BRYAN G HALL
CONSULTING CIVIL & TRANSPORTATION PLANNING ENGINEERS

Layout Design Check

Introduction

A review has been carried out of the proposed Lowfield Road Railway Bridge Signalisation associated with the Proposed Residential Development, Land off Lowfield Road, Bolton upon Dearne – Phase 3. The review has been carried out on drawing number 20/237/DE/1300/001 Rev B and 20/237/DE/1300/002 Rev B that were revised following an independent Road Safety Audit undertaken by Road Safety Initiatives on the previous revisions. The review has been carried out against the guidance contained in Design Manual for Roads and Bridges - CD123 Version 2.1.0 Geometric Design of Signal Controlled Junctions. The review shows that the layout either conforms to the requirements or those requirements are not applicable to the layout.

Table 1- Layout Design Check

Paragraph/Reference	Conforms to the guidance	Does not conform to the guidance	Guidance not applicable
7.1 - At new signal controlled junctions, the minimum intersection angle of the roads shall satisfy one of the following: 1) 90 degrees; or, 2) a minimum of 70 degrees.			✓
7.1.1 - The intersection angle of the roads should be in accordance with 1)			✓
7.2 - Each traffic lane shall have clear visibility of at least one primary signal associated with its particular movement, from a distance equivalent to the desirable minimum SSD of the approach road.	✓		
7.2.1 - Duplicate primary signals should be provided on approaches with a speed of 85 kph or above			✓
7.3 - Visibility to the primary signal shall be in accordance with the CD 109 [Ref 5.N] visibility envelope, but with the high object height amended to incorporate the signal head where this exceeds 2 metres	✓		
7.3.1 - Where multiple lanes are provided on the approach, a signal-controlled junction may have offside primary, double-headed or overhead additional signals to ensure visibility of the signals from all lanes			✓
7.3.2 - A minimum of 2 signals should be visible from each approach arm and each stop-line.	✓		
7.3.3 - Additional signal heads may be provided where a driver's vision of the signal head could be obscured			✓

7.3.4 - Where separate signalling of turning movements is employed, a minimum of 2 signals should be visible from each approach lane associated with each of the turning movements and each associated stop-line			✓
7.3.5 - Primary signal heads should be located a minimum of 1 metre beyond the stop-line	✓		
7.3.6 - Primary signal heads should be located in advance of crossing studs or marks if pedestrian facilities are provided.			✓
7.3.7 - At junctions with angled approaches, the secondary signal should be displaced a maximum angle of 30 degrees from the driver's line of forward sight			✓
7.3.8 - The distance between the stop-line and an associated secondary signal should not exceed 50 metres	✓		
7.3.9 -Where multi-phased signal layouts are provided, an additional secondary signal may be utilised.			✓
7.3.10 - The desirable minimum SSD should be provided to the back of the queue	✓		
7.4 -An intervisibility zone shall be provided that incorporates an area that extends across the full carriageway width of each arm from a distance of 2.5 metres back from each stop line.	✓		✓
7.5 -Where an advance stop-line (ASL) is provided, the intervisibility zone shall be measured from a point 2.5m behind the cyclists' stop-line.			✓
7.5.1 - Where a staggered pedestrian crossing is provided, the section of the crossing immediately adjacent to the junction should be included in the junction intervisibility zone.			✓
7.6 - No substantial fixed obstructions shall be located within the intervisibility zone of new junctions.			✓
7.6.1 - No substantial fixed obstructions should be located within the intervisibility zone of existing junctions.	✓		
7.7 -At new junctions, the minimum width of straight ahead lanes shall be 3.0 metres.			✓

7.8 - At existing junctions, the minimum width of straight ahead lanes shall satisfy one of the following: 1) 3.0 metres; or, 2) 2.5 metres where the 85th percentile approach speed exceeds 56 kph (35 mph) and/or it is necessary to make provision for HGVs; or, 3) 2.25 metres where the 85th percentile approach speed does not exceed 56 kph (35 mph) and it is not necessary to make provision for HGVs.	✓		
7.8.1 - The minimum width of the straight ahead lanes should be in accordance with 1) for all situations.	✓		
7.8.2 - At existing junctions, straight ahead lanes should only be reduced to 2.5m or less, if this allows the total number of lanes to be increased.			✓
7.8.3 - Straight ahead lanes should be a maximum of 3.65 metres wide at both new and existing junctions	✓		
7.8.4 - A minimum width of 4.0 metres should be provided between physical islands where cycle demand indicates a need.			✓
7.9 - Dedicated lanes for left or right turning traffic shall be a minimum of 3.0 metres wide.			✓
7.10 - Dedicated lanes for left-or right-turning traffic shall be developed with tapers of 1 in 5			✓
7.10.1 - On single carriageway roads, right-turn entry lanes may be accommodated by the provision of a hatched island			✓
7.10.2 - On single carriageway roads, hatched islands for right-turn lanes should be developed symmetrically from the centre line of the road with a minimum taper of 1 in 10 and a direct taper of 7.5 metres			✓
7.11 - The storage length shall be measured from the stop line to the furthest point upstream where the total number of entry lanes are at full width			✓
7.11.1 - The storage length of the left- and right-turn entry lanes should be designed: 1) to meet the capacity requirements of the junction; 2) to accommodate the longest queue of stopped traffic (to avoid turning traffic blocking the adjacent lane); and, 3) to avoid traffic being prevented from entering the left- or right-turn lane where there is a high proportion of straight ahead traffic queuing in the adjacent lane			✓

7.12 -Where it is necessary to reduce the numbers of lanes on an exit, this shall be carried out on either the nearside or the offside depending on the prevailing traffic flows on the exit arm			✓
7.12.1 - Where it is necessary to reduce the number of lanes on the exit arm, a single lane should be reduced over a distance of 100 metres starting at or beyond the limit of the junction intervisibility zone,			✓
7.13 - The design of a signal-controlled junction shall allow for the swept turning paths of the design vehicle where provision is to be made for large goods vehicles.	✓		
7.13.1 -The design of a signal-controlled junction should incorporate turning radii to cater for the swept paths of the worst case vehicle that can be reasonably expected to use the junction on a frequent basis.	✓		
7.14 -Where provision is to be made for large goods vehicles, the values for corner radii and associated tapers shall be the same as for a priority junction			✓
7.14.1 - Where no provision is to be made for large goods vehicles, the minimum corner radii should be the same as for a priority junctions			✓
7.14.2 - Stop-lines on adjacent entry lanes should not be staggered.			✓
7.15 - The nosing of central reserves and pedestrian refuges shall be set back a minimum distance of 1.5 metres from the edge of carriageway of the intersecting road.			✓
7.15.1 - Pedestrian crossings and any associated refuges should be located beyond the limits of the junction radii to minimise crossing distance.			✓
7.16 -A minimum clearance of 450 mm shall be provided between the edge of carriageway and any street furniture	✓		
7.17 -Traffic islands shall be provided to separate uncontrolled traffic from controlled traffic where left-turn slip lanes are provided.			✓
7.17.1 - Traffic islands may be provided to separate two independently controlled lanes of traffic on the same entry			✓
7.17.2 - Left-turn slip lanes may be signal-controlled or uncontrolled			✓

7.17.3 -A left-turn slip lane should be provided where: 1) the left-turn traffic movement is high; 2) left-turn manoeuvres for large goods vehicles need to be facilitated; 3) delay for left-turn vehicles would otherwise be significant; 4) left-turn traffic capacity requirements would extend the green time required for the straight ahead traffic movement phase			✓
7.17.4 - A single pedestrian crossing route through a signal-controlled junction should not include a mix of controlled and uncontrolled crossing points.			✓
7.18 - On roads with a design speed of 85 kph or higher, right turning lane(s) shall be separately signalled and segregated from the adjacent ahead-only lane(s) by a traffic island.			✓
7.18.1 - The central reserves on the major road may be offset to encourage right turning traffic to pass in front rather than behind each other.			✓
7.18.2 - Where the 85th percentile approach speed is greater than 72 kph (45 mph), right-turns should be separately signalled.			✓
7.19 - The controller cabinet shall not be situated such that it causes either physical or visual obstruction to road users and pedestrians	✓		
7.19.1 - The controller cabinet should be positioned to allow visibility from the controller cabinet to the signal head and stop-line for each junction arm.	✓		