Document 2

Table of Countermeasures

Table A	Intersection – Non-signaled	Document 2-1
Table B	Intersection – Signaled	Document 2-8
Table C	Uninterrupted flow – 2-lane road or less	Document 2-16
Table D	Uninterrupted flow – Multi-lane road	Document 2-22

Table A

Intersection – Non-signaled

Table A Intersection – Non-signaled

Accident occurrence process and causes			Type of accident concerned						Planning the accident countermeasures						
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Rear end	Right turn	Left turn	Other crossing	Crossing at crosswalk		Countermeasure goal	Counter-measures code table number	Countermeasure work type on the countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
1-1	Sharp curve before an intersection	Noticing intersection too late.	●	●	●		●		1	Alert drivers to the intersection and provide information in advance.	2102	Warning sign (201:Intersection ahead)			
									2	Reconstruct the road so drivers' attentiveness does not fall.	1301	Alignment improvement	• It improves the alignment before the intersection. • This is studied only in cases where large scale improvement is possible; land and budget can be obtained etc.		
									3	Control signals so vehicles can stop safely.	5101	Installing signals (normal signals)	• Its introduction is studied only when the intersection is still hard to see after the above countermeasures are taken.		
											5117	Controlling vehicle responsiveness and dilemma responsiveness			
		<Through vehicle> Notices the oncoming right-turn vehicle too late. <Right-turn vehicle> Notices the oncoming through vehicle too late.			●				1	Control the movement of right-turn vehicles and through vehicles to keep them apart.	5101	Installing signals (normal signals)	• The two countermeasures should be implemented together. • This countermeasure should be aggressively implemented at intersections of multiple lane roads.		
											5102	Installing signals (arrow signals)			
2-7	Long steep downhill gradient	<Right turn vehicle> Misunderstands the behavior of the through vehicle.			●				1	Control the speed of through vehicles.	1601	Road surface indicators (road surface deceleration indicators)	• This countermeasure is implemented where drivers can stop safely after it alerts them to the intersection. (Countermeasure code 1601 is a road administrator's countermeasure, and 5221 is a Public safety commission's countermeasure.)		
											5221				
											5304	Speed warning display boards			
											2102	Warning sign (201:Intersection ahead)			
											1404	Improving pavement (level difference pavement)		(9)	Document 3-9
									2	Control the movement of right-turn vehicles and through vehicles to keep them apart.	5101	Installing signals (normal signals)	• The two countermeasures should be implemented together. • This countermeasure should be aggressively implemented at intersections of multiple lane roads.		
											5102	Installing signals (arrow signals)			
3-1	Crest	Notices intersection too late.	●	●	●		●	●	1	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers.	2102	Warning sign (201:Intersection ahead)	• This countermeasure is implemented where drivers can stop safely after it alerts them to the intersection.		
		<Through vehicle> Notices the oncoming right-turn vehicle too late. <Right-turn vehicle> Notices the oncoming through vehicle too late.			●				1	Control the movement of right-turn vehicles and through vehicles to keep them apart.	5101	Installing signals (normal signals)	• The two countermeasures should be implemented together. • This countermeasure should be aggressively implemented at intersections of multiple lane roads.		
											5102	Installing signals (arrow signals)			
									2	Control right turns by vehicles.	5003	Prohibiting travel outside a designated direction	• This is studied when countermeasure 1 cannot be taken. (countermeasure code 5003 is prohibition of right turns)		
											5009	Prohibiting U-turns			
4-5	Long straight section before an intersection	Notices intersection too late.	●						1	Alert drivers to the intersection	5016	Stopping before entering intersection			
											5212	Internally illuminated traffic signs	• Case where a stop before crossing sign is already installed		
											5222	Large signs and high-brightness signs			
											5224	Cantilever and gate type signs			
											5103	Installing signals (1 light flashing)	• For small intersections		
											1610	Intersection center indicator (intersection rivets)			
											1611	Intersection center indicator (self light-emitting intersection rivets)			
											2501	Roadside mirrors			
											1404	Improving pavement (level difference pavement)		(9)	Document 3-9
											2102	Warning sign (201:Intersection ahead)			
											1609	Intersection center indicator (cross, T-mark)			
											1603	Channelizing strip	• At a convergence (Countermeasure code 1603 is a road administrator s countermeasure, and 5217 is a Public safety commission's countermeasure.)		
											5217				
4-7	Long straight section before an intersection	<Right turn vehicle> Misunderstands the behavior of the oncoming through vehicle.			●				1	Control the speed of through vehicles	1601	Road surface indicators (road surface deceleration indicators)	• This countermeasure is implemented where drivers can stop safely after it alerts them to the intersection. (Countermeasure code 1601 is a road administrator's countermeasure, and 5221 is a Public safety commission's countermeasure.)		
											5221				
											5304	Speed warning display boards			
											1404	Improving pavement (level difference pavement)		(9)	Document 3-9
											2102	Warning sign (201:Intersection ahead)			
									2	Control the movement of right-turn vehicles and through vehicles to keep them apart.	5101	Installing signals (normal signals)	• The two countermeasures should be implemented together. • This countermeasure should be aggressively implemented at intersections of multiple lane roads.		
											5102	Installing signals (arrow signals)			

Accident occurrence process and causes			Type of accident concerned						Planning the accident countermeasures						
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Rear end	Right turn	Left turn	Other crossing	Crossing at crosswalk		Countermeasure goal	Counter-measures code table number	Countermeasure work type on the countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
5-2	Corner cut-off with large radius	Speed increases in the outlet of the intersection so surrounding sidewalks are easily overlooked.					●	●	1	Control the speed of moving vehicles.	1104	Alignment improvement (reducing cut-off corner diameter)	• The three countermeasures should be implemented together. • In a case where there is a crosswalk	(1)	Document 3-1
											5017	Stopping lane (moving it forward)			
											5037	Crosswalk (moving it forward)		(12)	Document 3-12
											5036	Crosswalk (new)	• In a case where there is a crosswalk		
6-14	Corner cut-off with small radius	<Right/left turn vehicles> It is easy to stop abruptly or decelerate on the main road when turning to the left or right.		●					1	Alert drivers.	2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	(Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
											5216				
									2	Encourage vehicles performing emergency stops or emergency deceleration to stop or decelerate outside the driving lanes	1109	Left turn lane (new)			
									3	Remove elements that cause emergency stops and deceleration and lane changes on the main road.	1103	Alignment improvement (increasing cut-off corner diameter)			
											1111	Installing left turn channelizing strip	• Countermeasure in a case where land can be obtained.		
7-1	Acute angle intersection	<Left turn vehicle> Visibility of the street around the left corner is poor	●				●		1	Restore the normal shape of the intersection (acute angle intersection)	1105	Alignment improvement (improving intersection angle)			
									2	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	(Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
											5216				
									3	Control the traffic to keep two vehicles or a vehicle and a pedestrian apart	5101	Installing signals (normal signals)			
											5110	Improvement of the signal phase (adding pedestrian phase)	• This should be studied along with the above countermeasures at locations with high pedestrian demand and locations with many people handicapped in traffic (children, elderly etc.).		
									4	Keep pedestrians out of the traffic	1711	Bollards	• This is studied at locations of frequent accidents caused by pedestrians entering traffic lanes.		
											1404	Improving pavement (level difference pavement)			
7-14	Acute angle intersection	<Right and left turn vehicles> It is easy to stop or decelerate abruptly on the main road when starting to turn left or right.		●					1	Remove elements that encourage vehicles to abruptly stop, decelerate, or change lanes on the road	1105	Alignment improvement (improving intersection angle)			
									2	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	(Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
											5216				
									3	Provide information about the shape of the intersection	2109	Guide traffic signs (108, 108-2: road ahead, direction, advance warnings)			
									4	Cause vehicles abruptly stopping or decelerating to stop or decelerate outside the traffic lanes on the main road	1109	Left turn lane (new)	• This is studied in cases where left turn traffic is heavy.		
											1107	Right turn lane (new)	• This is studied aggressively in cases where right turn traffic is heavy.		
											1108	Right turn lane (lengthening, widening)		(2)	Document 3-2
8-2	Obtuse angle intersection	<Left turn vehicle> Attention is inadequate because drivers turn left at high speed without slowing down.					●	●	1	Restore the normal shape of the intersection (acute angle intersection)	1105	Alignment improvement (improving intersection angle)			
									2	Control the speed of moving vehicles	1401	Coloring the inside of the intersection	• This countermeasure is implemented where drivers can stop safely after it alerts them to the intersection.		
											1402	Improving pavement (coloring the lanes)			
											1404	Improving pavement (level difference pavement)		(9)	Document 3-9
									3	Control the traffic to keep vehicles and pedestrians apart	5101	Installing signals (normal signals)	• This should be studied at locations with high pedestrian demand and locations with many people handicapped in traffic (children, elderly etc.).		
											5110	Improvement of the signal phase (adding pedestrian phase)			
9-2	Complexly shaped intersection	Drivers are distracted or inattentive.	●	●	●		●	●	1	Stabilize unstable driving courses inside the intersection	1604	Guide line	• This is studied in cases where the line of motion of the main traffic flow bends (Countermeasure code 1604 is a road administrator's countermeasure, and 5220 is a Public safety commission's countermeasure.)		
											5220				
											1207	Center median tip indicator (obstruction indicator light etc.)	• This is studied in cases where the line of motion of the main traffic flow bends • Cases where there is center median		
									2	Provide information about the shape of the intersection	2109	Guide traffic signs (108, 108-2: road ahead, direction, advance warnings)			
									3	Simplify the shape of the intersection	1105	Alignment improvement (improving intersection angle)			
											1106	Alignment improvement (others)			
									4	Simplify the flow of the traffic	5002	One way traffic	• This is applied to the direction with relatively low traffic volume.		

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9-14	Complexly shaped intersection	Drivers become confused about their course, abruptly slowing down or stopping, or changing lanes on the main road.		●					1	Stabilize unstable driving courses inside the intersection	1604	Guide line	• This is studied in cases where the line of motion of the main traffic flow bends. (Countermeasure code 1604 is a road administrator's countermeasure, and 5220 is a Public safety commission's countermeasure.)		
											5220				
											1207	Center median tip indicator (obstruction indicator light etc.)	• This is studied in cases where the line of motion of the main traffic flow bends. • Cases where there is center median		
									2	Provide information (traffic sign, signboard) in advance	2109	Guide traffic signs (108, 108-2: road ahead, direction, advance warnings)			
									3	Cause vehicles abruptly stopping or decelerating to stop or decelerate outside the traffic lanes on the main road	1109	Left turn lane (new)	• This is studied only in cases where there is heavy left turn traffic.		
											1107	Right turn lane (new)	• This is aggressively studied in cases where there is heavy right turn traffic.		
											1108	Right turn lane (lengthening, widening)		(2)	Document 3-2
									4	Remove elements that encourage vehicles to abruptly stop, decelerate, or change lanes on the road	1105	Alignment improvement (improving intersection angle)			
											1106	Alignment improvement (others)			
10-4	Drivers tend to drive fast in a large intersection	Drivers turn right by slipping through a gap with the oncoming lane among the multiple lanes.			●				1	Control the movement of right-turn vehicles and through vehicles to keep them apart	5101	Installing signals (normal signals)	• The two countermeasures should be implemented together. • This countermeasure should be aggressively implemented at intersections of multiple lane roads.		
											5102	Installing signals (arrow signals)			
11-13	Long crossing distance for pedestrians and bicycles	There are factors that encourage pedestrians to cross when it is dangerous.					●		1	Clearly indicate where people cross the road	5036	Crosswalk (new)			
											5101	Installing signals (normal signals)	• Implemented where there is heavy traffic.		
											5120	Pedestrian use lights			
13-5	Narrow major road	At locations where drivers must confirm safety and stop or decelerate, drivers cannot sense these needs.	●						1	Inform drivers of the intersection and that the road ahead is a major road	5016	Stopping before entering intersection			
											5212	Internally illuminated traffic signs	• Case where "Stop before entering" signs are already installed		
											5222	Large signs and high-brightness signs			
											5224	Cantilever and gate type signs			
											5103	Installing signals (1 light flashing)			
											1610	Intersection center indicator (intersection rivets)			
											1611	Intersection center indicator (self-light emitting intersection rivets)			
											2501	Roadside mirrors			
											1404	Improving pavement (level difference pavement)		(9)	Document 3-9
											2102	Warning sign (201:Intersection ahead)			
											1609	Intersection center indicator (cross, T-mark)			
											1603	Channelizing strip	• Case of a convergence (Countermeasure code 1603 is a road administrator's countermeasure, and 5217 is a Public safety commission's countermeasure.)		
											5217				
14-14	Changing lane operation (through lane changes to a left or right turn lane)	Confused about the traveling direction, drivers stop or decelerate abruptly or change lanes on the major road.		●					1	Provide information in advance	5215	Warning of lane use control			
15-2	A bicycle crossing zone at a location with a pedestrian crosswalk.	The pedestrian bridge causes drivers to mistakenly believe that cyclists do not cross the road here, so they are not attentive to cyclists in the bicycle crossing zone.		●					1	Modify the pedestrian bridge so cyclists can use it and close the bicycle crossing zone	1803	Improvement of grade-separated crossing facilities (installing a slope etc.)			
											2304	Pedestrian – cyclist use fence (to prevent crossing)			
									2	Arouse drivers' attention	2116	Signs and indicators not legally required (letters, symbols, arrows)	• "Watch out for bicycles crossing" (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
											5216				
									3	Control traffic to keep vehicles apart	5101	Installing signals (normal signals)	• Intersection with both grade-separated crossing facility and road level crossing facility (crosswalk). • This should be studied at locations with high pedestrian demand and locations with many people handicapped in traffic (children, elderly etc.).		
											5110	Improvement of the signal phase (adding pedestrian phase)			

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16-1	Dark intersection where pedestrians and parked vehicles are difficult to see	It is difficult to see pedestrians and parked cars.					●	●	1	Improve drivers' ability to see the intersection	2001	Road lighting (new)	• This is studied in the case of high nighttime accident rate.		
											2002	Road lighting (enlargement, moving)			
									2	Control traffic to keep vehicles and pedestrians apart	5101	Installing signals (normal signals)	• This should be studied at locations with high pedestrian demand and ocations with many people handicapped in traffic (children, elderly etc.)		
											5110	Improvement of the signal phase (adding pedestrian phase)			
									3	Separate lines of motion of vehicles and pedestrians on different levels	1801	Constructing grade-separated crossing (pedestrian bridge, pedestrian tunnel)	• Introduction of this measure should be studied only when the crossing pedestrian traffic is high.		
17-1	Poorly located and maintained trees etc. on the center median	<Right and left turn vehicles> It is difficult for drivers turning right or left to see oncoming through traffic and pedestrians crossing the road. <Through vehicles> It is difficult for drivers to see vehicles on the curve.	●	●	●		●	●	1	Remove elements that reduce drivers' ability to see the intersection	1305	Rearranging vegetation	• This is related to rear-end collisions on curves. • This is checked first at locations with a center median and vegetation.		
									2	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116	Signs and indicators not legally required (letters, symbols, arrows)	• This is related to rear-end collisions on curves. (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
											5216				
									3	Control traffic to keep vehicles apart	5101	Installing signals (normal signals)	• This is related to rear-end collisions on curves.		
											5110	Improvement of the signal phase (adding pedestrian phase)	• This should be studied at locations with high pedestrian demand and locations with many people handicapped in traffic (children, elderly etc.).		
18-1	Poorly located and maintained trees, signboards, etc. on the sidewalks	<Left turn vehicles> It is difficult for drivers turning left to see pedestrians entering the crosswalk. <Through vehicles> It is difficult for drivers to see vehicles on the curve.	●	●				●	1	Remove elements that reduce drivers' ability to see the intersection	1305	Rearranging vegetation	• This is related to rear-end collisions on curves.		
									2	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116	Signs and indicators not legally required (letters, symbols, arrows)	• This is related to rear-end collisions on curves. (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
											5216				
									3	Control traffic to keep vehicles apart	5101	Installing signals (normal signals)	• This is related to rear-end collisions on curves.		
											5110	Improvement of the signal phase (adding pedestrian phase)	• This should be studied at locations with high pedestrian demand and locations with many people handicapped in traffic (children, elderly etc.).		
19-2	Inappropriately located traffic signs and road surface indicators with unsuitable contents (unclear and complex)	Drivers become confused about the direction, becoming distracted and inattentive, resulting in them overlooking oncoming vehicles or pedestrians.	●	●	●		●	●	1	Revise complex indicator content	2111	Revising the content of traffic guidance signs (simplification etc.)	• The application of this countermeasures should be studied at continuous intersections.		
									2	Revise unclear indicator content	1606	Lines showing the sides, centers, and boundaries of traffic lanes (high brightness)	• This is studied in the case of high nighttime accident rate. (Countermeasure codes 1605 and 1606 are road administrator's countermeasures, and 5213 and 5225 are Public safety commission's countermeasures.)		
											5213	Road indicators (high brightness)			
											1605	Road surface indicators (enlarging, increasing brightness)			
											5225				
									3	Revise the location of traffic signs and road surface indicators	5215	Warning of lane use control	• These are installed before the intersection so that drivers can change course safely after checking their direction after countermeasures are taken.		
19-5	Inappropriately located traffic signs and road surface indicators with unsuitable contents (unclear and complex)	They do not notice the intersection in time.	●						1	Revise complex indicator content	2111	Revising the content of traffic guidance signs (simplification etc.)	• The application of this countermeasures should be studied at continuous intersections.		
19-14	Inappropriate locations and contents of signs and road surface indicators (unclear, complex)	Encourages emergency stopping, deceleration, and lane changing on the main road by drivers who are confused about their course		●					1	Revise the contents of complex indicators	2111	Revising the content of traffic guidance signs (simplification etc.)	• The application of this countermeasures should be studied at the location of continuous intersections.		
									2	Revise the contents of unclear indicators	1606	Lines showing the sides, centers, and boundaries of traffic lanes (high brightness)	• This is installed before the intersection so that drivers can change their course safely after checking their course direction based on this countermeasure. (Countermeasure codes 1605 and 1606 are road administrator's countermeasures, and 5213 and 5225 are Public safety commission's countermeasures.)		
											5213	Road indicators (high brightness)			
											1605	Road surface indicators (enlarging, increasing brightness)			
											5225				
											5215	Warning of lane use control			
20-1	Bridge piers and other structures	Lowers drivers' ability to see oncoming through vehicles and pedestrians	●		●		●	●	1	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	5216	Signs and indicators not legally required (letters, symbols, arrows, etc.)			
									2	Control the movement of vehicles to keep them apart	5101	Installing signals (normal signals)	• This should be studied along with the above countermeasures at locations with high pedestrian demand and locations with many people handicapped in traffic (children, elderly etc.)		
											5110	Improvement of the signal phase (adding a pedestrian phase)			

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21-4	Same lanes used for right and left turn vehicles and for through vehicles	Vehicles waiting to turn left or right turn when it is dangerous to do so, because they are blocking the progress of through vehicles that are following them.			●				1	Separate right-turn and left-turn vehicles from following through vehicles to prevent dangerous right and left turns	1109	Left turn lane (new)	• This is studied only when there is heavy left turn traffic.		
											5038	Crosswalk (set back)	• One vehicle stopping space is placed before the crosswalk around the left corner. • This is studied in a case where a vehicle turning left obstructs a following through vehicle because a pedestrian or pedestrians are crossing in the crosswalk.		
											1107	Right turn lane (new)	• This is studied aggressively in a case where there is right turn traffic.		
											1108	Right turn lane (lengthening, widening)		(2)	Document 3-2
									2	Control the movement of right-turn vehicles and through vehicles to keep them apart	5101	Installing signals (normal signals)	• The two countermeasures should be implemented together.		
											5102	Installing signals (arrow signals)	• This countermeasure should be aggressively implemented at intersections of multiple lane roads.		
									3	Control traffic to keep vehicles and pedestrians apart	5101	Installing signals (normal signals)	• This should be studied along with the above countermeasures at locations with high pedestrian demand and locations with many people handicapped in traffic (children, elderly etc.)		
											5110	Improvement of the signal phase (adding pedestrian phase)			
21-14	Same lanes used for right and left turn vehicles and for through vehicles	Vehicles waiting to turn left or right block the progress of through traffic that is following them, causing drivers to abruptly stop, decelerate, or change lanes.		●					1	Separate right and left turn vehicles from through vehicles	1107	Right turn lane (new)	• This is studied aggressively in a case where there is right turn traffic.		
											1109	Left turn lane (new)	• This is studied only in a case where left turn traffic is heavy.		
											5101	Installing signals (normal signals)	• This is studied in a case where there are left and right turn lanes, but vehicles stray out of these lanes into the main road obstructing through vehicles.		
											5102	Installing signals (arrow signals)			
											1108	Right turn lane (lengthening, widening)	• This is studied in a case where there are left and right turn lanes, but vehicles stray out of these lanes into the main road obstructing through vehicles	(2)	Document 3-2
											1110	Left turn lane (lengthening, widening)	• This is studied in a case where "adjusting the green signal time" cannot resolve the problem.		
22-14	Vehicles turning right or left leave the right and left turning lanes	Vehicles waiting to turn left or right block the progress of following through traffic, causing drivers to abruptly stop, decelerate, or change lanes.		●					1	Guarantee that right and left turn lanes are long enough to hold left and right turn vehicle demand	1110	Left turn lane (lengthening, widening)	• This is studied only in a case where left turn traffic is heavy.		
											1108	Right turn lane (lengthening, widening)	• This is studied aggressively in a case where there is right turn traffic.	(2)	Document 3-2
23-1	Oncoming right turn vehicles stopping at inappropriate locations	<Right turn vehicle> Driver does not notice oncoming vehicles on time.			●				1	Control the movement of right-turn vehicles and through vehicles to keep them apart	5101	Installing signals (normal signals)	• This countermeasure should be aggressively implemented at intersections of multi-lane roads.		
											5102	Installing signals (arrow signals)			
									2	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	(Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
											5216				
24-1	Obstructions to vision on the road sides (buildings, walls, etc.)	Obstructs drivers' view.	●	●			●	●	1	Remove elements that obstruct drivers view	3104	Setting back roadside facilities and buildings	• Case where rear-end collisions occur where there is a curve before an intersection.		
											1304	Removal of obstructions (facilities, signboards)			
									2	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	• Case where rear-end collisions occur where there is a curve before an intersection. (Countermeasure code 2116 is a road administrator's countermeasure and 5216 is a Public safety commission's countermeasure.)		
											5216				
									3	Control traffic to keep vehicles and pedestrians apart	5101	Installing signals (normal signals)	• The two countermeasures should be implemented together. • Case where rear-end collisions occur where there is a curve before an intersection.		
											5110	Improvement of the signal phase (adding a pedestrian phase)	• This should be studied along with the above countermeasures at locations with high pedestrian demand and locations with many people handicapped in traffic (children, elderly etc.)		
25-1	Rows of bright structures lining the roadway	Obstructs drivers' view.					●	●	1	Control traffic to keep vehicles and pedestrians apart	5101	Installing signals (normal signals)	• The two countermeasures should be implemented together.		
											5124	Direction control type signal lights	• This should be studied along with the above countermeasures at locations with high pedestrian demand and locations with many people handicapped in traffic (children, elderly etc.)		
26-2	Facilities that distract drivers	Drivers are distracted or inattentive.	●		●		●	●	1	Arouse attentiveness	2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	• "Be careful to look to the side" (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
											5216				
26-14	Facilities that distract drivers.	Drivers abruptly stop or decelerate on the main road when they are distracted by the facilities.		●					1	Arouse attentiveness	2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	• "Be careful to look to the side" (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
											5216				

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29-5	Driveways of facilities along the roadside approaching the intersection	Drivers are aware of the intersection, but they do not pay attention to exits from facilities before the intersection, colliding with emerging vehicles.	●						1	Change stopping locations to prevent cars from entering the main road before stop line	5018	Stopping line (pulled back)			
29-14	Roadside facility driveways exiting into the intersection	<Through vehicles> A driver traveling in the main road who intends to stop at the stop line of the intersection doesn't notice a vehicle emerging from a driveway before the intersection on time, and is forced to make an emergency stop, deceleration, or lane change. <Motorcycle following after a left turn> The driver of a vehicle thought he was turning left into the intersection, but turns left into a roadside driveway obstructing a motorcycle following his vehicle.		●		●			1	Move roadside facility driveways	3101	Concentrating facility entrances by moving them outside the main road			
									2	Arouse attentiveness	2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	• "Watch for Cars Entering the Road" (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
											5216				
									3	Control signals at roadside facility driveways	5101	Installing signals (normal signals)	• This is studied aggressively in a case where a driveway to a roadside facility is linked in a cross form to a T-shaped intersection		
30-2	Visibility reduced by sunlight in the morning and in the west	Drivers are inattentive, because they cannot confirm the intersection (or confirm it on time) because of the sunlight.	●	●					1	Arouse attentiveness	2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	(Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
											5216				
30-5	Visibility reduced by sunlight in the morning and in the west	Drivers are unaware of or cannot check the intersection because of the sunlight.	●						1	Alert drivers to the intersection	1404	Improving pavement (level difference pavement)	• This countermeasure is implemented where drivers can stop safely after it alerts them to the intersection.	(9)	Document 3-9
											1401	Coloring the inside of the intersection			
											1402	Improving pavement (coloring the lanes)		(7)	Document 3-7
31-14	Deteriorated road surface paving (ruts and cracks)	When a driver unexpectedly loses control of the steering wheel, the driver abruptly stops or decelerates on the main road.		●					1	Perform continuous road surface maintenance	1408	Road surface maintenance	• At locations of heavy traffic by large vehicles, it is necessary to perform continuous road surface indicator maintenance.		
32-14	Poor Drainage	When a driver unexpectedly loses control of the steering wheel, the driver abruptly stops or decelerates on the main road.		●					1	Remove elements that prevent control of vehicles	1405	Improving paving (drainage pavement)	• Drainage systems must be modified as necessary.	(8)	Document 3-8
											1408	Road surface maintenance			
									2	Give advance warning that it is easy to lose control	2106	Warning signs (209: Slippery)			
38-1	Congested main road	A driver's view of an oncoming motorcycle is obstructed.	●		●		●	●	1	Prevent weaving traffic	1501	Narrowing the shoulder			
38-13	Congested main road	Because pedestrians can easily cross congested lanes where vehicles are stopped, pedestrians are encouraged to cross the road.					●	●	1	Keep vehicles and pedestrians apart	5101	Installing signals (normal signals)	• The two countermeasures should be implemented together. • This should be studied at locations with high pedestrian demand and locations with many people handicapped in traffic (children, elderly etc.)		
											2304	Pedestrian – cyclist use fence (to prevent crossing)			
40-2	Adjoining intersections	A driver sees the signal on the adjoining intersection, failing to notice the first intersection.	●	●					1	Prevent drivers from noticing adjacent signaled intersections	5123	Signal lights indicating restriction on distance			
									2	Alert drivers to the intersection	1404	Improving pavement (level difference pavement)	• This countermeasure is implemented where drivers can stop safely after it alerts them to the intersection.		
40-5	Adjoining intersections	A driver is distracted by the adjacent intersection, failing to notice the intersection the driver should notice.	●					●	1	Prevent drivers from noticing adjacent signaled intersections	5123	Signal lights indicating restriction on distance			
									2	Alert drivers to the intersection	1404	Improving pavement (level difference pavement)	• This countermeasure is implemented where drivers can stop safely after it alerts them to the intersection.		
											2102	Warning signs (201:Intersection ahead)			
40-14	Adjoining intersections	Confused by the signal on the adjoining intersection, a driver stops at an intersection where it is not necessary to stop.		●					1	Prevent drivers from noticing adjacent signaled intersections	5123	Signal lights indicating restriction on distance			
									2	Alert drivers to the intersection	1404	Improving pavement (level difference pavement)	• This countermeasure is implemented where drivers can stop safely after it alerts them to the intersection.		
41-2	A railway crossing adjoining the intersection	Distracted by the adjacent railway crossing, a driver fails to notice the intersection the driver should notice.	●	●				●	1	Provide advance information about the locational relationship of the railway crossing and intersection	2102	Warning signs (201:Intersection ahead)			
											2109	Guide traffic signs (108, 108-2: road ahead, direction, advance warnings)			
									2	Control traffic by signals	5101	Installing signals (normal signals)	• The two countermeasures should be implemented together.		
											5115	Improving signal phase (operates linked to railway crossing)			
41-5	A railway crossing adjoining the intersection	Distracted by the adjacent railway crossing, a driver notices the intersection where he must stop too late, forcing him to abruptly stop or decelerate.	●						1	Provide advance information about the locational relationship of the railway crossing and intersection	2102	Warning signs (201:Intersection ahead)			
											2109	Guide traffic signs (108, 108-2: road ahead, direction, advance warnings)			
									2	Control traffic by signals	5101	Installing signals (normal signals)	• The two countermeasures should be implemented together.		
											5115	Improving signal phase (operates linked to railway crossing)			

Accident occurrence process and causes			Type of accident concerned						Planning the accident countermeasures						
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Rear end	Right turn	Left turn	Other crossing	Crossing at crosswalk		Countermeasure goal	Counter-measures code table number	Countermeasure work type on the countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
41-14	A railway crossing adjoining the intersection	Distracted by the adjacent railway crossing, a driver stops at an intersection where it is not necessary to stop.		●					1	Provide advance information about the locational relationship of the railway crossing and intersection	2102	Warning signs (201:Intersection ahead)			
											2109	Guide traffic signs (108, 108-2: road ahead, direction, advance warnings)			
									2	Control traffic by signals	5101	Installing signals (normal signals)	• The two countermeasures should be implemented together.		
											5115	Improving signal phase (operates linked to railway crossing)			
42-2	Crossing facilities that do not satisfy crossing demand	Because pedestrians cross at locations where drivers are unaware of the crossing, they are not careful about pedestrians.			●				1	Clearly indicate that there are pedestrians crossing	5036	Crosswalk (new)			
											2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	(Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
											5216				
									2	Make it easier for drivers to see pedestrians	2001	Road lighting (new)			
											2002	Road lighting (enlargement, moving)			
42-13	Crossing facilities that do not satisfy crossing demand	At a location where there is no crossing, pedestrians cross through gaps between vehicles.					●		1	Prevent pedestrians from crossing dangerously	5101	Installing signals (normal signals)	• The two countermeasures should be implemented together.		
											5120	Installing pedestrian use lights			
									2	Separate the lines of motion of the vehicle and pedestrian at different levels	1801	Constructing grade-separated crossing (pedestrian bridge, pedestrian tunnel)	• The introduction of this countermeasures should be studied only where there is heavy pedestrian traffic.		
43-2	Motorcycles and cyclists weaving through traffic	Weaving vehicles easily enter a driver's dead angle so he is not attentive to them.	●		●	●			1	Prohibit weaving traffic	1501	Narrowing the shoulder			
									2	Separate motorcycles from positions where left turn vehicles stop	5020	Two-step stop lines	• This should be implemented at locations where motorcycles etc. become entangled in vehicle traffic turning left immediately after a light turns green.		
44-1	On-street parking and stopped busses obstructing traffic movement	<Vehicles driving on the main road> It expands drivers' dead angle delaying their awareness of vehicles and pedestrians that that suddenly appear on the road. <Vehicle entering the main road and pedestrians crossing it> Drivers enter the main road while still unable to confirm vehicles on the main road.	●				●		1	Make parked cars park off the main road	2704	Bus bay			
											2703	Parking zone			
									2	Remove cars parked on the main road	5022	Prohibiting parking	• It is necessary (for a Public safety commission) to strength regulations (restrictions)		
44-14	On-street parking and stopped busses obstructing traffic movement	Cars parked or stopped busses that drivers on the main road are not very aware of cause vehicles on the main road to abruptly stop, decelerate, or change lanes.		●					1	Make parked cars park off the main road	2704	Bus bay			
											2703	Parking zone			
									2	Remove cars parked on the main road	5022	Prohibiting parking	• It is necessary (for a Public safety commission) to strength regulations (restrictions)		

Table B

Intersection – Signaled

Table B Intersection – Signaled

Accident occurrence process and causes			Type of accident concerned						Planning the accident countermeasures						
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Rear end	Right turn	Left turn	Other crossing	Crossing at crosswalk		Countermeasure goal	Counter-measures code table number	Countermeasure work type on the countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
1-1	Sharp curve before an intersection	Delayed awareness of the intersection	●	●	●		●		1	Alert drivers to the intersection and provide information in advance	2102	Warning sign (201:Intersection ahead)			
											5108	Advance warning light			
									2	Reconstruct the road so the drivers attentiveness does not fall	1301	Alignment improvement	• The alignment before the intersection is improved. • This is studied only in cases where large scale improvement is possible; land and budget can be obtained etc.		
									3	Control signals so vehicles can stop safely	5117	Controlling vehicle responsiveness and dilemma responsiveness	• This is studied only in cases where it is difficult to notice the intersection even after the above countermeasure has been implemented.		
		<Through vehicle> Driver's awareness of an oncoming right turn vehicle is delayed. <Right turn vehicle> Driver's awareness of an oncoming through vehicle is delayed.			●				1	Control the movement of right-turn vehicles and through vehicles to keep them apart	5114	Improving the signal phases (separating left or right turn from through traffic)	• This countermeasure should be aggressively implemented at intersections of multi-lane roads.		
											5102	Installing signals (arrow signals)			
2-7	Long steep downhill gradient	<Right turn vehicle> Driver misunderstands the behavior of the oncoming through vehicles.			●				1	Control the speed of through vehicles	1601	Road surface indicators (road surface deceleration indicators)	(Countermeasure code 1601 is a road administrator's countermeasure, and 5221 is a Public safety commission's countermeasure.)		
											5221				
											5304	Speed warning display boards			
											2105	Warning sign (208-2:Traffic signal ahead)			
											1404	Improving pavement (level difference pavement)		(9)	Document 3-9
									2	Control the movement of right-turn vehicles and through vehicles to keep them apart	5114	Improving the signal phases (separating left or right turn from through traffic)	• This countermeasure should be aggressively implemented at intersections of multi-lane roads.		
											5102	Installing signals (arrow signals)			
3-1	Crest	Delayed awareness of the intersection	●	●	●		●	●	1	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2105	Warning sign (208-2:Traffic signal ahead)	• This countermeasure is implemented where drivers can stop safely after it alerts them to the intersection.		
		<Through vehicle> Driver's awareness of an oncoming right turn vehicle is delayed. <Right turn vehicle> Driver's awareness of an oncoming through vehicle is delayed			●				1	Control the movement of right-turn vehicles and through vehicles to keep them apart	5114	Improving the signal phases (separating left or right turn from through traffic)	• This countermeasure should be aggressively implemented at intersections of multi-lane roads.		
											5102	Installing signals (arrow signals)			
									2	Control right turns by vehicles	5003	Prohibiting travel outside a designated direction	• This is studied when countermeasure 1 cannot be taken. (Countermeasure code 5003 is prohibiting right turns.)		
											5009	Prohibiting U-turns			
4-5	Long straight section before an intersection	Delayed awareness of the intersection	●						1	Alert drivers to the intersection	2105	Warning sign (208-2:Traffic signal ahead)			
											1404	Improving pavement (level difference pavement)		(9)	Document 3-9
											1401	Coloring the inside of the intersection	• Only the area inside the intersection is colored.		
											1402	Improving pavement (coloring lanes)		(7)	Document 3-7
									2	Control signals so vehicles can stop safely	5117	Controlling vehicle responsiveness and dilemma responsiveness			
4-7	Long straight section before an intersection	<Right turn vehicle> Driver misunderstands the behavior of the oncoming through vehicle.			●				1	Control the speed of through vehicles	1601	Road surface indicators (road surface deceleration indicators)	• This countermeasure is implemented where drivers can stop safely after it alerts them to the intersection. (Countermeasure code 1601 is a road administrator's countermeasure, and 5221 is a Public safety commission's countermeasure.)		
											5221				
											5304	Speed warning display boards			
											1404	Improving pavement (level difference pavement)		(9)	Document 3-9
											2105	Warning sign (208-2:Traffic signal ahead)			
									2	Control the movement of right-turn vehicles and through vehicles to keep them apart	5114	Improving the signal phases (separating left or right turn from through traffic)	• This countermeasure should be aggressively implemented at intersections of multi-lane roads.		
											5102	Installing signals (arrow signals)			
5-2	Corner cut-off with large radius	As vehicles accelerate out of the intersection, their drivers easily overlook nearby pedestrians.					●	●	1	Control the speed of moving vehicles	1104	Alignment improvement (reducing cut-off corner diameter)	• The three countermeasures should be implemented together.	(1)	Document 3-1
											5017	Stopping lane (moving it forward)			
											5037	Crosswalk (moving it forward)		(12)	Document 3-12
									2	Provide grade separation of the lines of motion of vehicles and pedestrians	1801	Constructing grade-separated crossing (pedestrian bridge, pedestrian tunnel)	• Introduction of this measure should be studied only when the pedestrian traffic is adequately high.		

Accident occurrence process and causes			Type of accident concerned						Planning the accident countermeasures							
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Rear end	Right turn	Left turn	Other crossing	Crossing at crosswalk		Countermeasure goal	Counter-measures code table number	Countermeasure work type on the countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
6-14	Corner cut-off with small radius	<Left and right turn vehicles> Drivers tend to abruptly stop or decelerate on the main road as they begin their left or right turn.		●					1	Alert drivers	2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	• Signs such as, "Be Careful about Rear-end Collisions with Cars Turning Right" are displayed. (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
											5216				
									2	Encourage vehicles performing emergency stops or emergency deceleration to stop or decelerate outside the driving lanes	1109	Left turn lane (new)	• This is studied only in the case of heavy left turn traffic.		
									3	Remove elements that cause emergency stops and deceleration and lane changes on the main road	1103	Alignment improvement (increasing cut-off corner diameter)			
											1111	Installing left turn channelizing strip			
7-1	Acute angle intersection	<Left turn vehicle> Visibility of the road on the left is reduced.	●				●		1	Change the shape of the intersection to a normal shape (right-angled intersection)	1105	Alignment improvement (improving intersection angle)			
									2	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	(Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
											5216				
									3	Control the movement of traffic to keep two vehicles or a vehicle and a pedestrian apart	5110	Improvement of the signal phase (adding pedestrian phase)	• This should be studied at locations with high pedestrian demand and locations with many people handicapped in traffic (children, elderly etc.)		
									4	Keep pedestrians out of traffic	1711	Bollards	• This is studied in cases of many accidents caused by pedestrians being entangled in vehicle traffic.		
											1404	Improving pavement (level difference pavement)			
7-14	Acute angle intersection	<Left and right turn vehicles> Drivers tend to abruptly stop or decelerate on the main road before turning right or left.		●					1	Remove elements that encourage vehicles to abruptly stop, decelerate, or change lanes on the main road	1105	Alignment improvement (improving intersection angle)			
									2	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	(Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
											5216				
									3	Provide information about the shape of the intersection	2109	Guide traffic signs (108, 108-2: road ahead, direction, advance warnings)			
									4	Cause vehicles abruptly stopping or decelerating to stop or decelerate outside the traffic lanes on the main road	1109	Left turn lane (new)	• This is studied only in cases where left turn traffic is heavy.		
											1107	Right turn lane (new)	• This is studied aggressively in cases where there is right turn traffic.		
											1108	Right turn lane (lengthening, widening)		(2)	Document 3-2
8-2	Obtuse angle intersection	<Left turn vehicles> They are inattentive, because they turn left at high speed without decelerating.					●	●	1	Restore the normal shape of the intersection (right-angle intersection)	1105	Alignment improvement (improving intersection angle)			
									2	Control the speed of moving vehicles	1404	Improving pavement (level difference pavement)	• This countermeasure is implemented where drivers can stop safely after it alerts them to the intersection	(9)	Document 3-9
											1401	Coloring the inside of the intersection			
											1402	Improving pavement (coloring the lanes)		(7)	Document 3-7
									3	Control the traffic to keep vehicles and pedestrians apart	5110	Improvement of the signal phase (adding pedestrian phase)	• This should be studied at locations with high pedestrian demand and locations with many people handicapped in traffic (children, elderly etc.).		
8-6	Obtuse angle intersection	<Left turn vehicles> They are inattentive, because they turn left at high speed without decelerating				●			1	Restore the normal shape of the intersection (right-angle intersection)	1105	Alignment improvement (improving intersection angle)			
									2	Control the speed of left turn vehicles	1404	Improving pavement (level difference pavement)	• This countermeasure is implemented where drivers can stop safely after it alerts them to the intersection.	(9)	Document 3-9
											1401	Coloring the inside of the intersection			
											1402	Improving pavement (coloring the lanes)		(7)	Document 3-7
9-2	Complexly shaped intersection	Drivers are distracted and inattentive.	●	●	●		●	●	1	Stabilize unstable driving courses inside the intersection	1604	Guide line	• This is studied in cases where the line of motion of the main traffic flow bends. (Countermeasure code 1604 is a road administrator's countermeasure, and 5220 is a Public safety commission's countermeasure.)		
											5220				
											1207	Center median tip indicator (obstruction indicator light etc.)	• This is studied in cases where the line of motion of the main traffic flow bends. • This is studied in cased where there is a center median.		
									2	Provide information about the shape of the intersection	2109	Guide traffic signs (108, 108-2: road ahead, direction, advance warnings)			
									3	Simplify the shape of the intersection	1105	Alignment improvement (improving intersection angle)			
											1106	Alignment improvement (others)			
									4	Simplify the flow of the traffic	5002	One way traffic	• This is applied in the direction of relatively light traffic.		

Accident occurrence process and causes			Type of accident concerned						Planning the accident countermeasures						
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Rear end	Right turn	Left turn	Other crossing	Crossing at crosswalk		Countermeasure goal	Counter-measures code table number	Countermeasure work type on the countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
9-14	Complexly shaped intersection	Drivers tend to become confused about their course, abruptly stopping, decelerating, or changing lanes on the main road.		●					1	Stabilize unstable driving courses inside the intersection	1604	Guide line	• This is studied in cases where the line of motion of the main traffic flow bends. (Countermeasure code 1604 is a road administrator's countermeasure, and 5220 is a Public safety commission's countermeasure.)		
											5220				
											1207	Center median tip indicator (obstruction indicator light etc.)	• This is studied in cases where the line of motion of the main traffic flow bends. • This is studied in cases where there is a center median.		
									2	Provide information (traffic sign, signboard) in advance	2109	Guide traffic signs (108, 108-2: road ahead, direction, advance warnings)			
									3	Cause vehicles abruptly stopping or decelerating to stop or decelerate outside the traffic lanes on the main road	1109	Left turn lane (new)	• This is studied only in cases where there is heavy left turn traffic.		
											1107	Right turn lane (new)	• This is studied aggressively in cases where there is right turn traffic.		
											1108	Right turn lane (lengthening, widening)		(2)	Document 3-2
									4	Remove elements that encourage vehicles to abruptly stop, decelerate, or change lanes on the road	1105	Alignment improvement (improving intersection angle)			
											1106	Alignment improvement (others)			
10-2	Drivers tend to drive fast in a large intersection	As vehicles accelerate out of the intersection, their drivers easily overlook nearby pedestrians.						●	1	Reduce the size of the intersection to control the speed of moving vehicles	5037	Crosswalk (moving it forward)	• The two countermeasures should be implemented together.	(12)	Document 3-12
											5017	Stopping lane (moving it forward)			
									2	Control traffic to keep vehicles apart and keep vehicles and pedestrians apart	5110	Improvement of the signal phase (adding pedestrian phase)	• This should be studied at locations with high pedestrian demand and locations with many people handicapped in traffic (children, elderly etc.).		
									3	Provide grade separation of the lines of motion of vehicles and pedestrians	1801	Constructing grade-separated crossing (pedestrian bridge, pedestrian tunnel)	• Introduction of this measure should be studied when the crossing pedestrian traffic is high.		
10-4	Drivers tend to drive fast in a large intersection	Drivers tend to turn right dangerously through gaps between oncoming vehicles on multiple lanes.			●				1	Control the movement of right-turn vehicles and through vehicles to keep them apart	5114	Improving the signal phases (separating left or right turn from through traffic)	• This countermeasure should be aggressively implemented at intersections of multi-lane roads.		
											5102	Installing signals (arrow signals)			
11-13	Long crossing distance for pedestrians and bicycles	Because the signal waiting time is too long, pedestrians tend to try and cross dangerously when the lights change.						●	1	Reduce the crossing distance	5039	Crosswalk (making it right-angles to sidewalk)	• This is studied at intersection where roads intersect diagonally.		
											1113	Installing a traffic island		(3)	Document 3-3
									2	Reduce pedestrians' impatience in other ways	5121	Waiting time indicator and voice function equipped push button			
											1703	Expanding the sidewalk and waiting area	• This is studied in cases where the sidewalks are filled with pedestrians waiting for the light to change.		
									3	Provide grade separation of the lines of motion of vehicles and pedestrians	1801	Constructing grade-separated crossing (pedestrian bridge, pedestrian tunnel)	• Introduction of this measure should be studied when the crossing pedestrian traffic is high.		
12-1	Two or more right/left turn lanes	<Right turn vehicle> Drivers' awareness of oncoming through traffic is delayed.			●				1	Control traffic to keep vehicles and pedestrians apart	5114	Improving the signal phases (separating left or right turn from through traffic)	• This countermeasure should be aggressively implemented at intersections of multi-lane roads.		
											5102	Installing signals (arrow signals)			
14-14	Changing lane operation (through lane changes to a left or right turn lane)	Drivers become confused about their course, abruptly slowing down or stopping, or changing lanes on the main road.		●					1	Provide information in advance	5215	Warning of lane use control			
15-2	A bicycle crossing zone at a location with a pedestrian crosswalk.	The pedestrian bridge causes drivers to mistakenly believe that cyclists do not cross the road here, so they are not attentive to cyclists in the bicycle crossing zone.		●					1	Modify the pedestrian bridge so cyclists can use it and close the bicycle crossing zone	1803	Improvement of grade-separated crossing facilities (installing a slope etc.)	• Introduction of this measure should be studied only when the crossing pedestrian traffic is high.		
											2304	Pedestrian – cyclist use fence (to prevent crossing)	• The two countermeasures should be implemented together.		
									2	Arouse drivers' attention	2116	Signs and indicators not legally required (letters, symbols, arrows)	• Signs such as, "Beware of crossing bicycles" are studied. (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
											5216				
									3	Control traffic to keep vehicles apart	5110	Improvement of the signal phase (adding pedestrian phase)	• Intersection with both grade-separated crossing facility and road level crossing facility (crosswalk). • This should be studied at locations with high pedestrian demand and locations with many people handicapped in traffic (children, elderly etc.).		
16-1	Dark intersection where pedestrians and parked vehicles are difficult to see	It is difficult to see pedestrians and parked cars.					●	●	1	Improve drivers' view of the intersection	2001	Road lighting (new)	• This is studied in the case of high nighttime accident rate.		
											2002	Road lighting (enlargement, moving)			
									2	Control traffic to keep vehicles and pedestrians apart	5110	Improvement of the signal phase (adding pedestrian phase)			
									3	Separate lines of motion of vehicles and pedestrians on different levels	1801	Constructing grade-separated crossing (pedestrian bridge, pedestrian tunnel)	• Introduction of this measure should be studied only when the crossing pedestrian traffic is high.		

Accident occurrence process and causes			Type of accident concerned						Planning the accident countermeasures						
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Rear end	Right turn	Left turn	Other crossing	Crossing at crosswalk		Countermeasure goal	Counter-measures code table number	Countermeasure work type on the countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
17-1	Poorly located and maintained trees etc. on the center median	<Right and left turn vehicles> It is difficult for drivers turning right or left to see oncoming through traffic and pedestrians crossing the road. <Through vehicles> It is difficult for drivers to see vehicles ahead on the curve.	●	●	●		●	●	1	Remove elements that lower drivers' ability to see the intersection	1305	Rearranging vegetation	• This is related to rear-end collisions on curves. • This is checked first at locations with a center median and vegetation.		
									2	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116 5216	Signs and indicators not legally required (letters, symbols, arrows)	• This is related to rear-end collisions on curves. (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
									3	Control traffic to keep vehicles apart	5110	Improvement of the signal phase (adding pedestrian phase)	• This is related to rear-end collisions on curves. • This should be studied at locations with high pedestrian demand and locations with many people handicapped in traffic (children, elderly etc.).		
18-1	Poorly located and maintained vegetation, signboards, etc. on the sidewalks	<Left turn vehicles> It is difficult for drivers turning left to see pedestrians entering the crosswalk. <Through vehicles> It is difficult for drivers to see vehicles ahead on the curve.	●	●				●	1	Remove elements that lower drivers' ability to see the intersection	1305	Rearranging vegetation	• This is related to rear-end collisions on curves. • This is studied first at locations with a center median and vegetation.		
									2	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116 5216	Signs and indicators not legally required (letters, symbols, arrows)	• This is related to rear-end collisions on curves. (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
									3	Control traffic to keep vehicles apart	5110	Improvement of the signal phase (adding pedestrian phase)			
19-2	Inappropriately located traffic signs and road surface indicators with unsuitable contents (unclear and complex)	Drivers become confused about their course, becoming distracted and inattentive, resulting in them overlooking oncoming vehicles, pedestrians, or signals.	●	●	●		●	●	1	Revise complex indicator content	2111	Revising the content of traffic guidance signs (simplification etc.)	• The application of this countermeasures should be studied at continuous intersections.		
									2	Revise unclear indicator content	1606 5213 1605 5225	Lines showing the sides, centers, and boundaries of traffic lanes (high brightness) Road indicators (high brightness) Road surface indicators (enlarging, increasing brightness)	• This is installed before intersections so that drivers can change course safely after this countermeasures has let them confirm their course direction. (Countermeasure codes 1605 and 1606 are road administrator's countermeasures, and 5213 and 5225 are Public safety commission's countermeasures.)		
									3	Revise the location of traffic signs and road surface indicators	5215	Warning of lane use control	• These are installed before the intersection so that drivers can change course safely after checking their direction after the countermeasure is taken.		
19-5	Inappropriately located traffic signs and road surface indicators with unsuitable contents (unclear and complex)	They do not notice the intersection in time.	●						1	Revise complex indicator content	2111	Revising the content of traffic guidance signs (simplification etc.)	• The application of this countermeasure should be studied at continuous intersections.		
19-6	Inappropriately located traffic signs and road surface indicators with unsuitable contents (unclear and complex)	Drivers turn left abruptly.				●			1	Revise the location of signs and road surface indicators	5215	Warning of lane use control	• This is installed before the intersection so that drivers can change course safely after confirming their course thanks to this countermeasure.		
19-14	Inappropriately located traffic signs and road surface indicators with unsuitable contents (unclear and complex)	Drivers become confused about their course, abruptly slowing down or stopping, or changing lanes on the main road.		●					1	Revise complex indicator content	2111	Revising the content of traffic guidance signs (simplification etc.)	• The application of this countermeasure should be studied at continuous intersections.		
									2	Revise unclear indicator content	1606 5213 1605 5225	Lines showing the sides, centers, and boundaries of traffic lanes (high brightness) Road indicators (high brightness) Road surface indicators (enlarging, increasing brightness)	• This is installed before the intersection so that drivers can change course safely after confirming their course thanks to this countermeasure. (Countermeasure codes 1605 and 1606 are road administrator's countermeasures, and 5213 and 5225 are Public safety commission's countermeasures.)		
									3	Revise the location of traffic signs and road surface indicators	5215	Warning of lane use control	• This is installed before the intersection so that drivers can change course safely after confirming their course thanks to this countermeasure.		
20-1	Bridge piers and other structures	Visibility of oncoming vehicles and pedestrians is reduced.	●		●		●	●	1	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116 5216	Signs and indicators not legally required (letters, symbols, arrows, etc.)	(Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
									2	Control traffic to keep vehicles apart	5110	Improvement of the signal phase (adding a pedestrian phase)	• This should be studied at locations with high pedestrian demand and locations with many people handicapped in traffic (children, elderly etc.).		

Accident occurrence process and causes			Type of accident concerned						Planning the accident countermeasures							
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Rear end	Right turn	Left turn	Other crossing	Crossing at crosswalk		Countermeasure goal	Counter-measures code table number	Countermeasure work type on the countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
21-4	Same lanes used for right and left turn vehicles and for through vehicles	Vehicles waiting to turn left or right tend to make dangerous left or right turns, because they obstruct the movement of following cars.			●				1	Separate left and right turn vehicles from through vehicles that are following them to prevent dangerous left and right turns	1109	Left turn lane (new)	• This shall be studied only when there is heavy left turn traffic.		
											5038	Crosswalk (set back)	• One vehicle stopping space is placed before the crosswalk around the left corner. • This is studied in a case where one vehicle turning left obstructs a following through vehicle because a pedestrian or pedestrians are crossing in the crosswalk.		
											1107	Right turn lane (new)	• This is studied aggressively in a case where there is right turn traffic.		
											1108	Right turn lane (lengthening, widening)		(2)	Document 3-2
									2	Control the movement of right-turn vehicles and through vehicles to keep them apart.	5114	Improving the signal phases (separating left or right turn from through traffic)	• This countermeasure should be aggressively implemented at intersections of multiple lane roads.		
											5102	Installing signals (arrow signals)			
									3	Control traffic to keep vehicles and pedestrians apart.	5110	Improvement of the signal phase (adding pedestrian phase)	• This should be studied at locations with high pedestrian demand and locations with many people handicapped in traffic (children, elderly etc.).		
21-14	Same lanes used for right and left turn vehicles and for through vehicles	Vehicles waiting to turn left or right block the progress of following through traffic, causing drivers to abruptly stop, decelerate, or change lanes on the main road.		●					1	Separate right and left turn vehicles from through vehicles	1107	Right turn lane (new)	• This is studied aggressively in a case where there is right turn traffic.		
											1109	Left turn lane (new)	• This is studied only in a case where left turn traffic is heavy.		
											5102	Installing signals (arrow signals)	• This is studied in a case where there are left and right turn lanes, but vehicles stray out of these lanes into the main road, obstructing through vehicles.		
											5112	Improving the signal phase (adjusting green time)			
											1108	Right turn lane (lengthening, widening)	• This is studied in a case where there are left and right turn lanes, but vehicles stray out of these lanes into the main road, obstructing through vehicles • This is studied in a case where "adjusting the green signal time" cannot resolve the problem.	(2)	Document 3-2
											1110	Left turn lane (lengthening, widening)			
22-14	Vehicles turning right or left leave the right and left turning lanes	Vehicles waiting to turn left or right block the progress of following through traffic, causing drivers to abruptly stop, decelerate, or change lanes on the main road.		●					1	Guarantee that right and left turn lanes are long enough to hold left and right turn vehicle demand	1108	Right turn lane (lengthening, widening)	• This is studied aggressively in a case where there is right turn traffic.	(2)	Document 3-2
											1110	Left turn lane (lengthening, widening)	• This is studied only in a case where left turn traffic is heavy.		
23-1	Oncoming right turn vehicles stopping at inappropriate locations	<Right turn vehicle> Driver does not notice oncoming vehicles on time.			●				1	Control the movement of right-turn vehicles and through vehicles to keep them apart	5114	Improving the signal phases (separating left or right turn from through traffic)	• This countermeasure should be aggressively implemented at intersections of multiple lane roads.		
											5102	Installing signals (arrow signals)			
									2	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116 5216	Signs and indicators not legally required (letters, symbols, arrows)	• Signs such as "Beware of vehicles turning right" and "Beware of through vehicles" are installed. (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
24-1	Obstructions to vision on the road sides (buildings, walls, etc.)	Obstructs drivers' view.	●	●			●	●	1	Remove elements that obstruct drivers view	3104	Setting back roadside facilities and buildings	• This is studied in cases of rear-end collisions on curves before intersections.		
											1304	Removal of obstructions (facilities, signboards)			
									2	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116 5216	Signs and indicators not legally required (letters, symbols, arrows, etc.)	• This is studied in cases of rear-end collisions on curves before intersections. (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
									3	Control traffic to keep vehicles and pedestrians apart	5110	Improvement of the signal phase (adding a pedestrian phase)	• This is studied in cases of rear-end collisions on curves before intersections. • This should be studied at locations with high pedestrian demand and locations with many people handicapped in traffic (children, elderly etc.).		
25-1	Rows of bright structures lining the roadway	Obstructs drivers' view.					●	●	1	Control traffic to keep vehicles and pedestrians apart.	5110	Improvement of the signal phase (adding a pedestrian phase)	• This should be studied at locations with high pedestrian demand and locations with many people handicapped in traffic (children, elderly etc.).		
26-2	Facilities that distract drivers	Drivers are distracted or inattentive	●		●		●	●	1	Arouse attentiveness	2116 5216	Signs and indicators not legally required (letters, symbols, arrows, etc.)	• A sign, "Be careful to look to the side" is installed. (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
26-14	Facilities that distract drivers	Drivers abruptly stop or decelerate on the main road when they are distracted by the facilities.		●					1	Arouse attentiveness	2116 5216	Signs and indicators not legally required (letters, symbols, arrows, etc.)	• A sign, "Be careful to look to the side" is installed. (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		

Accident occurrence process and causes			Type of accident concerned						Planning the accident countermeasures						
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Rear end	Right turn	Left turn	Other crossing	Crossing at crosswalk		Countermeasure goal	Countermeasures code table number	Countermeasure work type on the countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
29-5	Driveways of facilities along the roadside enter the intersection	Drivers are aware of the intersection, but they do not pay attention to exits from facilities before the intersection, colliding with emerging vehicles.	●						1	Change stopping locations to prevent cars from entering the main road before the stop line	5018	Stopping line (pulled back)			
29-6	Driveways of facilities along the roadside enter the intersection	The driver of a vehicle thought he was turning left into the intersection, but turns left into a roadside driveway obstructing a motorcycle following his vehicle.				●			1	Change stopping locations to prevent cars from entering the main road before the stop line	5018	Stopping line (pulled back)			
29-14	Driveways of facilities along the roadside enter the intersection	<Through vehicles> A driver traveling in the main road who intends to stop at the stop line of the intersection doesn't notice a vehicle emerging from a driveway before the stop line on time, and is forced to make an emergency stop, deceleration, or lane change. <Motorcycle following after a left turn> The driver of a vehicle thought he was turning left into the intersection, but turns left into a roadside driveway obstructing a motorcycle following his vehicle.		●		●			1	*Move the roadside facility driveway*	3101	Concentrating facility entrances by moving them outside the main road			
									2	Arouse attentiveness	2116 5216	Signs and indicators not legally required (letters, symbols, arrows, etc.)	• Signs such as "Beware of emerging vehicles" are installed (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
									3	Control signals at roadside facility driveways	5101	Installing signals (normal signals)	• This is studied aggressively in a case where a driveway to a roadside facility is linked in a cross form to a T-shaped intersection.		
30-2	Visibility reduced by sunlight in the morning and in the west	A driver cannot confirm a signal (on time) because of sunlight, failing to drive in conformity with the signal (the driver may ignore the signal).	●	●					1	Improve the visibility of signal lights	5119	Replace signal lights with LED light sources			
30-5	Visibility reduced by sunlight in the morning and in the west	Drivers are unaware of or cannot check the intersection because of the sunlight.	●						1	Alert drivers to the intersection	1404	Improving pavement (level difference pavement)	• This countermeasure is implemented where drivers can stop safely after it alerts them to the intersection.	(9)	Document 3-9
											1401	Coloring the inside of the intersection	• Roadside conditions are considered because level difference pavement is noisy.		
											1402	Improving pavement (coloring the lanes)		(7)	Document 3-7
									2	Arouse attentiveness	2116 5216	Signs and indicators not legally required (letters, symbols, arrows, etc.)	(Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
31-14	Deteriorated road surface paving (ruts and cracks)	When a driver unexpectedly loses control of the steering wheel, the driver abruptly stops or decelerates on the main road.		●					1	Perform continuous road surface maintenance	1408	Road surface maintenance	• At locations of heavy traffic by large vehicles, it is necessary to perform continuous road surface indicator maintenance.		
32-14	Poor drainage	When a driver unexpectedly loses control of the steering wheel, the driver abruptly stops or decelerates on the main road.		●					1	Remove elements that prevent control of vehicles	1405	Improving paving (drainage pavement)	• Drainage systems must be modified as necessary.	(8)	Document 3-8
											1408	Road surface maintenance			
									2	Give advance warning that it is easy to lose control	2106	Warning signs (209: Slippery)			
33-1	Poorly located signals that are difficult to see	Drivers cannot confirm a signal (on time), failing to drive in conformity with the signal (the driver may ignore the signal).			●				1	Move or expand signals to improve their visibility	5107	Improve the location of signals			
											5106	Increase the number of signals	• When moving existing signals does not resolve the problem, increasing their number and installing warning signals are studied.		
											5108	Advance warning light			
											2105	Warning sign (208-2:Traffic signal ahead)			
									2	Improve the visibility of signal lights	5118	Enlarging signal lights		(11)	Document 3-11
33-2	Poorly located signals that are difficult to see	When a driver simultaneously sees signals in different phases, the driver is distracted and inattentive.	●	●				●	1	Prevent drivers from mistaking signals	5123	Signal lights indicating restriction on distance	• This is studied when there are continuous intersections.		
											5124	Direction control type signal lights	• This is studied in a case where a side road intersects and traffic on the parallel road is controlled by a different signal.		
33-5	Poorly located signals that are difficult to see	At a location where a driver must confirm safety, stop, and move slowly, the driver is unaware of these needs.	●						1	Move or expand signals to improve their visibility	5107	Improve the location of signals			
											5106	Increase the number of signals	• When moving existing signals does not resolve the problem, increasing their number and installing warning signals are studied.		
											5108	Advance warning light			
											2105	Warning sign (208-2:Traffic signal ahead)			
									2	Improve the visibility of signal lights	5118	Enlarging signal lights		(11)	Document 3-11
34-4	Short time available for forward movement	Because the green time or green arrow time is short, drivers advance or cut in dangerously.	●		●			●	1	Lengthen the time vehicles can move	5112	Improving the signal phase (adjusting green time)			
											5104	Installing signals (responsive type)	• This countermeasure can effectively allot the green time at the intersection of a road with heavy traffic and an extremely small road.		
									2	Increase the number of lanes	1504	Increasing the number of lanes (normal road)	• This countermeasure is studied if it is possible for the number of lanes in the entrances to the intersection to be the same as on the incoming side.		
											1505	Increasing the number of lanes (exclusive small-sized vehicle road)			
											1703	Expanding sidewalk waiting spaces	• This countermeasure is studied in a case where pedestrians waiting for a signal fill the sidewalk.		

Accident occurrence process and causes			Type of accident concerned						Planning the accident countermeasures						
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Rear end	Right turn	Left turn	Other crossing	Crossing at crosswalk		Countermeasure goal	Counter-measures code table number	*Countermeasure work type on the* countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
									3	Grade separate the lines of motion of vehicles	1101	Grade separated intersection (normal road)			
											1102	Grade separated intersection (exclusive small-sized vehicle road)			
34-13	Short time available for forward movement	Because the pedestrian green time is short, pedestrians cross dangerously.						●	1	Lengthen the time vehicles can move	5112	Improving the signal phase (adjusting *green time*)			
									2	Take other measures to prevent pedestrian impatience	5121	Waiting time indicator and voice function equipped push button			
									3	Grade separate the lines of motion of pedestrians and vehicles	1801	Constructing grade-separated crossing (pedestrian bridge, pedestrian tunnel)	• Introduction of this measure should be studied only when the crossing pedestrian traffic is high.		
35-4	Short clearance time	Many vehicles try to pass through the intersection as the signals change, resulting in them driving through dangerously.	●						1	Allow leeway when signals change	5113	Improving the signal phase (lengthening clearance time)			
									2	Reduce the size of the intersection	5037	Crosswalk (moving it forward)	• These two countermeasures should be implemented together. • In a case where left turn traffic is heavy, it is not a good countermeasure (because it encourages the situation in 21-14).	(12)	Document 3-12
											5017	Stopping lane (moving it forward)			
36-7	Signal phase operation is difficult to understand (complex, time differences)	Driver misunderstands the behavior of an oncoming through vehicle.			●				1	Control the movement of right-turn vehicles and through vehicles to keep them apart	5114	Improving the signal phases (separating left or right turn from through traffic)	• This countermeasure should be aggressively implemented at intersections of multiple lane roads.		
											5102	Installing signals (arrow signals)			
									2	Provide variable speed signal phases	5211	Auxiliary signs (time difference type signal phase)			
		Drivers are not careful about the intersection.	●					●	1	Restore normal signal phases	5111	Improving the signal phase (ending nighttime flashing)	• These two countermeasures should be implemented together.		
											5104	Installing signals (responsive type)			
37-4	Deceleration and stopping of right and left turn vehicles on main road	Vehicles waiting to turn left or right turn when it is dangerous to do so, because they are blocking the progress of through vehicles following them.						●	1	Separate left and right turn vehicles from through vehicles following them to prevent dangerous left and right turns	1109	Left turn lane (new)	• This is studied only in case where there is heavy left turn traffic.		
											5038	Crosswalk (set back)	• One vehicle stopping space is placed before the crosswalk around the left corner. • This is studied in a case where one vehicle turning left obstructs a following through vehicle because a pedestrian or pedestrians are crossing the crosswalk.		
											1107	Right turn lane (new)	• This is studied aggressively in a case where there is right turn traffic.		
											1108	Right turn lane (*lengthening, widening*)		(2)	Document 3-2
									2	Control traffic to keep vehicles apart	5114	Improving the signal phases (separating left or right turn from through traffic)	• This countermeasure should be aggressively implemented at intersections of multiple lane roads.		
											5102	Installing signals (arrow signals)			
38-1	Congested main road	Drivers' view of motorcycles weaving through traffic is obstructed.	●		●		●	●	1	Prevent weaving traffic	1501	Narrowing the shoulder			
38-13	Congested main road	Because pedestrians can easily cross congested lanes with stopped cars, the pedestrians try to cross.					●	●	1	Keep vehicles and pedestrians apart	2304	Pedestrian – cyclist use fence (to prevent crossing)			
											1801	Constructing grade-separated crossing (pedestrian bridge, pedestrian tunnel)	• Introduction of this measure should be studied only when the crossing pedestrian traffic is high.		
40-2	Adjoining intersections	A driver inadvertently sees the signal on an adjoining intersection, overlooking the signal the driver should observe	●	●					1	Prevent drivers from mistaking signals	5123	Signal lights indicating restriction on distance			
									2	Alert drivers to the intersection	1404	Improving pavement (level difference pavement)	• This countermeasure is implemented where drivers can stop safely after it alerts them to the intersection.	(9)	Document 3-9
									3	Provide advance information about a series of signaled intersections	2109	Guide traffic signs (108, 108-2: road ahead, direction, advance warnings)			
40-5	Adjoining intersections	Drivers are distracted by the adjacent intersection, failing to notice the intersection the drivers should notice.	●					●	1	Prevent drivers from mistaking signals	5123	Signal lights indicating restriction on distance			
									2	Alert drivers to the intersection	1404	Improving pavement (level difference pavement)	• This countermeasure is implemented where drivers can stop safely after it alerts them to the intersection.	(9)	Document 3-9
											2105	Warning sign (208-2:Traffic signal ahead)			
									3	Provide advance information about a series of signaled intersections	2109	Guide traffic signs (108, 108-2: road ahead, direction, advance warnings)			
40-14	Adjoining intersections	Confused by the signal on an adjoining intersection, drivers stop at an intersection where it is not necessary to stop.		●					1	Prevent drivers from mistaking signals	5123	Signal lights indicating restriction on distance			
									2	Alert drivers to the intersection	1404	Improving pavement (level difference pavement)	• This countermeasure is implemented where drivers can stop safely after it alerts them to the intersection.	(9)	Document 3-9
									3	Provide advance information about a series of signaled intersections	2109	Guide traffic signs (108, 108-2: road ahead, direction, advance warnings)			

Accident occurrence process and causes			Type of accident concerned						Planning the accident countermeasures						
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Rear end	Right turn	Left turn	Other crossing	Crossing at crosswalk		Countermeasure goal	Counter-measures code table number	Countermeasure work type on the countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
41-2	A railway crossing adjoining the intersection	Distracted by the adjacent railway crossing, a driver fails to notice the intersection the driver should notice.	●	●				●	1	Provide advance information about the relationship of the locations of the railway crossing and the signals	2105	Warning sign (208-2:Traffic signal ahead)			
											2109	Guide traffic signs (108, 108-2: road ahead, direction, advance warnings)			
									2	Link the railway crossing and intersection signals	5115	Improving signal phase (operates linked to railway crossing)	• This countermeasure should be introduced when an intersection with heavy traffic adjoins a railway crossing that is closed frequently.		
									3	Separate the lines of motion of vehicles and the lines of motions of vehicles and railway trains with railway crossings and plane intersections.	1101	Grade separated intersection (normal road)	• This is a radical countermeasure that should definitely be introduced if it is possible to obtain land and budget.		
											1102	Grade separated intersection (exclusive small-sized vehicle road)			
41-5	A railway crossing adjoining the intersection	Distracted by the adjacent railway crossing, a driver notices the intersection where he must stop too late, forcing him to abruptly stop or decelerate.	●						1	Provide advance information about the relationship of the locations of the railway crossing and the signals	2105	Warning sign (208-2:Traffic signal ahead)			
											2109	Guide traffic signs (108, 108-2: road ahead, direction, advance warnings)			
									2	Link the railway crossing and intersection signals	5115	Improving signal phase (operates linked to railway crossing)	• This countermeasure should be introduced when an intersection with heavy traffic adjoins a railway crossing that is closed frequently.		
									3	Separate the lines of motion of vehicles and the lines of motions of vehicles and railway trains with railway crossings and plane intersections.	1101	Grade separated intersection (normal road)	• This is a radical countermeasure that should definitely be introduced if it is possible to obtain land and budget.		
											1102	Grade separated intersection (exclusive small-sized vehicle road)			
41-14	A railway crossing adjoining the intersection	Distracted by the adjacent railway crossing, a driver stops at an intersection where it is not necessary to stop.		●					1	Provide advance information about the relationship of the locations of the railway crossing and the signals	2105	Warning sign (208-2:Traffic signal ahead)			
											2109	Guide traffic signs (108, 108-2: road ahead, direction, advance warnings)			
									2	Link the railway crossing and intersection signals	5115	Improving signal phase (operates linked to railway crossing)	• This countermeasure should be introduced when an intersection with heavy traffic adjoins a railway crossing that is closed frequently.		
									3	Separate the lines of motion of vehicles and the lines of motions of vehicles and railway trains with railway crossings and plane intersections	1101	Grade separated intersection (normal road)	• This is a radical countermeasure that should definitely be introduced if it is possible to obtain land and budget.		
											1102	Grade separated intersection (exclusive small-sized vehicle road)			
42-2	No crossing facilities at a location they are needed	Because pedestrians cross at locations where drivers are unaware of the crossing, they are not careful about pedestrians.			●				1	Clarify that pedestrians are crossing the road	5036	Crosswalk (new)			
											2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	(Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
											5216				
									2	Take measures so drivers see pedestrians more easily	2001	Road lighting (new)			
											2002	Road lighting (enlargement, moving)			
43-2	Motorcycles and cyclists weaving through traffic	Weaving traffic tends to be in a driver's dead angle so the driver does not notice it.	●		●	●			1	Prevent weaving traffic	1501	Narrowing the shoulder			
									2	Separate the stopping positions of motorcycles from left turn vehicles	5020	Two-step stop lines	• This should be implemented at locations where accidents occur frequently by vehicles entangled immediately after the green light in particular.		
44-1	On-street parking and stopped busses obstructing traffic movement	<Vehicle driving on the main road> The driver's dead angle widens delaying the driver's awareness of pedestrians and vehicles that appear unexpectedly. <Vehicle entering the main road, pedestrian crossing the road> The pedestrian enters (or crosses) the main road without being able to confirm if there are vehicles on the main road.	●				●		1	Cause stopped vehicles to stop outside the main road	2704	Bus bay			
											2703	Parking zone			
									2	Remove vehicles stopped on the main road	5022	Prohibiting parking	• It is necessary (for a Public safety commission) to strength regulations (restrictions)		
44-14	On-street parking and stopped busses obstructing traffic movement	Cars parked or stopped busses that drivers on the main road are not very aware of cause vehicles on the main road to abruptly stop, decelerate, or change lanes.		●					1	Cause stopped vehicles to stop outside the main road	2704	Bus bay			
											2703	Parking zone			
									2	Remove vehicles stopped on the main road	5022	Prohibiting parking	• It is necessary (for a Public safety commission) to strength regulations (restrictions)		

Table C

Uninterrupted flow – 2-lane road or less

Table C Uninterrupted flow – 2-lane road or less

Accident occurrence process and causes			Type of accident concerned								Planning the accident countermeasures						
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Head-on	Rear end	Right turn	Left turn	Other crossing	When changing course	Lane departure		Countermeasure goal	Counter-measures code table number	Countermeasure work type on the countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
1-1	Sharp curve	Visibility of vehicles ahead and pedestrians is poor.	●		●	●		●			1	Alert drivers to and provide information about conditions at locations where visibility is poor	2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	• This is studied in a case where there are obstructions inside a curve. (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
													5216				
											2	Construct roads that do not reduce a driver's ability to see the road ahead	1301	Alignment improvement			
1-10	Sharp curve	Drivers enter the oncoming lane to pass where it is difficult to confirm safety.		●							1	Take physical measures to prevent passing in the oncoming lane	1202	Center median (post cones)			
													1201	Center median (separation)			
											2	Add passing lanes	1506	Climbing lane, yield lane	• Its installation is studied for locations such as long rising slopes where there tends to be slow moving vehicles.		
													1507	Passing lane			
1-12	Sharp curve	Drivers enter a curve at high speed without confirming the alignment ahead on time.		●						●	1	Remove elements that make it difficult for drivers to confirm the alignment	1305	Rearranging vegetation	• This is studied in a case where there are obstructions inside a curve.		
													1304	Removal of obstructions (facilities, signboards)			
													3104	Setting back roadside facilities and buildings			
											2	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers and encourage deceleration	2103	Warning signs (202 – 206: bends, curves, winding road)	• This is studied in a case where there are obstructions inside a curve.		
													2202	Approaching oncoming vehicle indicator device	(Countermeasure code 2202 is a road administrator's countermeasure, and 5303 is a Public safety commission's countermeasure.) • Introduction of this measure should not be studied only when the oncoming traffic is high.		
													5303				
													2401	Visual guidance indicators (new)			
													2402	Visual guidance indicators (expansion, moving)			
													2404	Self-illuminated visual guidance indicators	• This is studied in a case where there are obstructions inside a curve. • This is studied in cases where nighttime accidents are particularly frequent.	(10)	Document 3-10
2-7	Long steep downhill gradient	<Right turn vehicle> Drivers misunderstand the behavior of oncoming through vehicles.				●					1	Control the speed of through vehicles	1404	Improving pavement (level difference pavement)		(9)	Document 3-9
													1402	Improving pavement (coloring the lanes)		(7)	Document 3-7
													1601	Road surface indicators (road surface deceleration indicators)	(Countermeasure code 1601 is a road administrator's countermeasure, and 5221 is a Public safety commission's countermeasure.)		
													5221				
											2	Prohibit right turns and right turn crossing	5003	Prohibiting travel outside a designated direction	• Its implementation should be studied along with the prohibition of right turns and vehicle crossing and the installation of post cones on center medians. (Countermeasure code 5003 is prohibition of right turns)		
													5007	Prohibiting vehicle crossing			
													1202	Center median (post cones)			
2-17	Long steep downhill gradient	<Passing vehicles> Drivers misunderstand the behavior of oncoming through vehicles.		●							1	Prohibit passing in the oncoming lane	5005	Prohibiting driving on the right side in order to pass a vehicle			
													5218	Road indicators (road rivets, and vibration devices)			
													1202	Center median (post cones)			
3-1	Crest	Visibility of vehicles ahead and of pedestrians is poor.	●			●		●			1	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	(Countermeasure code 2116 is a road administrator's countermeasure, and 52161 is a Public safety commission's countermeasure.)		
													5216				
													2101	Warning signs (general)			
											2	Prohibit right turns and right turn crossing	5003	Prohibiting travel outside a designated direction	• Its implementation should be studied along with the prohibition of right turns and vehicle crossing and the installation of post cones on center medians. (Countermeasure code 5003 is prohibition of right turns)		
													5007	Prohibiting vehicle crossing			
													1202	Center median (post cones)			
3-10	Crest	It is difficult to confirm safety when passing in the oncoming lane.		●							1	Prohibit passing in the oncoming lane	5005	Prohibiting driving on the right side in order to pass a vehicle			
													5218	Road indicators (road rivets, and vibration devices)			
													1202	Center median (post cones)			
3-12	Crest	It is difficult to confirm the alignment.		●						●	1	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2103	Warning signs (202 – 206: bends, curves, winding road)			

Accident occurrence process and causes			Type of accident concerned								Planning the accident countermeasures						
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Head-on	Rear end	Right turn	Left turn	Other crossing	When changing course	Lane departure		Countermeasure goal	Counter-measures code table number	Countermeasure work type on the countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
4-7	Long straight section	<Right turn vehicle> Drivers misunderstand the behavior of oncoming through vehicles.				●					1	Control the speed of through vehicles	1404	Improving pavement (level difference pavement)		(9)	Document 3-9
													1402	Improving pavement (coloring lanes)		(7)	Document 3-7
													1601	Road surface indicators (road surface deceleration indicators)	(Countermeasure code 1601 is a road administrator's countermeasure, and 5221 is a Public safety commission's countermeasure.)		
													5221				
											2	Prohibit right turns and right turn crossing	5003	Prohibiting travel outside a designated direction	• Its implementation should be studied along with the prohibition of right turns and vehicle crossing and the installation of post cones on center medians. (Countermeasure code 5003 is prohibition of right turns)		
													5007	Prohibiting vehicle crossing			
													1202	Center median (post cones)			
4-17	Long straight section	Drivers pass dangerously in conditions where it is easy to misunderstand the behavior of oncoming vehicles.		●							1	Take physical measures to prevent passing in the oncoming lane	1201	Center median (separation)			
													1202	Center median (post cones)			
5-8	Reverse cant	A vehicle is uncontrollable.		●						●	1	Remove elements that make vehicles uncontrollable	1303	Improving cant and lateral gradient			
8-14	Narrow lanes	Drivers abruptly stop or decelerate on the main road.			●						1	Eliminate narrowing sections of roads	1503	Widening lanes	• It is aggressively studied if it is possible to obtain land and budget.		
9-12	Sudden decline of the number and width of lanes	Slow to notice the decline of number of lanes or narrowing on the road ahead, drivers do not decelerate in time and stray from their lane.								●	1	Indicate a reduction of the number of lanes or road width in advance	2108	Warning sign (212: narrowing road)	• Several are installed far enough in advance to allow drivers to safely decelerate and change lanes.		
													2107	Warning sign (211: reduction of lanes)			
9-14	Sudden decline of the number and width of lanes	Drivers abruptly stop, decelerate, or change lanes on the main road.			●						1	Provide advance information about the reduction of number of lanes and road width	2108	Warning sign (212: narrowing road)	• Several are installed far enough in advance to allow drivers to safely decelerate and change lanes.		
													2107	Warning sign (211: reduction of lanes)			
10-12	Complex change of the number and width of lanes	Drivers unable to respond to a complex change in the number or width of lanes, depart their lane.								●	1	Fundamentally improve conditions that cause complex change of the number of lanes and road width	1301	Alignment improvement	• This improvement should be made in a case where it is possible to obtain land and budgets.		
											2	Temporarily improve conditions that cause complex change of the number of lanes and road width	1602	Road surface indicators (stabilization of the number of lanes and width using zebra indicators)			
10-14	Complex change of the number and width of lanes	Drivers unable to respond to a complex change in the number or width of lanes, abruptly stop, decelerate, or change lanes on the main road.			●						1	Fundamentally improve conditions that cause complex change of the number of lanes and road width	1301	Alignment improvement	• This improvement should be made in a case where it is possible to obtain land and budgets.		
											2	Temporarily improve conditions that cause complex change of the number of lanes and road width	1602	Road surface indicators (stabilization of the number of lanes and width using zebra indicators)			
11-14	Changing lane operation (through lane changes to a left or right turn lane)	Drivers abruptly stop, decelerate, or change lanes on the main road.			●						1	Provide advance warning of change of lane operation and the type of change	5215	Warning of lane use control	• It is installed not directly before the intersection, but at a location that lets driver change lanes safely.		
12-11	Slow vehicles traveling in a section without a passing zone (lane)	Drivers pass in the oncoming lane.		●							1	Provide physical measures to prevent passing in the oncoming lane	1202	Center median (post cones)			
													1201	Center median (separation)			
											2	Add lanes for passing	1506	Climbing lane, yield lane	• Its installation is studied for locations such as long rising slopes where there tends to be slow moving vehicles.		
													1507	Passing lane			
13-1	Dark intersection where pedestrians, parked vehicles, and the alignment are difficult to see	Drivers ability to see pedestrians is reduced.						●			1	Guarantee appropriate brightness to improve visibility	2001	Road lighting (new)	• Its use at a location where pedestrian – vehicle accidents occur frequently at night should be studied,		
													2002	Road lighting (enlargement, moving)			
											2	Install crossings where they are needed	5036	Crosswalk (new)	• Signals should, as necessary, also be installed on the vehicle side so that pedestrian can cross safely using a push button.		
											3	Prohibit pedestrians from jay-walking	2304	Pedestrian – cyclist use fence (to prevent crossing)	• It is studied in a case where there is a nearby crosswalk.		

Accident occurrence process and causes			Type of accident concerned								Planning the accident countermeasures						
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Head-on	Rear end	Right turn	Left turn	Other crossing	When changing course	Lane departure		Countermeasure goal	Counter-measures code table number	Countermeasure work type on the countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
13-12	Dark intersection where pedestrians, parked vehicles, and the alignment are difficult to see	It is difficult to understand the alignment.		●						●	1	Guarantee appropriate brightness to improve visibility	2001	Road lighting (new)	• Its use at a location where single vehicle accidents and front-end collisions occur frequently at night should be studied. (Countermeasure codes 1606 and 1607 are road administrator's countermeasures, and 5213 and 5218 are Public safety commission's countermeasures.)		
													2002	Road lighting (enlargement, moving)			
											2	Install safety equipment so that it is easy to understand the alignment	1203	Center median (road rivets, chatter bars)			
													2401	Visual guidance indicators (new)			
													2402	Visual guidance indicators (expansion, moving)			
													2403	Visual guidance indicators (enlarging)			
													2404	Self-illuminated visual guidance indicators		(10)	Document 3-10
													1606	Lines showing the sides, centers, and boundaries of traffic lanes (high brightness)		(6)	Document 3-6
													5213	Road indicators (high brightness)		(6)	Document 3-6
											3	Install safety equipment so that it is easy to sense a lane departure	1607	Lines showing the sides, centers, and boundaries of traffic lanes (road rivets, vibration devices)		(6)	Document 3-6
													5218	Road indicators (road rivets, and vibration devices)		(6)	Document 3-6
14-12	Optical guidance either not installed or inadequate (nighttime)	It is difficult to understand the alignment.		●						●	1	Install safety equipment so that it is easy to understand the alignment	1203	Center median (road rivets, chatter bars)	• Its use at a location where single vehicle accidents and front-end collisions occur frequently at night should be studied.		
													2401	Visual guidance indicators (new)			
													2402	Visual guidance indicators (expansion, moving)			
													2403	Visual guidance indicators (enlarging)			
													2404	Self-illuminated visual guidance indicators		(10)	Document 3-10
													1606	Lines showing the sides, centers, and boundaries of traffic lanes (high brightness)	(Countermeasure code 1606 is a road administrator's countermeasure, and 5213 is a Public safety commission's countermeasure.)		
													5213	Road indicators (high brightness)			
16-1	Poorly located and maintained trees, signboards, etc. on the sidewalks	<Vehicles entering the main road from the road side and narrow roads> It is difficult for their drivers to check for vehicles on the main road. <Through vehicles traveling on the main road> It is difficult for drivers to check vehicles ahead on curves.	●		●						1	Remove elements that obstruct visibility	1305	Rearranging vegetation	• This is related to rear-end collisions on curves.		
											2	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116	Signs and indicators not legally required (letters, symbols, arrows)	• This is related to rear-end collisions on curves. (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
													5216				
18-12	Inappropriately located traffic signs with unsuitable contents (unclear and complex)	Drivers cannot correctly understand the alignment ahead because the locations and contents of traffic signs are inappropriate.		●						●	1	Revise the location and contents of traffic signs	2103	Warning signs (202 – 206: bends, curves, winding road)	• This countermeasure is studied first (including revising the contents of traffic signs).		
											2	Introduce highly visible traffic signs	2113	Large traffic signs and high brightness traffic signs	• This is studied in a case where warning signs are already installed.		
													2114	Internally illuminated traffic signs	• This is studied in a case where warning signs are already installed. • This should be introduced where particularly frequent accidents occur at night.		
18-14	Inappropriately located traffic signs with unsuitable contents (unclear and complex)	Drivers become confused about what action to take, abruptly stopping, decelerating, and changing lanes on the main road.			●				●		1	Revise the location and contents of traffic signs	2103	Warning signs (202 – 206: bends, curves, winding road)	• This countermeasure is studied first (including revising the contents of traffic signs).		
											2	Introduce highly visible traffic signs	2113	Large traffic signs and high brightness traffic signs	• This is studied in a case where warning signs are already installed.		
													2114	Internally illuminated traffic signs	• This is studied in a case where warning signs are already installed. • This should be introduced where particularly frequent accidents occur at night.		

Accident occurrence process and causes			Type of accident concerned									Planning the accident countermeasures						
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Head-on	Rear end	Right turn	Left turn	Other crossing	When changing course	Lane departure		Countermeasure goal	Counter-measures code table number	Countermeasure work type on the countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
18-18	Inappropriately located traffic signs with unsuitable contents (unclear and complex)	A driver does not notice a narrow side street he plans to turn left into on time, and makes a sharp turn to the left.					●				1	Make narrow roads more conspicuous	1608	Lines showing the sides, centers, and boundaries of traffic lanes (others)	• Installed on lines showing the outside of lanes.		
													2102	Warning sign (201:Intersection ahead)			
											2	Introduce highly visible traffic signs	2113	Large traffic signs and high brightness traffic signs	• Installed in cases where warning traffic signs are already installed.		
													2114	Internally illuminated traffic signs	• Installed in cases where warning traffic signs are already installed. • Its introduction is studied in cases where nighttime accidents are particularly frequent.		
19-1	Bridge piers and other structures	It obstructs drivers' view.				●					1	Prohibit right turns and U-turns on roads with 2 lanes or less	1208	Openings in the center median (closing them etc.)	• Because in sections where there are many openings in a center median, the traffic flow is disrupted by vehicles turning right, reducing safety, as many openings in the center median as possible should be closed. • This countermeasure should be applied to close meaningless openings in center medians. (Countermeasure code 5003 is a prohibition on right turns.)		
													1202	Center median (post cones)			
													5003	Prohibiting travel outside a designated direction			
													5009	Prohibiting U-turns			
		It obstructs drivers' view	●					●			2	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	• This is related to rear-end collisions on curves (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
													5216				
20-1	Obstructions to vision on the road sides (buildings, walls, etc.)	It obstructs drivers' view.	●		●			●			1	Remove elements that obstruct visibility	1304	Removal of obstructions (facilities, signboards)	• It is studied for rear-end collisions and other crossing accidents in cases where there is a curve. • It is taken as a priority countermeasure whenever possible.		
											2	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	• It is studied for rear-end collisions and other crossing accidents in cases where there is a curve. (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
													5216				
21-1	Rows of bright structures lining the roadway	It is difficult to see pedestrians in crosswalks on the roadway, obstructing drivers' vision.						●			1	Provide road traffic signs that do not lower drivers' ability to see the road	2001	Road lighting (new)	• This is studied in cases where pedestrian crossing accidents are particularly frequent at night.		
													2002	Road lighting (enlargement, moving)			
22-14	Facilities that distract drivers	Drivers abruptly stop, decelerate, or change lanes on the main road.			●						1	Arouse drivers' attention	2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	(Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
													5216				
23-14	Heavily used roadside facility driveway exit/entrance	Drivers abruptly stop, decelerate, or change lanes on the main road.			●						1	Reduce facility driveway exits/entrances on the main road	3101	Concentrating facility entrances by moving them outside the main road	• At locations with a series of roadside facilities with parking area entrances, they are concentrated as much as possible.		
											2	Separate vehicles entering or exiting roadside facilities from vehicles on the main road	1508	Additional lanes for roadside facility use	• The construction of additional lanes is studied where there is a large scale roadside facility. • A frontage road should be constructed in a case where there is a row of medium and small scale facilities.		
													1509	Frontage road			
24-14	Heavily used narrow roads	Drivers abruptly stop, decelerate, or change lanes on the main road.			●						1	Separate vehicles entering or exiting narrow roads from vehicles on the main road	1509	Frontage road	• This countermeasure should be taken if there will be no problem guaranteeing land and budget.		
											2	Reduce vehicles decelerating to enter narrow side roads from the main road	5002	One way traffic			
25-14	Unclear roadside facility driveway exit/entrance or narrow roads	Drivers abruptly stop, decelerate, or change lanes on the main road.			●				●		1	Make narrow side roads more conspicuous	1608	Lines showing the sides, centers, and boundaries of traffic lanes (others)	• Installation of lines marking the outside of the lanes		
													2102	Warning sign (201:Intersection ahead)			
											2	Separate vehicles entering or leaving roadside facilities and narrow roads from vehicles on the main road	1508	Additional lanes for roadside facility use	• The construction of additional lanes is studied where there is a large scale roadside facility. • A frontage road should be constructed in a case where there is a row of medium and small scale facilities.		
													1509	Frontage road			
25-18	Unclear roadside facility driveway exit/entrance or narrow roads	A driver does not notice a narrow side street he plans to turn left into on time, and makes a sharp turn to the left.					●				1	Make narrow roads more conspicuous	1608	Lines showing the sides, centers, and boundaries of traffic lanes (others)	• Installation of lines marking the outside of the lanes		
													2102	Warning sign (201:Intersection ahead)			
											2	Separate vehicles entering or exiting roadside facilities from vehicles on the main road	1508	Additional lanes for roadside facility use			
													1509	Frontage road			

Accident occurrence process and causes			Type of accident concerned									Planning the accident countermeasures						
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Head-on	Rear end	Right turn	Left turn	Other crossing	When changing course	Lane departure		Countermeasure goal	Counter-measures code table number	Countermeasure work type on the countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
27-1	Visibility reduced by sunlight in the morning and in the west	It obstructs drivers' view.	●		●	●		●			1	Arouse drivers attention	2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	• Signs such as "Be careful of the western sun" are displayed. (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
													5216				
											2	Guarantee visibility	2601	Glare prevention boards on center medians	• This is installed in a case where head lamps of oncoming vehicles reduce visibility.		
28-8	Deteriorated road surface paving (ruts and cracks)	Drivers cannot control their vehicles	●	●	●			●		●	1	Remove elements that make vehicles uncontrollable	1408	Road surface maintenance			
											2	Provide advance warning of a section where vehicle control is difficult	2106	Warning signs (209: Slippery)			
											3	Stabilize vehicle control	1403	Improving pavement (slip-proof pavement)			
													1406	Improving pavement (grooving pavement)			
29-8	Poor drainage	Drivers cannot control their vehicles	●	●	●			●		●	1	Remove elements that make vehicles uncontrollable	1405	Improving paving (drainage pavement)		(8)	Document 3-8
													1408	Road surface maintenance			
											2	Provide advance warning of a section where vehicle control is difficult	2106	Warning signs (209: Slippery)			
30-8	Deposited mud or sand	Drivers cannot control their vehicles.	●	●	●			●		●	1	Provide advance warning of a section where vehicle control is difficult	2106	Warning signs (209: Slippery)			
31-8	Road surface icing	Vehicles are uncontrollable	●	●	●			●		●	1	Remove elements that make vehicles uncontrollable	2802	Snow and cold countermeasures (road heating)			
													2801	Snow and cold countermeasures (spreading anti-icing agent)			
											2	Provide advance information about the road surface	2201	Road information boards	• Signs such as "Icy Road Ahead" are displayed. • Its installation before sections where the road surface fluctuates abruptly such as those approaching mountains should be studied.		
34-4	Vehicles preparing to turn right or left stopping or decelerating on the main road	Vehicles turning right into a roadside facility or narrow side road advance dangerously.				●					1	Prohibit right turns	1202	Center median (post cones)			
													5003	Prohibiting travel outside a designated direction	• Right turns are prohibited.		
													5007	Prohibiting vehicle crossing			
											2	Separate vehicles entering/exiting roadside facilities and narrow roads from vehicles on the main road	1508	Additional lanes for roadside facility use	• The addition of lanes is studied where there is a large roadside facility. • A frontage road should be constructed in a case where there is a row of medium and small scale facilities.		
													1509	Frontage road			
													1204	Center median (new center zebra)		(4)	Document 3-4
34-14	Vehicles preparing to turn right or left stopping or decelerating on the main road	Vehicles turning right or left into a roadside facility or narrow side road abruptly stop, decelerate, or change lanes on the main road			●						1	Prohibit right turns	1202	Center median (post cones)			
													5003	Prohibiting travel outside a designated direction	• Right turns are prohibited.		
													5007	Prohibiting vehicle crossing			
											2	Separate vehicles entering/exiting roadside facilities and narrow roads from vehicles on the main road	1508	Additional lanes for roadside facility use	• The addition of lanes is studied where there is a large roadside facility. • A frontage road should be constructed in a case where there is a row of medium and small scale facilities.		
													1509	Frontage road			
													1204	Center median (new center zebra)		(4)	Document 3-4
35-1	Congested main road	Congestion causes pedestrians to jaywalk and blocks visibility between drivers of vehicles turning right from facilities and narrow roads and drivers of vehicles on the main road. The ability of drivers of vehicles turning right from the main road to see oncoming weaving motorcycles is reduced.				●		●			1	Prohibit right turns	1202	Center median (post cones)			
													5003	Prohibiting travel outside a designated direction	• Right turns are prohibited.		
													5007	Prohibiting vehicle crossing			
											2	Prevent weaving	1501	Narrowing the shoulder			
											3	Prevent jaywalking	2304	Pedestrian – cyclist use fence (to prevent crossing)	• The two countermeasures should be implemented together.		
													5035	Prohibition on pedestrian crossing			
35-13	Congested main road	Congestion shortens the actual crossing distance, encouraging pedestrians to jaywalk and obscuring the vision of drivers of vehicles on the main road.						●			1	Prevent jaywalking	2304	Pedestrian – cyclist use fence (to prevent crossing)	• The two countermeasures should be implemented together.		
													5035	Prohibition on pedestrian crossing			
											2	Prevent weaving	1501	Narrowing the shoulder			

Accident occurrence process and causes			Type of accident concerned								Planning the accident countermeasures						
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Head-on	Rear end	Right turn	Left turn	Other crossing	When changing course	Lane departure		Countermeasure goal	Counter-measures code table number	Countermeasure work type on the countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
35-14	Congested main road	Congestion occurs, causing drivers on the main road at the rear end of the congestion to abruptly stop, decelerate, or change lanes.			●						1	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers.	2299	Other road information provision systems	• A signboard warning of the end of congestion is installed. • It should be studied in particular in cases where congestion occurs around a curve or in a tunnel. (Countermeasure code 2299 is a road administrator's countermeasure, and 5399 is a Public safety commission's countermeasure.)		
													5399	Others			
													2116	Signs and indicators not legally required (letters, symbols, arrows)	• Signs such as "Warning! Congestion Ahead" are displayed. (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
													5216				
37-4	Heavy traffic on the main road	Drivers drive dangerously into the main road from roadside facilities and narrow roads.	●			●					1	Separate vehicles emerging from roadside facilities and narrow side roads from vehicles on the main road	1508	Additional lanes for roadside facility use			
													1509	Frontage road			
													1204	Center median (new center zebra)		(4)	Document 3-4
											2	Change the location where traffic flows into the main road	3102	Guiding vehicles entering the main road to the signal stopping point	• Wide area improvements are studied.		
41-13	No crossing facilities at a location they are needed	Pedestrians cross dangerously outside the crosswalks.						●			1	Change the locations of crossings according to crossing demand	5036	Crosswalk (new)	• This countermeasure should be implemented according to crossing demand.		
													5120	Installing pedestrian use lights			
													1801	Constructing grade-separated crossing (pedestrian bridge, pedestrian tunnel)			
											2	Prevent jaywalking	2304	Pedestrian – cyclist use fence (to prevent crossing)	• The two countermeasures should be implemented together.		
													5035	Prohibition on pedestrian crossing			
											3	Arouse drivers' attention	2104	Warning signs (208: School, Kindergarten, Nursery School, etc.)	• This measure should be studied if there is a school, kindergarten, nursery school, or other facility with many small children on the roadside.		
													1699	Other section lines and road surface lines	• Introduction of school zones and silver zones.		
42-2	Motorcycles weaving through vehicle traffic	Drivers turning left are non-attentive.					●				1	Prevent weaving	1501	Narrowing the shoulder			
43-1	On-street parking and stopped busses obstructing traffic movement	Driver's vision is obstructed.	●					●			1	Cause stopping vehicles to stop outside the main road lanes	2704	Bus bay			
													2703	Parking zone			
											2	Remove vehicles stopped on the main road	5022	Prohibiting parking			
43-11	On-street parking and stopped busses obstructing traffic movement	Drivers pass in the oncoming lane.		●							1	Cause stopping vehicles to stop outside the main road lanes	2704	Bus bay			
													2703	Parking zone			
											2	Remove vehicles stopped on the main road	5022	Prohibiting parking			
43-13	On-street parking and stopped busses obstructing traffic movement	Pedestrians are encouraged to jaywalk						●			1	Cause stopping vehicles to stop outside the main road lanes	2704	Bus bay			
													2703	Parking zone			
											2	Remove vehicles stopped on the main road	5022	Prohibiting parking			
											3	Prohibit jaywalking	2304	Pedestrian – cyclist use fence (to prevent crossing)	• The two countermeasures should be studied together.		
													5035	Prohibition on pedestrian crossing			
43-14	On-street parking and stopped busses obstructing traffic movement	Drivers abruptly stop, decelerate, or change lanes on the main road.			●						1	Cause stopping vehicles to stop outside the main road lanes	2704	Bus bay			
													2703	Parking zone			
											2	Remove vehicles stopped on the main road	5022	Prohibiting parking			

Table D

Uninterrupted flow – Multi-lane road

Table D Uninterrupted flow – Multi-lane road

Accident occurrence process and causes			Type of accident concerned									Planning the accident countermeasures						
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Head-on	Rear end	Right turn	Left turn	Other crossing	When changing course	Lane departure		Countermeasure goal	Counter-measures code table number	Countermeasure work type on the countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
1-1	Sharp curve	Drivers have difficult seeing vehicles ahead and pedestrians crossing the road.	●		●	●		●			1	Alert drivers to and provide information about conditions at locations where visibility is poor	2116	Signs and indicators not legally required (letters, symbols, arrows)	• This is studied in a case where there is an obstruction on the inside of a curve. (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
													5216				
											2	Construct roads that do not reduce a driver's view ahead	1301	Alignment improvement			
2-7	Long steep downhill gradient	<Right turn vehicle> Drivers misunderstand the behavior of oncoming through vehicles.				●					1	Control the speed of through vehicles	1404	Improving pavement (level difference pavement)		(9)	Document 3-9
													1402	Improving pavement (coloring the lanes)		(7)	Document 3-7
													1601	Road surface indicators (road surface deceleration indicators)	(Countermeasure code 1601 is a road administrator's countermeasure, and 5221 is a Public safety commission's countermeasure.)		
													5221				
											2	Prohibit right turns and right turn crossings	5003	Prohibiting travel outside a designated direction	• The implementation of a prohibition on right turns, prohibition on vehicle crossing, and placing post cones on the center median should be studied together. (Countermeasure code 5003 is prohibiting right turns)		
													5007	Prohibiting vehicle crossing			
													1202	Center median (post cones)			
3-1	Crest	Drivers have difficult seeing vehicles ahead and pedestrians crossing the road.	●			●		●			1	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	(Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
													5216				
													2101	Warning signs (general)			
											2	Prohibit right turns and right turn crossing	5003	Prohibiting travel outside a designated direction	• The implementation of a prohibition on right turns, prohibition on vehicle crossing and placing post cones on the center median should be studied together. (Countermeasure code 5003 is prohibiting right turns)		
													5007	Prohibiting vehicle crossing			
													1202	Center median (post cones)			
4-7	Long straight section	<Right turn vehicle> Drivers misunderstand the behavior of oncoming through vehicles.				●					1	Control the speed of through vehicles	1404	Improving pavement (level difference pavement)		(9)	Document 3-9
													1402	Improving pavement (coloring the lanes)		(7)	Document 3-7
													1601	Road surface indicators (road surface deceleration indicators)	(Countermeasure code 1601 is a road administrator's countermeasure, and 5221 is a Public safety commission's countermeasure.)		
													5221				
											2	Prohibit right turns and right turn crossing	5003	Prohibiting travel outside a designated direction	• The implementation of a prohibition on right turns, prohibition on vehicle crossing, and placing post cones on the center median should be studied together. (Countermeasure code 5003 is prohibiting right turns)		
													5007	Prohibiting vehicle crossing			
													1202	Center median (post cones)			
8-14	Narrow lanes	Drivers abruptly stop or decelerate on the main road.			●						1	Eliminate narrowing of the road	1503	Widening lanes	• It is aggressively implemented if it is possible to guarantee land and budget.		
9-14	Sudden decline of the number and width of lanes	Drivers abruptly stop, decelerate, or change lanes on the main road.			●						1	Provide advance indication of a reduction of the number of lanes or road width	2108	Warning sign (212: narrowing road)	• Several are installed far enough in advance to allow drivers to safely decelerate and change lanes.		
													2107	Warning sign (211: reduction of lanes)			
10-14	Complex change of the number and width of lanes	Drivers unable to respond to a complex change in the number or width of lanes, abruptly stop, decelerate, or change lanes on the main road.			●						1	Fundamentally improve conditions that cause frequent change of the number of lanes and road width	1301	Alignment improvement	• It should be improved in case where it is possible to guarantee land and budget		
											2	Temporarily improve conditions that cause frequent change of the number of lanes and road width	1602	Road surface indicators (stabilization of the number of lanes and width using zebra indicators)			
11-14	Changing lane operation (through lane changes to a left or right turn lane)	Drivers abruptly stop, decelerate, or change lanes on the main road.			●						1	Provide advance warning of change of lane operation and the type of change	5215	Warning of lane use control	• It is installed at a location that allows vehicles to change lanes safely instead of immediately before the intersection		
15-1	Poorly located and maintained trees etc. on the center median	<Vehicles turning right from roadsides or narrow roads into the main road> The ability to see the main road is obscured. <Vehicles turning right from the main road> The drivers' ability to see oncoming through vehicles is reduced. <Through vehicles on the main road> It s difficult to check the stopping or deceleration behavior of vehicles ahead on curves	●		●	●					1	Remove elements that obstruct visibility	1305	Rearranging vegetation	• It is studied in a case where there is a center median with vegetation constructed on a multi-lane road • Near openings, t is grass or other low vegetation that reduces visibility.		
											2	Prohibit right turns and U-turns on multi-lane roads	1208	Openings in the center median (closing them etc.)	• Because in sections where there are many openings in a center median, the traffic flow is disrupted by vehicles turning right, reducing safety, as many openings in the center median as possible should be closed. • It is studied in cases where there is an intermittent center median on a multi-lane road. • This countermeasure should be applied to close meaningless openings in center medians. (Countermeasure code 5003 is a prohibition on right turns.)		
													1202	Center median (post cones)			
													5003	Prohibiting travel outside a designated direction			
													5009	Prohibiting U-turns			

Accident occurrence process and causes			Type of accident concerned								Planning the accident countermeasures						
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Head-on	Rear end	Right turn	Left turn	Other crossing	When changing course	Lane departure		Countermeasure goal	Counter-measures code table number	Countermeasure work type on the countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
16-1	Poorly located and maintained trees, signboards, etc. on the sidewalks	<Vehicles entering the main road from the roadside or from narrow roads> It is difficult for them to check for vehicles on the main road. <Through vehicles on the main road> It s difficult to check vehicles ahead on curves.	●		●						1	Remove elements that obstruct visibility	1305	Rearranging vegetation	• This is related to rear-end collisions on curves		
											2	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116 5216	Signs and indicators not legally required (letters, symbols, arrows)	• This is related to rear-end collisions on curves (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
17-14	Negligently cut center median	Drivers on the main road abruptly stop, decelerate, or change lanes, because vehicles cut in from openings in the center median at places where drivers on the main road do not expect this to happen. (Drivers on the main road have to pay attention to too many things at the same time.)			●						1	Close openings so that the number of things drivers on the main road must pay attention to is low	1208	Openings in the center median (closing them etc.)	• Because in sections where there are many openings in a center median, the traffic flow is disrupted by vehicles turning right, reducing safety, as many openings in the center median as possible should be closed. • It is studied in cases where there is an intermittent center median on a multi-lane road. • This countermeasure should be applied to close meaningless openings in center medians. (Countermeasure code 5003 is a prohibition on right turns.)		
													1202	Center median (post cones)			
													5003	Prohibiting travel outside a designated direction			
													5007	Prohibiting vehicle crossing			
18-14	Inappropriately located traffic signs with unsuitable contents (unclear and complex)	Confused about what action to take, drivers abruptly stop, decelerate, or change lanes on the main road.			●				●		1	Revise the locations and contents of traffic signs	2103	Warning signs (202 – 206: bends, curves, winding road)	• Revising the content of the warning signs is studied.		
											2	Introduce highly visible traffic signs	2113	Large traffic signs and high brightness traffic signs	• This is studied in cases where warning signs are already installed.		
													2114	Internally illuminated traffic signs	• This is studied in cases where warning signs are already installed. • This should be introduced at locations where accidents occur particularly frequently at night.		
19-1	Bridge piers and other structures	It obstructs drivers view.				●					1	Prohibit right turns and U-turns on multi-lane roads	1208	Openings in the center median (closing them etc.)	• Because in sections where there are many openings in a center median, the traffic flow is disrupted by vehicles turning right, reducing safety, as many openings in the center median as possible should be closed. • This is studied in cases where there is an intermittent center median on a multi-lane road. • This countermeasure should be applied to close meaningless openings in center medians. (Countermeasure code 5003 is a prohibition on right turns.)		
													1202	Center median (post cones)			
													5003	Prohibiting travel outside a designated direction			
													5009	Prohibiting U-turns			
		It obstructs drivers view.	●					●			2	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116 5216	Signs and indicators not legally required (letters, symbols, arrows, etc.)	• This is related to rear-end collisions on curves (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
20-1	Obstructions to vision on the road sides (buildings, walls, etc.)	It obstructs drivers view.	●		●			●			1	Remove elements that obstruct visibility	1304	Removal of obstructions (facilities, signboards)	• This is studied in a case where rear-end collisions and other accidents during crossing occurs on curves. • It is taken as a priority countermeasures whenever possible.		
											2	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2116 5216	Signs and indicators not legally required (letters, symbols, arrows, etc.)	• This is studied in a case where rear-end collisions and other accidents during crossing occurs on curves. (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
22-14	Facilities that distract drivers	Drivers abruptly stop, decelerate, or change lanes on the main road.			●						1	Arouse the attention of drivers	2116 5216	Signs and indicators not legally required (letters, symbols, arrows, etc.)	(Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
23-14	Heavily used roadside facility driveway exit/entrance	Drivers abruptly stop, decelerate, or change lanes on the main road			●						1	Reduce the number of facility entrances/exits on the main road	3101	Concentrating facility entrances by moving them outside the main road	• This is highly concentrated at locations where there are a row of roadside facilities with entrance/exit driveways.		
											2	Separate vehicles entering/exiting roadside facilities from roads on the main road	1508	Additional lanes for roadside facility use	• The construction of additional lanes is studied where there is a large scale roadside facility and a frontage road should be constructed in a case where there is a row of medium and small scale facilities.		
													1509	Frontage road			
24-14	Heavily used narrow roads	Drivers abruptly stop, decelerate, or change lanes on the main road.			●						1	Separate vehicles entering/exiting roadside facilities from roads on the main road	1509	Frontage road	• This countermeasure should be taken when there will be no problem guaranteeing land and budget		
											2	Reduce the number of vehicles decelerating to enter a narrow road from the main road	5002	One way traffic			
25-14	Unclear roadside facility driveway exit/entrance or narrow road	Drivers abruptly stop, decelerate, or change lanes on the main road			●				●		1	Increase the visibility of narrow roads	1608	Lines showing the sides, centers, and boundaries of traffic lanes (others)	• Installing lines marking the outsides of lanes.		
													2102	Warning sign (201:Intersection ahead)			
											2	Separate vehicles entering/exiting roadside facilities from roads on the main road	1508	Additional lanes for roadside facility use	• The construction of additional lanes is studied where there is a large scale roadside facility and a frontage road should be constructed in a case where there is a row of medium and small scale facilities.		
													1509	Frontage road			

Accident occurrence process and causes			Type of accident concerned									Planning the accident countermeasures						
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Head-on	Rear end	Right turn	Left turn	Other crossing	When changing course	Lane departure		Countermeasure goal	Counter-measures code table number	Countermeasure work type on the countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
											3	Prevent the concentration of traffic on facility side lanes	5010	Prohibiting changes of course	• It should be possible to change lanes from lanes from the roadside to lanes from the center median (arranging two lines: broken white lines and yellow lines).		
27-1	Visibility reduced by sunlight in the morning and in the west	It obstructs drivers view	●		●	●		●			1	Arouse attention	2116	Signs and indicators not legally required (letters, symbols, arrows, etc.)	• Signs such as "Beware of the Western Sun" are displayed (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
													5216				
											2	Guarantee visibility	2601	Glare prevention boards on center medians	• This is installed in a case where head lamps of oncoming vehicles reduce visibility.		
28-8	Deteriorated road surface paving (ruts and cracks)	Vehicles become uncontrollable	●	●	●			●		●	1	Remove elements that make vehicles uncontrollable	1408	Road surface maintenance			
											2	Provide advance warning that it is easy to lose control	2106	Warning signs (209: Slippery)			
											3	Stabilize the control of vehicles	1403	Improving pavement (slip-proof pavement)			
													1406	Improving pavement (grooving pavement)			
29-8	Poor drainage	Vehicles become uncontrollable	●	●	●			●		●	1	Remove elements that make vehicles uncontrollable	1405	Improving paving (drainage pavement)		(8)	Document 3-8
													1408	Road surface maintenance			
											2	Provide advance warning that it is easy to lose control	2106	Warning signs (209: Slippery)			
30-8	Deposited mud or sand	Vehicles become uncontrollable.	●	●	●			●		●	1	Provide advance warning that it is easy to lose control	2106	Warning signs (209: Slippery)			
31-8	Road surface icing	Vehicles become uncontrollable	●	●	●			●		●	1	Remove elements that make vehicles uncontrollable	2802	Snow and cold countermeasures (road heating)			
													2801	Snow and cold countermeasures (spreading anti-icing agent)			
											2	Provide information about the road surface in advance	2201	Road information boards	• Signs such as, "Road Surface Frozen Ahead" etc. are displayed. • Its installation before sections where the road surface fluctuates abruptly such as those approaching mountains should be studied.		
34-4	Vehicles preparing to turn right or left stopping or decelerating on the main road	Vehicles turning right into roadside facilities or narrow streets, travel dangerously.				●					1	Prohibit right turns	1208	Openings in the center median (closing them etc.)	• Because in sections where there are many openings in a center median, the traffic flow is disrupted by vehicles turning right, reducing safety, as many openings in the center median as possible should be closed • It is studied in cases where there is an intermittent center median on a multi-lane road. • This countermeasure should be applied to close meaningless openings in center medians. (Countermeasure code 5003 is a prohibition on right turns.)		
													1202	Center median (post cones)			
													5003	Prohibiting travel outside a designated direction			
													5007	Prohibiting vehicle crossing			
											2	Separate vehicles entering/exiting roadside facilities from roads on the main road	1508	Additional lanes for roadside facility use	• The construction of additional lanes is studied where there is a large scale roadside facility and a frontage road should be constructed in a case where there is a row of medium and small scale facilities.		
													1509	Frontage road			
													1204	Center median (new center zebra)		(4)	Document 3-4
34-14	Vehicles preparing to turn right or left stopping or decelerating on the main road	Vehicles turning right into a roadside facility or narrow street abruptly stop, decelerate, or change lanes on the main road.			●						1	Prohibit right turns	1208	Openings in the center median (closing them etc.)	• Because in sections where there are many openings in a center median, the traffic flow is disrupted by vehicles turning right, reducing safety, as many openings in the center median as possible should be closed. • This is studied in cases where there is an intermittent center median on a multi-lane road. • This countermeasure should be applied to close meaningless openings in center medians. (Countermeasure code 5003 is a prohibition on right turns.)		
													1202	Center median (post cones)			
													5003	Prohibiting travel outside a designated direction			
													5007	Prohibiting vehicle crossing			
											2	Separate vehicles entering/exiting roadside facilities and narrow streets from vehicles on the main road	1508	Additional lanes for roadside facility use	• The construction of additional lanes is studied where there is a large scale roadside facility and a frontage road should be constructed in a case where there is a row of medium and small scale facilities.		
													1509	Frontage road			
													1204	Center median (new center zebra)		(4)	Document 3-4

Accident occurrence process and causes			Type of accident concerned									Planning the accident countermeasures						
Cause code	Road environment factors on the road where the countermeasures are taken	Impact on the road environment	Intersection collision	Head-on	Rear end	Right turn	Left turn	Other crossing	When changing course	Lane departure		Countermeasure goal	Counter-measures code table number	Countermeasure work type on the countermeasure code table	Precautions when selecting and implementing countermeasures	Case No.	Case page
35-1	Congested main road	Congestion encourages pedestrians to jaywalk and blocks visibility between drivers of vehicles turning right from facilities and narrow roads and drivers of vehicles on the main road. The ability of drivers of vehicles turning right from the main road to see oncoming weaving motorcycles is reduced.				●		●			1	Prohibit right turns	1208	Openings in the center median (closing them etc.)	• Because in sections where there are many openings in a center median, the traffic flow is disrupted by vehicles turning right, reducing safety, as many openings in the center median as possible should be closed. • This is studied in cases where there is an intermittent center median on a multi-lane road. • This countermeasure should be applied to close meaningless openings in center medians. (Countermeasure code 5003 is a prohibition on right turns.)		
													1202	Center median (post cones)			
													5003	Prohibiting travel outside a designated direction			
													5007	Prohibiting vehicle crossing			
											2	Prevent weaving	1501	Narrowing the shoulder			
											3	Prevent jaywalking	2304	Pedestrian – cyclist use fence (to prevent crossing)	• The two countermeasures should be implemented together.		
													5035	Prohibition on pedestrian crossing			
35-14	Congested main road	Congestion occurs, causing drivers on the main road at the rear end of the congestion to abruptly stop, decelerate, or change lanes.			●						1	Alert drivers to, and provide information about, conditions that will make a location a dead angle for drivers	2299	Other road information provision systems	• A signboard warning of the end of congestion is installed. • It should be studied in particular in cases where congestion occurs around a curve or in a tunnel. (Countermeasure code 2299 is a road administrator's countermeasure, and 5399 is a Public safety commission's countermeasure.)		
													5399	Others			
													2116	Signs and indicators not legally required (letters, symbols, arrows)	• Signs such as "Warning! Congestion Ahead" are displayed. (Countermeasure code 2116 is a road administrator's countermeasure, and 5216 is a Public safety commission's countermeasure.)		
													5216				
37-4	Heavy traffic on the main road	Drivers drive dangerously into the main road from roadside facilities and narrow roads.	●			●					1	Separate vehicles exiting roadside facilities and narrow roads from vehicles on the main road	1508	Additional lanes for roadside facility use			
													1509	Frontage road			
													1204	Center median (new center zebra)		(4)	Document 3-4
											2	Change the location where traffic flows into the main road	3102	Guiding vehicles entering the main road to the signal stopping point	• Wide area improvements are studied.		
43-1	On-street parking and stopped busses obstructing traffic movement	Drivers' view of the road ahead is obstructed.	●					●			1	Cause stopped vehicles to stop outside the main road	2704	Bus bay			
													2703	Parking zone			
											2	Remove vehicles stopped on the main road	5022	Prohibiting parking			
43-14	On-street parking and stopped busses obstructing traffic movement	Drivers abruptly stop, decelerate, and change lanes on the main road.			●						1	Cause stopped vehicles to stop outside the main road	2704	Bus bay			
													2703	Parking zone			
											2	Remove vehicles stopped on the main road	5022	Prohibiting parking			