Interim Advice Note No. 044

Maximizing Parking at T-Junctions in Urban local roads of residential areas Revision No. 0

ADVICE

This Interim Advice Note provides information and guidelines on maximizing the parking provision across the T-Junctions in urban local roads of residential areas. This document must be read in conjunction with the:

- Qatar Highway Design Manual (QHDM) 2015
- Qatar Pedestrian Crossing Manual (QPCM)

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Circulation:	**Ashghal Departments, Contractors, Supervision Consultants, Design Consultants.**
Application:	This Interim Advice Note (IAN) applies with immediate effect from the date of approval

0	April 2021	Issued for All Relevant Infrastructure Projects	AV	AO	TT	MOD
Rev	**Date**	**Reason For Issue**	**Author**	**Chk**	**QA/QC**	**App**

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1. Foreword

1.1 Interim Advice Notes (IANs) may be issued by Ashghal from time to time. They define specific requirements for works on Ashghal projects only, subject to any specific implementation instructions contained within each IAN.

1.2 Whilst IANs shall be read in conjunction with the Qatar Highway Design Manual (QHDM), the Qatar Traffic Control Manual (QTCM), MOTC Qatar Pedestrian Crossing Manual (QPCM) and the Qatar Construction Specifications (QCS), and may incorporate amendments or additions to these documents, they are not official updates to the QHDM, QTCM, QCS or any other standards.

1.3 Ashghal directs which IANs shall be applied to its projects on a case by case basis. Where it is agreed that the guidance contained within a particular IAN is not to be incorporated on a particular project (e.g. physical constraints make implementation prohibitive in terms of land use, cost impact or time delay), a departure from standard shall be applied for by the relevant Consultant / Contractor.

1.4 IANs are generally based on international standards and industry best practice and may include modifications to such standards in order to suit Qatar conditions. Their purpose is to fill gaps in existing Qatar standards where relevant guidance is missing and/or provide higher standards in line with current, international best practice.

1.5 The IANs specify Ashghal's requirements in the interim until such time as the current Qatar standards (such as QHDM, QTCM, etc.) are updated. These requirements may be incorporated into future updates of the QHDM, QTCM or QCS, however this cannot be guaranteed. Therefore, third parties who are not engaged on Ashghal projects make use of Ashghal IANs at their own risk.

1.6 All IANs are owned, controlled and updated as necessary by Ashghal. All technical queries relating to IANs should be directed to Ashghal's Manager of the Designs Department, Infrastructure Affairs.

Signed on behalf of the Designs Department:

Abdulla Ahin A A Mohd

Designs Department Manager

Design Department
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2. Ashghal Interim Advice Note (IAN) – Feedback Form

Ashghal's IANs represent the product of consideration of international standards and best practice against what would work most appropriately for Qatar. However, it is possible that not all issues have been considered, or that there are errors or inconsistencies in an IAN.

If you identify any such issues, it would be appreciated if you could let us know so that amendments can be incorporated into the next revision. Similarly, we would be pleased to receive any general comments you may wish to make. Please use the form below for noting any items that you wish to raise.

Please complete all fields necessary to identify the relevant item			
IAN title:			
IAN number:		Appendix letter:	
Page number:		Table number:	
Paragraph number:		Figure number:	
Description comment: Please continue on a separate sheet if required:			
Your name and contact details (optional):			
Name:		Telephone:	
Organisation:		Email:	
Position:		Address:	

Please email the completed form to:

Abdulla Ahin AA Mohd
Manager of the Designs Department
Designs Department
Public Works Authority

aahin@ashghal.gov.qa

We cannot acknowledge every response, but we thank you for contributions. Those contributions which bring new issues to our attention will ensure that the IANs will continue to assist in improving quality on Ashghal's infrastructure projects.

3. Introduction

This Interim Advice Note takes immediate effect and shall be read in conjunction with the Qatar Highway Design Manual (QHDM) 2015.

4. Background

This Interim Advice Note was issued due to the following reasons:

4.1 Very high demand for On-Street Parking in the Residential Areas warrants to maximize the parking arrangement on urban local roads.

4.2 Most of Qatar's households has one or more school-going children and are significantly being transported by School Buses.

4.3 Garbage trucks, water and other online shopping delivery vehicles reach numerous households on a daily basis and require a turning radius of more than 6 m.

4.4 The majority of the urban local roads are being designed with a 3.3 m lane width. It usually helps to restrict the speed but makes it difficult for the School bus / SU09 vehicle types to manoeuvre at the junctions with a 6 m corner radius. While taking turning, the vehicle path overlaps with the opposite lane, leading to waiting time and causes delays during the peak hour.

4.5 The MoTC has raised concerns using 6 m corner radii in numerous projects and adopted 10 m corner radii in the Concept Design Projects.

4.6 Damages are being caused to kerbs and other street furniture on the 6 m corner radii due to exceptional movement of the emergency service/fire truck / large vehicles in the urban local roads.

5. Withdrawn / Amended Standard

5.1 This Interim Advice Note (IAN) shall take immediate effect and supersedes/supplements the following:

- The following relevant subsections of the Qatar Highway Design Manual (QHDM) 2015:
    - Volume 1 – Part 3 Road Design Element
        - 6. Cross-Section Elements
            - 6.2 Design Requirements
                - **6.2.8 Parking Bays and lanes**
    - Volume 1 – Part 6 Design for Priority Intersections
        - 4. Design Controls for Priority Intersections
            - **4.7 Visibility**
    - Volume 1 – Part 6 Design for Priority Intersections
        - 5. Geometric Design Details for Priority Intersections
            - 5.1 Corner radii
                - **5.1.1. T-Intersection Corner Radii**

6. Implementation

6.1 This IAN shall be implemented with immediate effect on projects as follows:

- All Ashghal infrastructure projects in the design stage (before the completion of the Detailed Design),
- Relevant Ashghal Design & Build projects,
    - All Ashghal infrastructure projects in the tender stage (changes to be incorporated in Shop Drawings).

6.2 Ashghal infrastructure projects in the construction stage shall be reviewed by the Supervision Consultant and Contractor, and the implications of the adoption of this Interim Advice Note discussed with the respective Ashghal's Project Manager. This shall include an assessment on the current design to determine whether it complies with this Interim Advice Note and the practicalities of modifying the design and construction in order to achieve compliance.

6.3 The only exceptions are:

- Projects already in the advanced construction stage, where a significant portion of construction and procurement has already occurred, and design modification would not be economic or practicable.

6.4 If in doubt, Consultants / Contractors should seek guidance from their respective Ashghal Project Manager or the Engineer on a scheme-specific basis.

7. Disclaimer

This Interim Advice Note and its recommendations or directions have been provided for application on Ashghal's infrastructure projects within Qatar only, and they are not warranted as suitable for use on other roads, highways or infrastructure with Qatar or elsewhere. Should any third party, consultant or contractor choose to adopt this Interim Advice Note for purposes other than Ashghal's infrastructure projects, they shall do so at their own risk.

8. Amendments to the Qatar Highway Design Manual (QHDM) 2015

The following additions are related to:

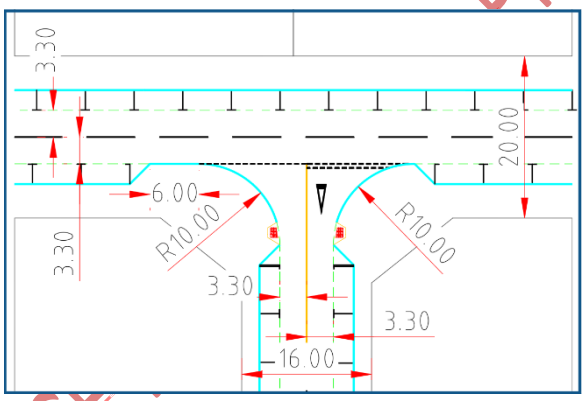
8.1 Volume 1 – Part 3 Road Design Element, 6. Cross Section Elements, 6.2 Design Requirements, 6.2.8 Parking Bays and lanes.

In details, in 6.2.8 Parking Bays and lanes, after the last paragraph, the following is added:

As an exception, if there is a strong requirement to maximize the parking provision across T Junctions three (3) Typical Details based on the Pedestrian volumes and connectivity requirements are proposed below, if the following conditions are applicable:

- Residential Areas.
- Urban local roads up to 20m wide corridors.
- Low Traffic Volume (i.e ADT <2000 VPD/ Traffic LOS – A, B, C).
- Running lane width 3.3m or less.

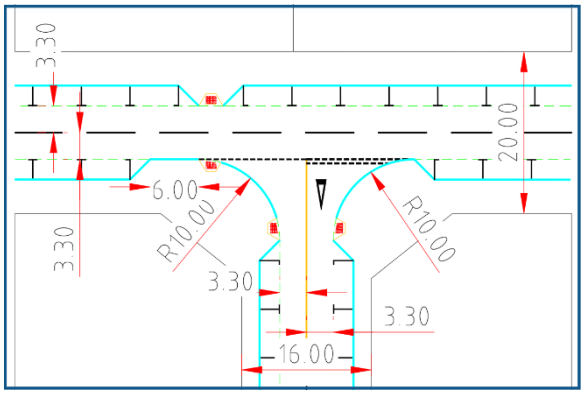
1. Type 1: 10m Radius T-junctions - Low Volume Pedestrian Crossings (Pedestrian LOS A, B as per QPCM Version 1.0, 2. Planning Guidance, 2.2 Pedestrian Crossing Planning Guidance Principles, 2.2.4 Level of Service, Table 2.1 and Table 2.3).



Type – 1

This is the most common one and can be applied where the pedestrian volume expected to be low and the traffic volume across the T-junction is low (i.e ADT <2000 VPD / Traffic LOS – A, B, C).

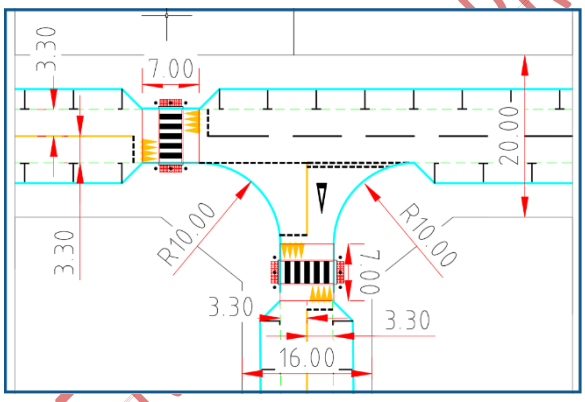
2. Type 2: 10m Radius T-junctions – Adjacent to Commercial / Mosques - Medium Volume Pedestrian Crossings. (Pedestrian LOS C, D as per QPCM Version 1.0, 2. Planning Guidance, 2.2 Pedestrian Crossing Planning Guidance Principles, 2.2.4 Level of Service, Table 2.1 and Table 2.3).



Type - 2

The suggested application is where the pedestrians' generation is expected and considered to be medium volume as per the existing / land use like adjacent to Commercial / Mosques or any other facilities that would generate pedestrians.

3. Type 3: 10m Radius T-junctions – Near the Access points of Commercial/Schools/Mosques – High Volume Pedestrian Crossings. (Pedestrian LOS E, F as per QPCM Version 1.0, 2. Planning Guidance, 2.2 Pedestrian Crossing Planning Guidance Principles, 2.2.4 Level of Service, Table 2.1 and Table 2.3).



Type – 3

The suggested application is where the pedestrians' generation is expected and considered to be High volume as per the existing / land use like Commercial / Schools / Mosques or any other facilities that would generate pedestrians.

Criteria

All three (3) proposed types will result in a reduced Visibility; therefore, should only be applied at T- Junctions where the operating speed is low i.e. <30Kph and where the traffic volume is low (i.e ADT <2000 VPD / Traffic LoS A,B, C).

This should be studied in detail in conjunction with Qatar Pedestrian Crossing Manual and agreed with the overseeing Engineer.

If there is a justifiable need for additional parking provision in a short link approach (i.e <200m) the 6m visibility gap in the Type 1 &2 can be eliminated or reduced to maximize the Parking / while rounding of the parking bays.

If there is a justifiable need for additional parking provision in a long link approach (i.e. more than 200m), where the operating traffic speed condition may exceed the posted speed, the 6m visibility gap in the Type 1 &2 can be reduced or eliminated to make necessary parking provisions if appropriate traffic calming measures are proposed to maintain a low operational speed.

In addition the Designer should consider the following design elements when designing one of the above mentioned Junction types:

- Soft Landscape restrictions close to the junction apply to enhance Visibility.
- Swept paths for the design vehicle to be checked and the street furniture to be designed with necessary clearances.
- Frequency of large vehicles to be considered.
- Traffic calming measures should be proposed on the long links major road, i.e. greater than 200m long, to keep the operational speed low.
- Visibility to proposed traffic signs to be checked.
- Designer to implement STOP condition on the side roads based on the visibility check

8.2 Volume 1 – Part 6 Design for Priority Intersections, 4. Design Controls for Priority Intersections, 4.7 Visibility

In details, in 4.7 Visibility, after the last paragraph and after Table 4.4 Minimum X and Y Visibility Distances from the Minor Road, the following is added:

In order to maximize the Parking in the low volume T- Junctions (i.e ADT <2000 VPD / Traffic LoS A,B, C) in the urban local roads (up to 20m wide corridors) in the residential areas where the Design speed is expected to be 30 Kph, the stopping sight distance can be applied as per the following table:

Table 4.4a Minimum X and Y Visibility Distances from the Minor Road[1],

Design Speed of T-Junction (Kph)	Y Distance (m)	Minimum X Distance (m)
30	35	2.5

8.3 Volume 1 – Part 6 Design for Priority Intersections, 5. Geometric Design Details for Priority Intersections, 5.1 Corner Radii, 5.1.1. T-Intersection Corner Radii

In details, in 5.1.1. T-Intersection Corner Radii, the first paragraph, is replaced as per the following:

For simple T-intersections without merge or diverge auxiliary lanes, and where no provision is to be made for larger trucks or buses, the minimum circular corner radius shall generally be 10 m in urban and rural areas.

The benefits that will derive from the use of a minimum circular corner radius of 10m (without taper) in the urban residential areas will be the following:

- Easy the turning of Refuse truck used for the Garbage collection and Minibus (SU-9) that is regularly used for schools within the urban streets of the residential areas. This also will benefit the exceptional use of vehicles like ambulance and fire trucks.
- Reduce the overlap on the opposite lanes, thus increases safety and also reduces the delays.
- Increase the capacity of the junction during the peak hour.

These minimum radii are appropriate on urban local roads and service roads where pedestrian mobility and safety is a priority.

[1] Shall only be used to maximize the Parking in the low volume T-Junctions on Urban local roads

9. Restrictions

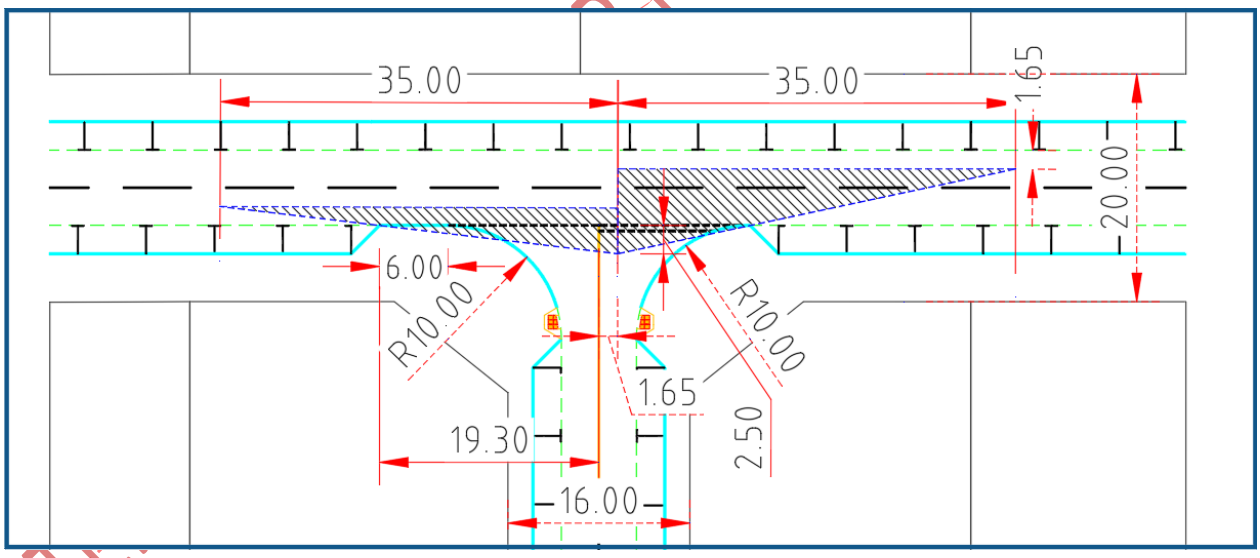
The Designer should refrain from using these three (3) typical details mentioned in clause 8.1 with reduced Visibility in the following scenarios:

1. T-junction where the operating speed expected to be high, i.e greater than 30 Kph.
2. Where the proposed lane width is 3.65m or more.
3. The approach of the access road gradient is downward more than 4%.
4. High traffic volume T-junctions where the ADT greater than 2000 VPD or Traffic LoS is D, E, F.
5. If not a Local Street based on the Road Hierarchy.
6. Where a high number of heavy vehicles/ long buses are expected to apply.
7. Key routes near pedestrian triggers.
8. Junction located on a curve that impacts SSD.
9. Any other situations where Designer deemed as necessary.

In the event of application in a restricted situation, the Designer should exercise the utmost care and apply necessary physical mitigation measures to reduce T-Junctions' operational speed to less than 30 Kph.

10. References

1. Achieved Visibility Envelope for 30 Kph Design Speed.



Visibility Envelope for 30 Kph Design Speed

2. MOTC comment on using 10m corner radii in the urban local roads in DS141 concept Design Approval.

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GOT/MOTC/23

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وزارة المواصلات والاتصالات
MINISTRY OF TRANSPORT AND COMMUNICATIONS

الرقم: ص.إ.ت.ن.ب_2019_1387 — التاريخ: 2019/06/20

المحترم

السيد/ مدير إدارة التصاميم
هيئة الأشغال العامة
الدوحة – قطر

تحية طيبة وبعد،،،

المشروع: تطوير الطرق والبنية التحتية في منطقة جنوب الخيسة
الموضوع: طلب الموافقة على مخطط تصميم الطرق (DS141)

تهديكم إدارة تخطيط النقل البري بوزارة المواصلات والاتصالات أطيب التحيات.

بالإشارة إلى كتابكم رقم (2019/0013301/5) الوارد إلينا بالرقم (2019/1505) بتاريخ 2019/06/17م بشأن الموضوع أعلاه (مرفق).

بعد الاطلاع ومراجعة المخطط العام للمشروع موضوع الكتاب، تجدون مرفق طيه ملاحظاتنا على التصميم المذكور أعلاه للأخذ بعين الاعتبار حين إعادة التقديم وذلك للمراجعة والاعتماد.

وتفضلوا بقبول فائق الاحترام والتقدير،،،

محمد عبد اللطيف إبداح
مدير إدارة تخطيط النقل البري

المرفقات: ما ذكر أعلاه
نسخة: مكتب وكيل الوزارة المساعد لشؤون النقل البري

Comments & Observations

Project No.: DS141

Project Title: Design of Roads and Infrastructure in Al Kheesa South

MOTC-LTPD offers the following few minor comments on the road layout submitted with PWA letter no. (2019/0013301/5) received at MOTC-LTPD under reference no. (1505/2019):

1- The four T-intersections (near the central commercial area) which are provided with raised tables, have 15m as corner radii while all other local roads have 6m as corner radii. Use 10m corner radii for all local streets.

2- There are some properties with access ramps at the proposed bus stops and at intersections. Please keep all accesses away from the bus stops and the intersections.

3- For long straight roads with multiple intersections, provide speed tables at appropriate spacing as a traffic calming measure.

3. The proposed typical details can achieve the Visibility is approximately 30m which is equivalent to the stopping sight distance for 30 Km/h design speed as per the Table 3.1 of AASHTO - Geometric Design Highway & Streets - 7th edition 2018.

Table 3-1. Stopping Sight Distance on Level Roadways

U.S. Customary					Metric				
Design Speed (mph)	Brake Reaction Distance (ft)	Braking Distance on Level (ft)	Stopping Sight Distance		Design Speed (km/h)	Brake Reaction Distance (m)	Braking Distance on Level (m)	Stopping Sight Distance	
			Calculated (ft)	Design (ft)				Calculated (m)	Design (m)
15	55.1	21.6	76.7	80	20	13.9	4.6	18.5	20
20	73.5	38.4	111.9	115	30	20.9	10.3	31.2	35
25	91.9	60.0	151.9	155	40	27.8	18.4	46.2	50
30	110.3	86.4	196.7	200	50	34.8	28.7	63.5	65
35	128.6	117.6	246.2	250	60	41.7	41.3	83.0	85
40	147.0	153.6	300.6	305	70	48.7	56.2	104.9	105
45	165.4	194.4	359.8	360	80	55.6	73.4	129.0	130
50	183.8	240.0	423.8	425	90	62.6	92.9	155.5	160
55	202.1	290.3	492.4	495	100	69.5	114.7	184.2	185
60	220.5	345.5	566.0	570	110	76.5	138.8	215.3	220
65	238.9	405.5	644.4	645	120	83.4	165.2	248.6	250
70	257.3	470.3	727.6	730	130	90.4	193.8	284.2	285
75	275.6	539.9	815.5	820	140	97.3	224.8	322.1	325
80	294.0	614.3	908.3	910					
85	313.5	693.5	1007.0	1010					

Note: Brake reaction distance predicated on a time of 2.5 s; deceleration rate of 11.2 ft/s^2 [3.4 m/s^2] used to determine calculated sight distance.

4. Figure 7-10 showing the parking arrangement with pedestrian crossing facility on an **Arterial street from AASHTO - Geometric Design Highway &** Streets - 7th edition.

Source: New York State DOT

Figure 7-10. Divided Arterial Street with Parking Lane

5. Figure 7-10 showing the parking arrangement starting from the Point of Tangent from the Curve on a T-Junction from AASHTO - Geometric Design Highway & Streets - 7th edition.

Source: Gresham-Smith Partners

Figure 1-7. Typical Street in the Urban Context