

### TRAFFICABILITY

#### INTRODUCTION

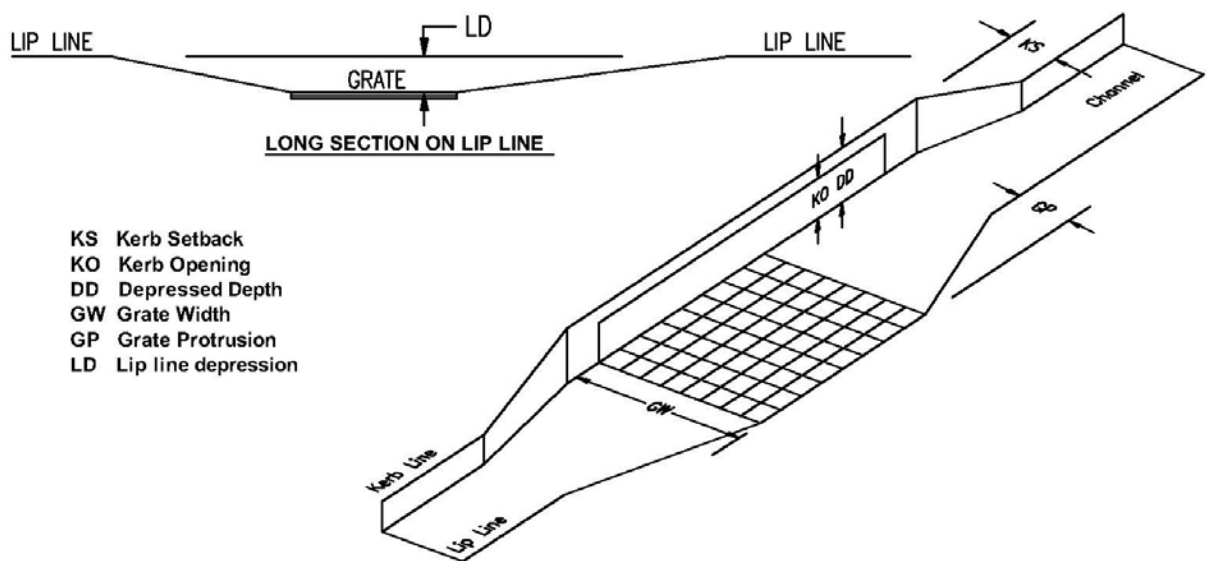
Stormwater inlets affect trafficability when grates protrude into the carriageway (GP) or when the kerb line is broken for lintel setback (KS). Setback is necessary for lip-in-line construction, when the width of the grate (GW) or in some designs grate plus wall of the box exceeds that of the channel.

#### THE KERB

The kerb is there primarily to protect pedestrians from encroachment of wheeled vehicles on to the footpath but also importantly to safely deflect wheels of straying vehicles back into the center of lane in which they are traveling. In so doing it serves the further essential function of defining the outer limits of the carriageway. In that respect it is an important aspect of carriageway trafficability for vehicles ranging from bicycles to trucks and buses. This is particularly so for collector roads, bus routes and arterial roads where maintenance of an intact kerb line is of greatest importance.



Trafficability is compromised by set back kerb



#### PROTRUSION AND DEPRESSION

Vehicles normally travel at a safe distance from the lip of the channel and modest grate intrusion does not affect trafficability. However where the lane width is tight and grate protrusion and/or lip line grate depression pronounced, vehicles will take avoidance action often with detrimental effect on traffic in their own and adjacent lanes. This may be minimized by reducing the grate width (GW) and reducing the grate depression (DD) and therefore the lip line depression (LD). In addition the safety of cyclists sharing the lane adjacent to the kerb must also be considered.



BCC inlet – large protrusion and depression

## CYCLISTS

Cyclists will veer around the grate if practicable but may need to cross it if forced over by traffic. The photographs show the Brisbane site where a Council Bicycle Officer, an experienced cyclist, was killed. According to the coroner he was squeezed for room by a truck and unable to negotiate the depression of the grate. The grate width (GW) is 676mm, the kerb opening (KO) is 140mm and the lip line depression (LD) some 50 mm.

The lower photo was taken after a template of the *Max Q Manning* grate was placed in its *Kerbway* design position. The template like the *Manning* is 510mm wide and the kerb opening (KO) is set to 90mm. The resulting lip line depression is reduced to 13mm. The white line to the right was marked to show the extent of the lane width taken up by the truck (as determined by the coroner). The space between the two white lines provides room, for a bitumen sealed lane wide enough for a cyclist, if a *Manning* grate been in place. Had there been less space than shown a cyclist could almost certainly have negotiated the 13mm lip line depression without undue difficulty.

## CRITICAL DIMENSIONS

Critical inlet dimensions that affect trafficability are summarized in Tables 1 and 2



Location of the incident, September 1999



Template of Manning grate

TABLE 1

Barrier Kerb with 300mm Channel - Kerb-in-line Inlets			
Description	IPWEA Dwg D-0060 Inlet	BCC UMS 331 Inlet	Kerbway Manning Inlet
Grate protrusion beyond lip line	376	376	210
Grate depression on the lip line	43	37	13

TABLE 2

Kerb Line Setback (KS) - Barrier Kerb 300mm Channel - Lip-in-line Inlets				
Description	IPWEA Dwg D-0060 Inlet	BCC UMS 331 Inlet	Drainway Plus Inlet	Kerbway Manning Inlet
Kerb setback - barrier 300 ch	460	376	310	210

## SETBACK KERB LINE

As shown in the photograph even the smaller setback of the *Manning* grate in a lip-in-line position restricts this bus to front door access. With barrier kerb it is worth considering the small grate protrusion and lip line depression of the *Manning* grate (Table 1) and to choose kerb-in-line construction rather than lip-in-line.

## CONCLUSION

From the point of view of trafficability, kerb in line construction is to be preferred with the *Manning* grate offering considerable advantages over the three other designs with which it is compared in Tables 1 and 2.

It is also worthy of note that:

1. The *Manning* grate which satisfies BTPR to AS 3996 was also certified bicycle friendly in riding tests by the Queensland Bicycle Institute.
2. *Manning* kerb-in-line inlets have equivalent capture to the IPWEA and BCC inlets.



Manning lip-in-line Inlet - 210mm kerb setback