 years at the intersection, add 1 point (maximum 3)	20	3	60
Proximity Factors	-	-	-	-
i. Rail Grade Crossing	If there is a rail grade crossing within 50m of the intersection, add 1 point	10	1	10
j. Children	If the signals are heavily used by children (e.g. proximity to a school), add 1 point	30	1	30
k. Other Traffic Signals	If another signalised intersection is not within 3km of the intersection, add 1 point	10	1	10
Other Factors	-	-	-	-
l. Evacuation / Emergency Route	If the intersection is on an evacuation or emergency route, add 1 point	40	1	40
m. Truck Route	If the intersection is on a main truck route, add 1 point	5	1	5
Total	-	-	-	350

Where the total exceeds 150, provision of a UPS system is highly recommended.

Where the total exceeds 100, provision of a UPS system should be considered.

Where the total does not exceed 100, provision of a UPS system is not considered to be warranted.

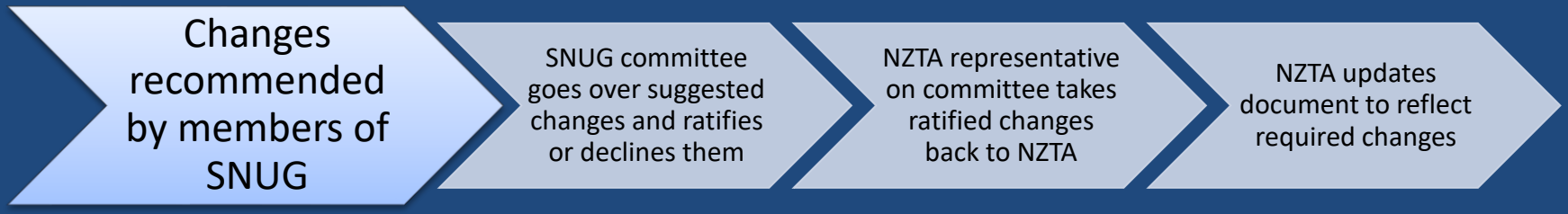
Common changes with reference to Regional specifications

- Generator socket is the main addition.
- All but Whangarei require aluminum lantern construction as per current standard! So no change?

Process for change

- NZTA remains the owner of the document
- SNUG and others can recommend changes to the document
- SNUG committee to gain support from SNUG Group to ratify the changes.
- The NZTA / committee representative then takes these ratified changes back to NZTA to have the document amended/updated.

Process



Dan Burgess
NZTA/P43 Committee Rep

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Questions

- For any questions or recommendations please feel free to email me or Daniel or post them on the forum.

TCD Trials

- Two aspect cycle trial
  - Ongoing (all variants)
- Two aspect rbt pre signals
  - Paremata rbt added to existing trial
- Directional cycle signals trial
  - Concluded awaiting inclusion in TCD
  - 300mm, ……
- Ahead arrows wording / approach generally agreed and being polished ready for inclusion.
- Raised Table interim report presented.

Finally, on the 30th September (for the first time ever!) powers were excised to approve a pedestrian crossing in a 60km/h speed limit.

This approval was for Left turn slip lane on the southbound approach of SH1(N) at the signalised intersection of SH1 with Sandspit Road, Hill Street and Elizabeth Street, in Whangarei.

The operating speed in this location is low and several conditions were added to the approval;

Conditions

Approval for the pedestrian crossing on the left turn slip lane of the signalised intersection described in Schedule 2 is conditional upon;

1. The crossing being placed on a raised platform as per the details and specifications covered in the Pedestrian Planning and Design guide (https://www.nzta.govt.nz/resources/pedestrian-planning-guide/pedestrian-planning-guide-index.html); and
2. That the pedestrian crossing complies with the TCD Rule in the provision, installation and use of traffic control devices (https://nzta.govt.nz/assets/resources/rules/docs/traffic-control-devices-2004-as-at-1-june-2019.pdf)

be done with due consideration for the physical layout and operation of other traffic movements, to avoid conflict between cycle and motor traffic movements.

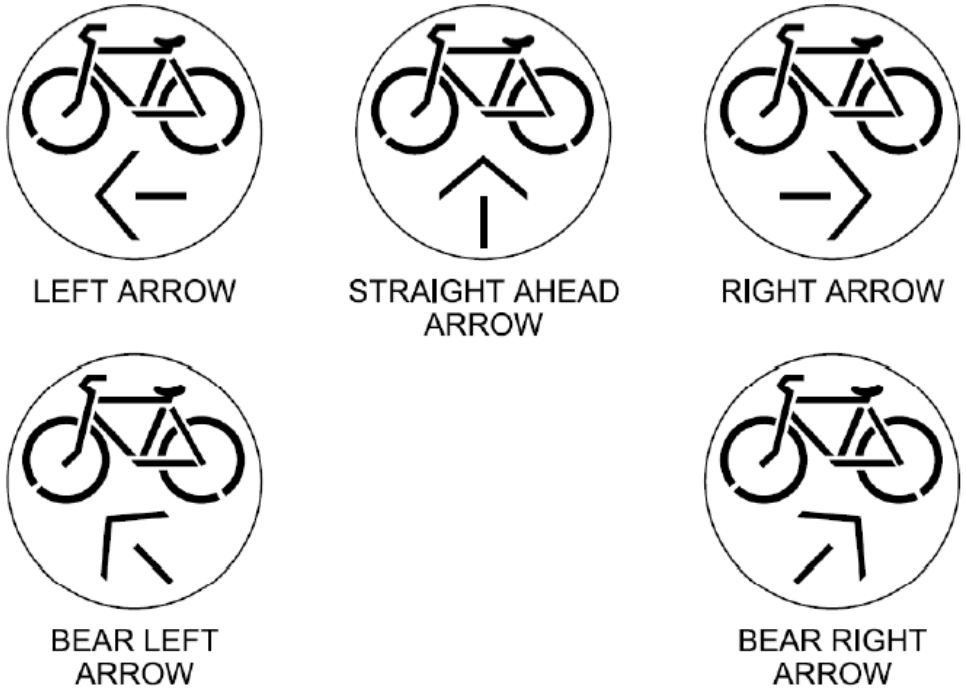


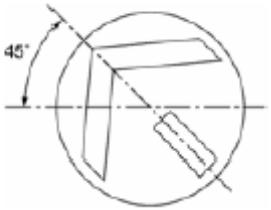
Figure 2-2: Possible configurations for directional cycle signal lantern aspects

TCD Rule - traffic signal displays

- It was noted that there were issues using ahead / arrow aspects that did not look like those in TCD.
- The TCD Rule permits the use of a straight-ahead arrow S6.3(1) As illustrated in Schedule 3 (section 1) but the Rule also requires under (S6.4) that only the display configurations in Schedule 3 (section 4) can be used. None of these display combinations illustrated in Schedule 3 section 4 present a display with a straight-ahead arrow.
- The same could be said of 45degree diagonal upwards arrow aspects.
- Thus, there is an opportunity to address this in Schedule 3 adding 45degree “down aspects” and creating a suite of typically used display combinations whilst adding footnotes that aspect types are interchangeable. This relaxes the prescriptive expectation placed on section 4 of Schedule 3.

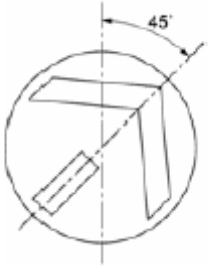
S1-2.1 Left turn ~~90° or more~~

S1-2.2 Bear left turn ~~less than 90°~~

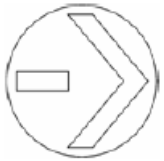


S1-2.3 Straight through

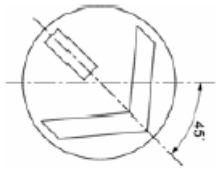
S1-2.4 Bear right ~~turn~~



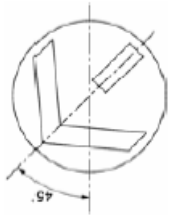
S1-2.5 Right turn ~~90° or more~~



S1-2.6 Return right turn



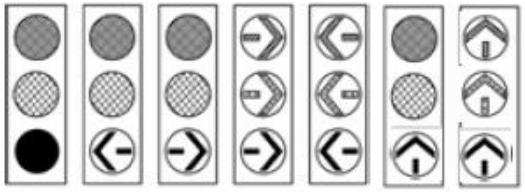
S1-2.7 Return left turn



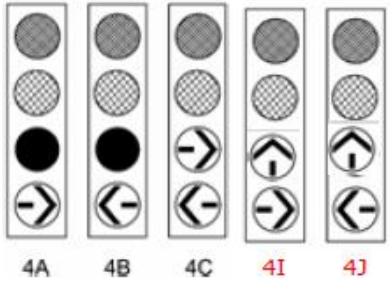
4 Permitted steady signal displays

- **Permitted variants**
- **S1-2.2, S1-2.4, S1-2.6, S1-2.7**
  - The S1-2.1 Left turn arrow/s in a column can be replaced, with a S1-2.2 bear left turn or a S1-2.7 return left turn, as appropriate for the angle of the manoeuvre and provided all left turn arrows present within the column are replaced.
  - The S1-2.5 Right turn arrow/s in a column can be replaced with a S1-2.4 bear right or a S1-2.6 return right turn as appropriate for the angle of the manoeuvre and provided all left turn arrows present within the column are replaced.
- **S1-2.3**
  - The green disk S1-1 can be replaced with a S1-2.3 on the following aspects
    - • 3A
    - • 4A, 4B, 4D, 4E
    - • 5A, 5B
    - • 6A, 6B
- All full roundels discs, (red, yellow and green), on a 3A, 6A or 6B and a 9A are permitted to be S1-2.3 straight through arrows. Provided that the arrows in each column are pointing the same direction and logical to the road layout.

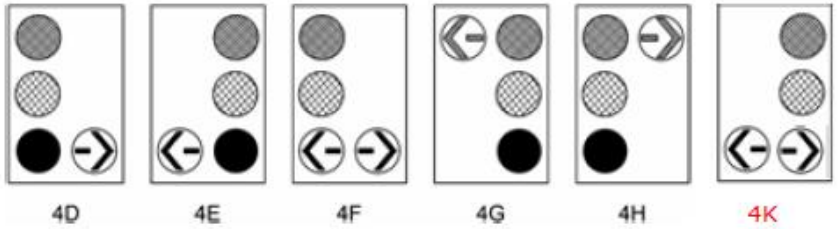
S4-3 Single-column 3-aspect

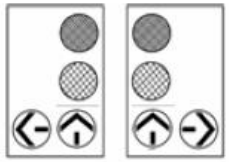


S4-4 Single-column 4-aspect



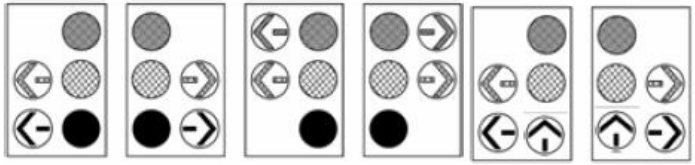
S4-5 Two-column 5-aspect





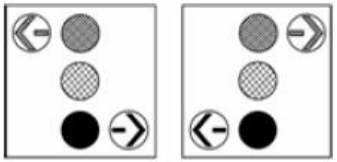
4L 4M

S4-5 Two-column 5-aspect



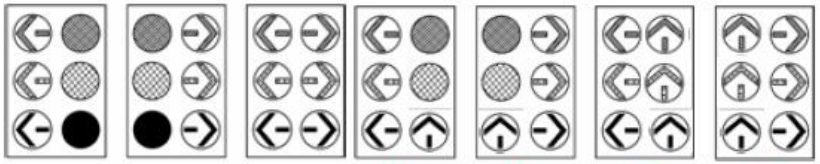
5A 5B 5C 5D 5G 5H

S4-5 Three-column 5-aspect



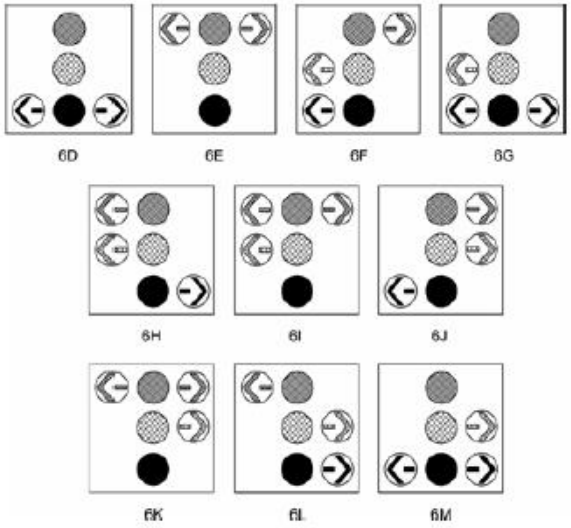
5E 5F

S4-6 Two-column 6-aspect

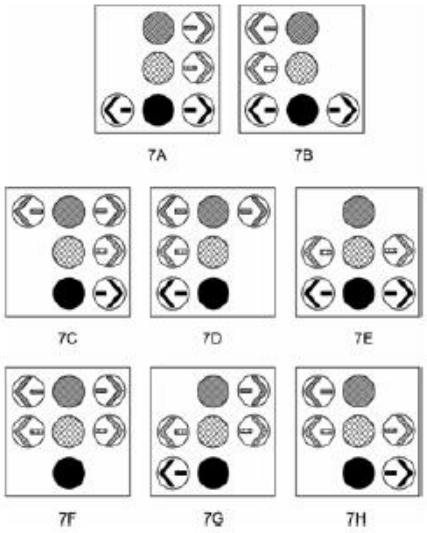


6A 6B 6C 6N 6O 6P 6Q

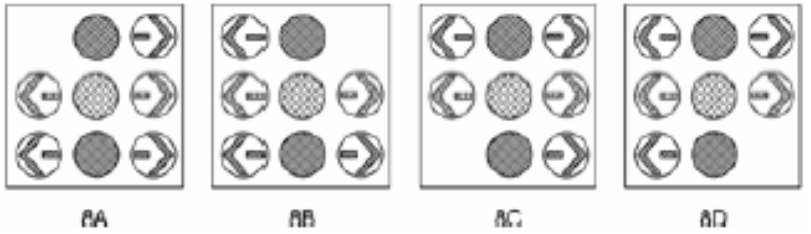
S4-6 Three-column 6-aspect



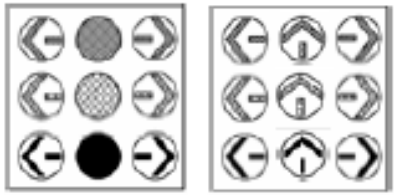
S4-7 Three-column 7-aspect



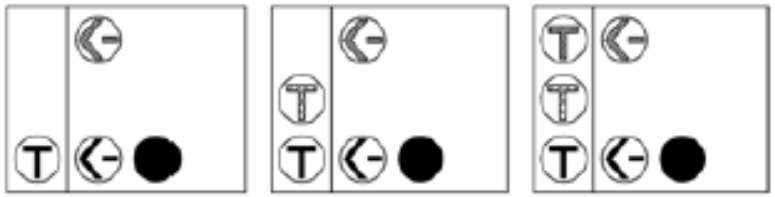
S4-8 Three-column 8-aspect



S4-9 Three-column 9-aspect



S4-10 Special vehicle displays



In respect to red through arrows, and yellow, there is no need to provide more than the aspects above. i.e 3A, 6A/B or 9A If we provide a red ahead we need to also cover the other movements with red arrows to portray the correct movement.

TCD Rule 6.4(1) says that

The configuration and combination of a steady vehicle display must comply with one of the displays in Schedule 3

Will need to add…..

or be a permitted variant.

RAISED TRAFFIC SIGNALS

FINDINGS FROM A FOCUS GROUP

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Figure 6: Piano keys road marking variation at intersection

Figure 5: Sharks teeth road marking variation at intersection