Alberta Transportation

Report

Northeast Edmonton Ring Road Functional Planning Study

Report R - 1084

Appendix H
Traffic Analysis

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Traffic Solutions
CONSULTING LTD.

APPENDIX H

H.1 Planning Level Interchange Capacity Analysis Method - Critical Lane Volume (CLV) Methodology

The traditional interchange and freeway planning process involves the selection of a few promising interchange configurations for more detailed freeway and interchange design and analysis. The interchange configuration design evaluation process is particularly complicated due to the large combination of possible interchange configurations. For each potential interchange configuration, there are a wide range of variables such as number of through lanes, number of turn lanes, number of lanes on the ramp, traffic control measures (i.e. yield vs free flow for right turn movements) signal phasing (including use of protected-prohibited lefts vs protected-permissive lefts), signal timing and signal coordination.

H.1.1 Interchange Analysis Challenges

The major drawback of any typical interchange planning and operational analysis process is that the complexity of the process essentially rules out the possibility of performing a comprehensive analysis of anything more than a few selected interchange types.

The following elements of the analysis process are tedious, with intensive data requirements, and time-consuming:

1. **Traffic Volumes** – a large amount of data processing effort is needed for various traffic or population scenarios, traffic volume balancing, and assignment of volumes onto various links for multiple interchange configurations (large number of potential interchange type candidates – e.g. Diamond, Parclo A4, Parclo B4, Parclo A2, Parclo B2, Parclo AB, etc)
2. **Planning Level Analysis** – multiple analysis periods (AM peak, PM peak), study horizons (30 Year, Long Term, Opening Day, among others), multiple interchange configurations, lane requirements for through lanes and turn lanes, signal phasing and timings, and level of details in the planning level analysis model
3. **Simulation Analysis** – substantial modeling efforts, large data requirements, needs for analysts to be familiar with the model and its limitations

Various time-saving procedures have been developed to streamline the above repetitive and tedious interchange analysis computational tasks.

H.1.2 Automated Planning Level Critical Link Volume Capacity Analysis

H.1.2.1 Considerations in Planning Level Analysis for Interchanges

There are numerous variables that can affect the operation of an interchange:

- Interchange configuration (i.e. Diamond or Parclo, Parclo A or B, etc)
- Number of through lanes
- Number of turn lanes
- Number of ramp lanes
- Turn bay length
- Type of Control (stop controlled vs signalized, yield / merge vs free flow)
- Signal Phasing (2 phase vs 3 phase, protected left turns)
- Signal Timing (cycle length, intergreen times, minimum green)
- Degree of actuation of traffic signal (i.e. detection)
- Ramp intersection spacing
- Level of turning volumes
- Operating speed on cross streets and ramps
- Arrival patterns of traffic from upstream traffic signals
- Truck percent and mix
- Peaking pattern of traffic
- Local driver characteristics (saturation flow rate, amber overrun, etc)
- Impact of upstream and downstream lane balance and lane continuity

In the majority of the cases, the determination of capacity of an interchange involves the determination of the intersection capacity of the two signalized ramp intersections. The limitations of the traditional intersection capacity analysis approaches are their inability to model in details of the interactions at the interchange. Nonetheless, from a planning level standpoint, intersection capacity analysis is a good starting point to provide a reasonably good estimate of the degree of capacity utilization at the interchange. It will provide a good indication of the relative levels of performance if two different interchange designs are compared using the same evaluation method.

However, data entry requirements for typical intersection capacity analysis models are too specific and labour intensive. These models are not conducive for planning level analysis of intersection operations especially in the case of interchanges, where it is desirable to evaluate a large number of alternatives. Several parameters in these models such as number of lanes, signal phasing, signal timing, detection, and adjacent traffic signals can be adjusted, and will generate volatile run results depending on assumptions made on these model parameters.

H.1.2.2 Critical Lane Volume (CLV) Interchange Capacity Analysis

An automated computer spreadsheet was developed which could carry out multiple scenario analysis using a critical movement analysis method for any given set of traffic volumes at typical interchange ramp intersections. The spreadsheet was designed in such a way to be able to examine both AM and PM peak periods of both signalized ramp intersections at the same time. This planning level analysis approach is named the Critical Lane Volume (CLV) Interchange Capacity Analysis method.

The CLV planning level analysis results can be generated simultaneously and instantaneously for different types of interchanges such as Simple Diamond, Parclo A-4, Parclo B-4, Parclo A-2, Parclo B-2, Parclo AB-2, Parclo AB-4, Parclo A-4 with Directional Ramp, Parclo B-4 with Directional Ramp, Single Point Diamond, as well as potentially a host of other variations of the standard diamond and parclo style of interchanges. The ability of the computer program to rapidly carry out exhaustive rounds of analysis allows the planner / analyst to easily and quickly identify a short list of interchange configurations that are most promising, as well as quantitatively compare which interchange design is most effective in providing the highest capacity.

H.1.2.2.1 CLV Approach Input Parameters

There are three main types of data entry needed for the CLV approach:

1. Traffic Data
2. Traffic Signal Data
3. Interchange Type and Lane Configuration Date

The data requirements are straightforward and should require no more than 15 minutes to complete a planning level evaluation of hundreds of scenarios of interchange types and lane configurations for a given set of traffic volumes and basic traffic signal parameters.

The list of data requirements are summarized as follows:

Traffic Data	Traffic Signal Data	Interchange Type Data and Lane Configuration Data
▪ AM Peak traffic volumes ▪ PM Peak traffic volumes ▪ Volume multiplying factor ▪ Truck % ▪ Peak Hour Factor ▪ Heavy Vehicle Equivalent Factor	▪ Signal cycle length (AM/PM) ▪ Amber duration for major road, minor road & left turns ▪ All-red duration for major/ minor road & left turns ▪ Minimum green time ▪ Amber overrun time ▪ Lost time ▪ Ideal Saturation Flow Rate ▪ Left Turn Saturation Flow Adjustment Factors for multiple turn lanes ▪ Signal Phasing, no. of phases	▪ Interchange Type ▪ Number of through lanes on main road (parameters needed for each travel direction) ▪ Number of left turn lanes on main road ▪ Number of left turn lanes on ramp approach (minor road)

H.1.2.2.2 Traffic Data

Based on the above input data, the program will automatically determine the passenger car equivalent of the traffic volumes based on peak hour factors, truck percentage and heavy vehicle equivalent factors. A traffic volume multiplying factor is also available for possible use in sensitivity analysis to determine the impact of a higher or lower levels of traffic volumes on interchange capacity utilization.

H.1.2.2.3 Traffic Signal Data

Despite the long list of traffic signal data requirements in the previous table, the determination of traffic signal data is actually quite straightforward.

The determination of signal cycle length can be made based on intersection capacity needs but in most cases are dependent on the anticipated signal cycle length along the cross street arterial corridor. Other signalized intersections along the cross-street corridors are most likely 4-legged intersections with multiple signal phasing scheme (3 to 4 phase sequences). Often the cycle length requirements of the busiest intersection along a corridor dictate the cycle length of the entire corridor. During peak periods, arterial traffic progression is often as important as the operation of individual intersection operations. If the interchange is planned as a grade separated improvement of an existing, developed arterial corridor with several traffic signals along it, it is essential that the planners for freeway interchanges work closely with the traffic planners / engineers looking after the arterial operation to agree on a signal cycle lengths for the corridor.

For simple 2-phase signal operations at Parclo A4 and Parclo B4 interchanges, cycle lengths can be as short as 60s to 90s. For 3-phase signal operations at Diamond, Parclo A2, Parclo B2 and Parclo AB interchanges, longer cycle lengths in the range of 80s to 120s are often used. For interchanges operating at close to capacity, it is often necessary to use longer cycle lengths in the range of 120s to 150s. For the purposes of comparing operational effectiveness of various interchange types in the NEERR project, a cycle length of 120s was used in the CLV analysis.

It is rare to have interchange ramp intersections with 4-phase signal sequences. One example of a 4-phase signal sequence ramp intersection is to have 2-way ramp, which may result by connecting an arterial or collector roadway directly into the ramp intersection. Ramp intersections with 4-phase signal operations are not recommended as they generally are sluggish in operations and will significantly reduce the over capacity of the interchange. Connecting collector or arterial roadways directly into the ramp intersection is not recommended.

Values of clearance intervals such as the amber and all-red periods are a function of the posted speed (known) as well as the intersection width (fairly standard given the interchange type and configuration). The clearance interval values used in the NEER project are as follows:

Through Phases	Amber
50 km/h Posted Speed	3.5s
60 km/h Posted Speed	4.0s
70 km/h Posted Speed	4.5s
80 km/h Posted Speed	5.0s

Through Phases	All-Red
Major Road	2.0s
Minor Road – Crossing 4 Lanes	2.0s
Minor Road – Crossing 6 Lanes	2.5s

Left Turn Phases	Amber	All-Red
Lagging Left	Same as concurrent through phase	
Leading, Protected-Prohibited Left	3.0s	2.0s
Leading, Protected-Permissive Left	3.0s	1.0s

Minimum green time will be dependent on the type of detection used, as well as local traffic operations policies or preferences. For the purposes of the CLV analysis in the NEERR project, the following minimum green times were used:

Road / Approach Type	Minimum Green
Major Road Through Phase	15 s [Note 1]
Minor Road Through Phase / Ramp Phase	10 s
Left Turn Phase	7 s

[Note 1]: Actual minimum green values for major road are often set with a value of at least 30s during peak traffic periods to provide a minimum guaranteed phase timing – due to heavy traffic volumes and for achieving a reasonable minimum traffic progression green band or through band.

Amber overrun and lost times are also dependent heavily on local driver characteristics or agency policies / preferences. For the purposes of the CLV analysis in the NEERR Project, the following assumptions on lost time deductions are used:

Movement Types	Lost Time	Rationale
Through Phases	Amber + All Red	As a conversation planning level assumption to not including the “run amber” capacity
Left Turns	Amber + All Red – 2 s	Assuming that some left turns will continue to take place even after the left turn signal turns amber

H.1.2.2.4 Interchange Type and Lane Configuration Data

Signal phasing requirements are dependent on interchange types and therefore are highly predictable. They are pre-determined in the CLV spreadsheet for each interchange type, and are applied in accordance with the following guidelines.

Interchange with 2-Phase Signals	Interchange with 3-Phase Signals
▪ Parclo A4 ▪ Parclo B4	▪ Simple Diamond ▪ Parclo AB ▪ Parclo A2 ▪ Parclo B2 ▪ Single Point Diamond

Several CLV analysis modules are included in the CLV worksheet to provide a comprehensive overview of every possible combination of number of through and turn lanes for both AM and PM peak periods, for both signalized ramp intersections at the interchange. The following 11 interchange types can be analyzed with the current version of the CLV worksheet. The number of lane configuration alternatives for each interchange type is shown in bracket:

1. Simple Diamond (28 lane configuration alternatives)
2. Parclo A-2 (28 lane configuration alternatives)
3. Parclo B-2 (28 lane configuration alternatives)
4. Parclo AB (28 lane configuration alternatives)
5. Parclo A-4 (21 lane configuration alternatives)
6. Parclo B-4 (21 lane configuration alternatives)
7. Parclo BA (same as Parclo AB) (28 lane configuration alternatives)
8. Parclo A-4 Modified for free-flow loop (21 lane configuration alternatives)
9. Single Point Diamond (24 lane configuration alternatives)
10. Parclo A-4 with N-E Directional Ramp (18 lane configuration alternatives)
11. Parclo A-4 with S-W Directional Ramp (18 lane configuration alternatives)

In total, the current version of the CLV worksheet consists of the following for every single set of AM/PM traffic volumes at any interchange locations:

- 11 interchange types
- 263 ramp intersection lane configurations for the first ramp intersection
- 263 ramp intersection lane configurations for the second ramp intersection
- 1,052 individual CLV analysis modules (AM and PM modules for each ramp intersection lane configuration)

H.1.2.2.5 Critical Lane Volume Analysis Algorithms

Each signal phase at a signalized intersection is expected to be utilized by a number of non-conflicting traffic movements allowed in that phase. The critical movement for a particular signal phase is referred to the most critical or most congested traffic movement permitted during that signal phase. The critical movement is the movement with the highest traffic volume per lane flow rate, which is calculated by dividing the traffic volumes by the number of lanes for that movement. The highest flow rate for a particular signal phase is called the critical lane volume (CLV) for that signal phase, with a unit passenger car unit per hour per lane (pc/h/ln).

Adjustment factors are applied to left turn movements as lower saturation flow rates are expected for the left turning traffic. For the NEERR project, the following adjustment factors were used in the CLV procedures:

No. of Left Turn Lanes	Adjustment Factors	Equivalent Saturation Flow Rate (assuming Ideal rate of 1900 pc/h/ln)
1	1.05	1810 pc/h/ln
2	1.10	1730 pc/h/ln
3	1.15	1650 pc/h/ln

Signal phase can be under-utilized due to (i) signal is operating in a fixed time fashion, or, for actuated signals, (ii) a "minimum green" timing must be run even when the traffic flow is very low at the approach. The previously determined critical lane volumes have to be compared to the minimum green requirements. The higher of the two values will be used for the applicable signal phase.

For any given set of traffic volumes, the critical lane volume (CLV) for each ramp intersection can be calculated as the sum of the following:

CLV for Signal Phase 1 + CLV for Signal Phase 2 + CLV for Signal Phase 3

H.1.2.2.6 Capacity and Level-Of-Service Criteria for CLV Analysis

To facilitate calculation of capacity utilization, all traffic volumes are converted into passenger car units to account for the effects of trucks, peaking pattern, and truck equivalent factor.

The ideal intersection capacity with no amber and red times, combined with 100 percent efficient utilization of the green time, is set at 1900 pc/h/ln.

Under the CLV analysis methodology, the capacity of a given signalized intersection is called the **Intersection CLV Capacity.** It is determined by the percentage green time available to the traffic, or green time / cycle length (g/c) ratio, for the particular signal phasing scheme applicable to the interchange type, and the selected traffic signal cycle length.

Intersection CLV Capacity = 1900 x (Phase 1 Lost Time + Phase 2 Lost Time + Phase 3 Lost Time) / Cycle Length

where

Lost Time = Amber + Red – Amber Overrun

The following level of service approach used in the Synchro program is adopted to define the LOS for the CLV Analysis Approach:

Level of Service	% Utilization of Intersection Capacity
A	50% – 59%
B	60% - 69%
C	70% - 79%
D	80% - 84%
mD (mid D)	85% - 89%
E	90% - 99%
F	100% +

Illustrated below is a partial CLV worksheet output for the first 16 diamond interchange lane configurations (8 for North Ramp, 8 for South Ramp). It can be seen that 2 CLV analysis modules (one for AM peak, one for PM peak) are provided for each of the 8 North Ramp and 8 South Ramp lane configurations:

- North Ramp – AM Peak, 8 lane configurations
- North Ramp – PM Peak, 8 lane configurations
- South Ramp – AM Peak, 8 lane configurations
- South Ramp – PM Peak, 8 lane configurations

1. Diamond Interchange

Critical Lane Volume Intersection Capacity Analysis:

N Ramp

Cycle Length: 120

Critical Lane Volume Capacity (pcu): 1626

No. of signal phaseses: 3

	1	2	4	Sum	g/c
Lost Time:	2.0	6.5	6.0	14.5	0.88
CLV for min Green	111	238	158		

		2SLT	2 DLT		3SLT	3 DLT		
		↓ ↑	↓↓ ↑↑		↓↓↓ ↑↑		↓↓↓ ↑↑↑	
		↓ ⌐ ↰ ↑	↓↓ ⌐ ⌐ ↰ ↑↑	↓↓ ⌐ ⌐ ↰↰ ↑↑	↓↓↓ ⌐ ⌐ ↰ ↑↑	↓↓↓ ⌐ ⌐ ↰↰ ↑↑	↓↓↓ ⌐ ⌐ ↰ ↑↑↑	↓↓↓ ⌐ ⌐ ↰↰ ↑↑↑	↓↓↓ ⌐ ⌐ ↰↰ ↑↑↑
	CLV_1	1106 / 1	1106 / 1	1159 / 2	1106 / 1	1159 / 2	1106 / 1	1159 / 2	1159 / 2
	CLV_2	1287 / 1	1287 / 2	1287 / 2	1287 / 3	1287 / 3	1287 / 3	1287 / 3	1287 / 3
	CLV_3	64 / 1	-1041 / 2	12 / 2	-1041 / 2	12 / 2	-2147 / 3	-568 / 3	-568 / 3
	CLV_4	737 / 1	772 / 2	772 / 2	772 / 2	772 / 2	772 / 2	772 / 2	807 / 3
AM									
900 1100									
300	351	Max of CLV_1 & Min G_1	1106 / 1	1106 / 1	1159 / 2	1106 / 1	1159 / 2	1106 / 1	1159 / 2	1159 / 2
vph 600	702	Max of CLV_2 & CLV_3 & Min G_2	1287 / 1	1287 / 2	1287 / 2	1287 / 3	1287 / 3	1287 / 3	1287 / 3	1287 / 3
		Max of CLV_4 & Min G4	737 / 1	772 / 2	772 / 2	772 / 2	772 / 2	772 / 2	772 / 2	807 / 3
900 1000		Sum CLV	3130	2136	1609	1921	1395	1921	1395	1277
1053 1287		v/c	1.92	1.31	0.99	1.18	0.86	1.18	0.86	0.79
pcu		LOS	F	F	E	F	D	F	D	C
1053 1170										
PM										
400 1450		CLV_1	983 / 1	983 / 1	1030 / 2	983 / 1	1030 / 2	983 / 1	1030 / 2	1030 / 2
300		CLV_2	1697 / 1	1697 / 2	1697 / 2	1697 / 3	1697 / 3	1697 / 3	1697 / 3	1697 / 3
vph 600		CLV_3	655 / 1	-328 / 2	609 / 2	-328 / 2	609 / 2	-1311 / 3	94 / 3	94 / 3
		CLV_4	737 / 1	772 / 2	772 / 2	772 / 2	772 / 2	772 / 2	772 / 2	807 / 3
800 1400	351	Max of CLV_1 & Min G_1	983 / 1	983 / 1	1030 / 2	983 / 1	1030 / 2	983 / 1	1030 / 2	1030 / 2
468 1697		Max of CLV_2 & CLV_3 & Min G_2	1697 / 1	1697 / 2	1697 / 2	1697 / 3	1697 / 3	1697 / 3	1697 / 3	1697 / 3
pcu	702	Max of CLV_4 & Min G4	737 / 1	772 / 2	772 / 2	772 / 2	772 / 2	772 / 2	772 / 2	807 / 3
936 1638		Sum CLV	3417	2218	1749	1935	1467	1935	1467	1350
		v/c	2.10	1.36	1.08	1.19	0.90	1.19	0.90	0.83
		LOS	F	F	F	F	E	F	E	mD

1. Diamond Interchange

S Ramp

Critical Lane Volume Capacity: 1626.46

No. of signal phaseses: 3

		2SLT	2 DLT		3SLT	3 DLT		
		↓ ↑	↓↓ ↑↑		↓↓ ↑↑↑		↓↓↓ ↑↑↑	
		↓ ↳ ⌐ ↑	↓↓ ↳ ⌐ ⌐ ↑↑	↓↓ ↳ ⌐ ⌐ ↑↑	↓↓ ↳ ⌐ ⌐ ↑↑↑	↓↓ ↳ ⌐ ⌐ ↑↑↑	↓↓↓ ↳ ⌐ ⌐ ↑↑↑	↓↓↓ ↳ ⌐ ⌐ ↑↑↑	↓↓↓ ↳ ⌐ ⌐ ↑↑↑
	CLV_1	491 / 1	491 / 1	515 / 2	491 / 1	515 / 2	491 / 1	515 / 2	515 / 2
	CLV_2	1755 / 1	1755 / 2	1755 / 2	1755 / 3	1755 / 3	1755 / 3	1755 / 3	1755 / 3
	CLV_3	1030 / 1	538 / 2	1006 / 2	538 / 2	1006 / 2	47 / 3	749 / 3	749 / 3
	CLV_4	491 / 1	515 / 2	515 / 2	515 / 2	515 / 2	515 / 2	515 / 2	538 / 3
AM									
1300 400									
400									
800 vph		Max of CLV_1 & Min G_1	491 / 1	491 / 1	515 / 2	491 / 1	515 / 2	491 / 1	515 / 2	515 / 2
		Max of CLV_2 & CLV_3 & Min G_2	1755 / 1	1755 / 2	1755 / 2	1755 / 3	1755 / 3	1755 / 3	1755 / 3	1755 / 3
1500 500		Max of CLV_4 & Min G4	491 / 1	515 / 2	515 / 2	515 / 2	515 / 2	515 / 2	515 / 2	538 / 3
		Sum CLV	2738	1627	1393	1334	1100	1334	1100	1022
		v/c	1.68	1.00	0.86	0.82	0.68	0.82	0.68	0.63
		LOS	F	F	D	mD	B	mD	B	B
1521 468										
468										
936 pcu										
1755 585										
PM										
1690 360		CLV_1	442 / 1	442 / 1	463 / 2	442 / 1	463 / 2	442 / 1	463 / 2	463 / 2
		CLV_2	1638 / 1	1638 / 2	1638 / 2	1638 / 3	1638 / 3	1638 / 3	1638 / 3	1638 / 3
		CLV_3	1535 / 1	1093 / 2	1514 / 2	1093 / 2	1514 / 2	651 / 3	1283 / 3	1283 / 3
800		CLV_4	983 / 1	1030 / 2	1030 / 2	1030 / 2	1030 / 2	1030 / 2	1030 / 2	1077 / 3
1100 vph		Max of CLV_1 & Min G_1	442 / 1	442 / 1	463 / 2	442 / 1	463 / 2	442 / 1	463 / 2	463 / 2
		Max of CLV_2 & CLV_3 & Min G_2	1638 / 1	1638 / 2	1638 / 2	1638 / 3	1638 / 3	1638 / 3	1638 / 3	1638 / 3
1400 800		Max of CLV_4 & Min G4	983 / 1	1030 / 2	1030 / 2	1030 / 2	1030 / 2	1030 / 2	1030 / 2	1077 / 3
		Sum CLV	3064	1776	1566	1503	1293	1503	1293	1137
		v/c	1.88	1.09	0.96	0.92	0.79	0.92	0.79	0.70
		LOS	F	F	E	E	C	E	C	B
1978 421										
936										
1287 pcu										
1638 936										

H.2 Guidelines for Synchro/SimTraffic Interchange Simulation Analysis

Detailed interchange configurations were determined and confirmed by traffic simulation using the Synchro/SimTraffic Studio 7 suite of programs.

Synchro is used to establish basic model programming of the Synchro/SimTraffic model, as well as provide preliminary assessment of signal split timing and the effectiveness of the lane configuration in accommodating traffic demands.

SimTraffic is used to provide simulation statistics in the assessment of interchange performance. The measures of effectiveness used in interchange operation analysis are SimTraffic output parameters.

H.2.1 Criteria for Failed Interchange Operations

Ramp intersection operational failures often are caused by queue blockage which limits the freedom of traffic movements. Due to the heavy turning movements at typical interchanges, the high level of traffic volumes, and the close spacing of interchange ramp intersections, the effect of one single blockage can potentially propagates rapidly to the other crucial interchange or ramp intersection elements and result in loss of freedom of movements for a certain movements in some cases, and complete interchange failure or gridlock situation in the more critical cases. It is therefore essentially that interchanges are planned so that there is a high degree of movements for all traffic movements.

Criteria for failed interchange operations used in the NEERR Study include:

- Excessive queue in turn bay spilling out of bay and blocking adjacent through lane
- Excessive queue in through lane blocking turn bay
- Excessive delay > 80 s (simulated delay, unit - average delay per vehicle)
- Successive cycle failure (vehicles need to wait for multiple signal cycles to clear an intersection)
- Substantial consecutive stops (undesirable traffic progression performance)

H.2.2 Synchro / SimTraffic Models

Synchro / SimTraffic models were created to demonstrate that the recommended interchange configurations would satisfy the following requirements:

- Storage Requirements – to accommodate maximum queue of turning traffic so that the queue in the turn bay will not spill out of the turn bay and blocks the through traffic movement
- Blocking Prevention Requirement – to prevent blockage of access to turn bay by queue of through traffic
- In addition, the minimum deceleration requirement was also checked for compliance for the turn bay design at interchange ramp intersections.

The following Synchro/SimTraffic Files were prepared:

i. 30 Year (2041) Horizon, AM Peak Hour Model
ii. 30 Year (2041) Horizon, PM Peak Hour Model
iii. Long Term Horizon, AM Peak Hour Model
iv. Long Term Horizon, AM Peak Hour Model

H.2.3 Determination of Crossroad Turn Bay Dimensions at Service Interchanges

The **required turn bay length** shall satisfy all three requirements below:

- Deceleration Requirement – based on the specified Design Speed of the crossroad
- Storage Requirement – to accommodate maximum queue of turning traffic
- Blocking Pavement Requirement – to prevent blockage of access to turn bay by queue of through traffic

Notes:

1. The **length of a turn bay** is to be measured from the start of the bay taper to the stop line at the end of the turn bay.
2. In determining the storage requirements of a turn bay, the portion of the taper where the turn bay lane width is narrower than 3.0m will be considered unusable for vehicle storage. This initial unusable portion of the bay taper, therefore, shall not be included as the available storage distance calculation. For the purposes of this project, the lengths of the unavailable portion of the bay taper for storage are as follows:

   Length of unusable bay taper:

   (i) Design Speed of 60 km/h – 50m for single lane turn lane & 70m for double lane turn lanes
   (ii) Design Speed of 70 km/h – 60m for single lane turn lane & 80m for double lane turn lanes
   (iii) Design Speed of 80 km/h – 70m for single lane turn lane & 90m for double lane turn lanes

Accordingly, the turn bay length provided shall therefore meet the following criteria:

Table 1 – Criteria for Determination of Turn Bay Lengths at Crossroad Ramp Intersections

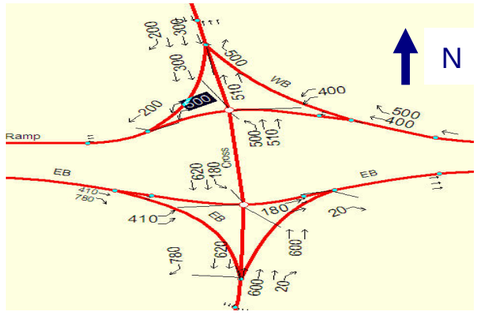
Crossroad Design Speed	Required Turn Bay Length (Use the largest value of the following 3 criteria to design for the turn bay) (measured from start of bay taper to stopline at the end of turn bay)				
	Deceleration Requirement	Storage Requirement (turn bay length)		Blocking Prevention Requirement	
		Single-Lane Turn Lane	Double-Lane Turn Lane	Single-Lane Turn Lane	Double-Lane Turn Lane
60 km/h	90 m	SimTraffic Maximum Queue in turn bay + 50m	SimTraffic Maximum Queue in turn bay + 70m	SimTraffic Maximum Queue in through lane + 50m	SimTraffic Maximum Queue in through lane + 70m
70 km/h	110 m	SimTraffic Maximum Queue in turn bay + 60m	SimTraffic Maximum Queue in turn bay + 80m	SimTraffic Maximum Queue in through lane + 60m	SimTraffic Maximum Queue in through lane + 80m
80 km/h	130 m	SimTraffic Maximum Queue in turn bay + 70m	SimTraffic Maximum Queue in turn bay + 90m	SimTraffic Maximum Queue in through lane + 70m	SimTraffic Maximum Queue in through lane + 90m

H.2.3.1 Example - Diamond Interchange on North / South Crossroad (with 70 km/h Design Speed)

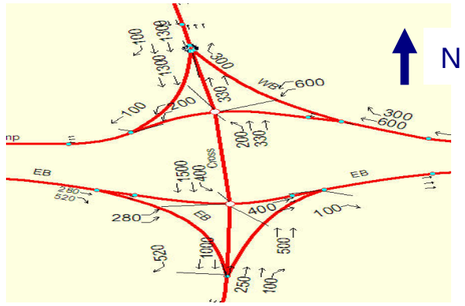
H.2.3.1.1 Lane Configurations and Peak Hour Volumes

(Note: The ramp intersection spacing is assumed to be 240m)

AM Peak Hour

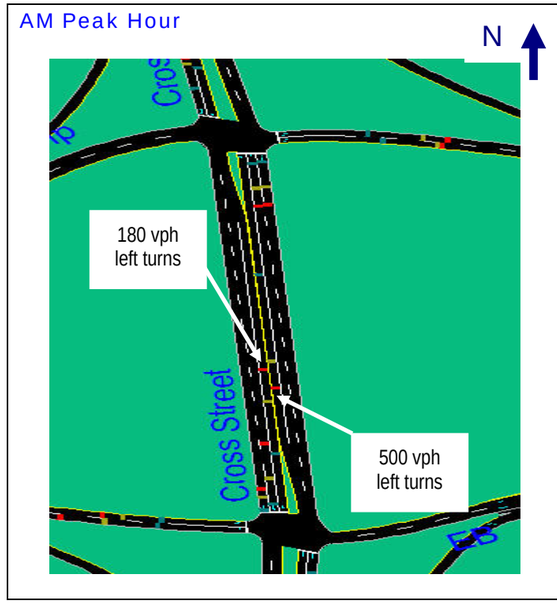


PM Peak Hour

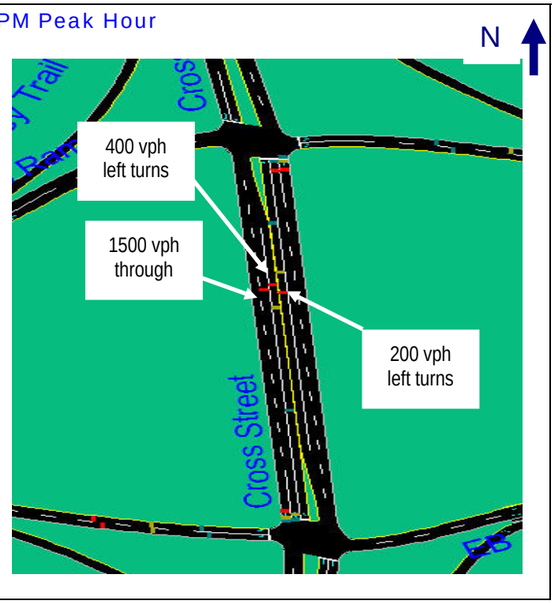


H.2.3.1.2 SimTraffic Maximum Queue Plot

AM Peak Hour



PM Peak Hour



Observations:

- The northbound left turns are more critical during the AM peak hour.
- The southbound left turns are more critical during the PM peak hour.
- Queues for southbound through traffic are also long in the PM peak hour.

H.2.3.1.3 SimTraffic Queuing and Blocking Report

AM Peak Hour (Critical Intersection: North Intersection – Node 3)

Intersection: 3: WB Ramp & Cross Street

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	L	T	T	T	T
Maximum Queue (m)	64.0	65.4	146.7	34.0	33.3	55.5	37.3
Average Queue (m)	41.2	35.3	76.5	7.2	6.7	30.2	18.0
95th Queue (m)	62.0	55.9	130.3	22.8	22.0	46.4	33.3
Link Distance (m)	110.2	110.2		222.2	222.2	111.5	111.5
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)			180.0				
Storage Blk Time (%)							
Queuing Penalty (veh)							

PM Peak Hour (Critical Intersection: South Intersection – Node 6)

Intersection: 6: EB Ramp & Cross Street

Movement	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	L	T	T	L	T	T
Maximum Queue (m)	70.7	66.6	59.9	38.9	145.6	142.9	6.4
Average Queue (m)	27.7	24.2	32.9	21.4	68.2	0.5	0.2
95th Queue (m)	47.5	46.6	49.7	37.2	131.6	3.8	2.2
Link Distance (m)	112.3	112.3	110.6	110.6		222.2	222.2
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)					180.0		
Storage Blk Time (%)							
Queuing Penalty (veh)							

North Ramp Intersection:

- Deceleration requirement for the northbound left turns is 110m (from Table 1)
- The northbound left turns have maximum queue of 146.7m in the AM peak hour (critical traffic period). At 70 km/h design speed, unusable taper length is 60m. Storage requirement for northbound left turns is therefore 147m+60m=207m
- During the AM peak hour, the through lane queue is considerably shorter at 34m. Bay length requirement to allow left turn traffic to drive around the through lane queue is therefore 34m+60m=94m
- Conclusion: Left Turn Storage of 207m is more critical - Use 210m turn bay length in design

South Ramp Intersection:

- Deceleration requirement for the northbound left turns is 110m (from Table 1)
- The southbound left turns have maximum queue of 145.6m in the PM peak hour (critical traffic period). At 70 km/h design speed, unusable taper length is 60m. Storage requirement for northbound left turns is therefore 146m+60m=206m
- During the PM peak hour, the through lane queue is slightly shorter at 142.9m. Bay length requirement to allow left turn traffic to drive around the through lane queue is therefore 143m+60m=203m
- Conclusion: Left Turn Storage of 206m is more critical – Use 210m turn bay length in design

H.2.4 Synchro Modeling Approach

- Ramp intersections at an interchange must be coordinated and share the same cycle length
- If there is a traffic signal within 600m of the ramp intersections, that traffic signal shall be included in the Synchro model to reflect the impact of this closely spaced adjacent traffic signal on the interchange operations.
- Determine if protected-only phasing is warranted using guidelines provided by ITE
- Cycle length should be realistic and shall be at least 70 s and perhaps a minimum of 100s to 120s on major corridors, depending on the number of signal phases, the amount of traffic, and congestion along the arterial (longer cycle length for heavier traffic). Use 5s increments (preferably 10s increments) for signal cycle lengths

- If the arterial is a major thoroughfare, the minimum green timings for the main street phase shall be at least 30 s. If the roadway is neither a major arterial nor a thoroughfare, the minimum green timings can be reduced to 20 s.
- Minimum green band along arterials (through the two interchange ramp intersections) shall be at least 30s, preferably significantly more so that there will be a reasonable level of progression along that arterial. If the roadway is neither a major arterial nor a thoroughfare, the minimum green band can be reduced to 20 s.
- Lead or lag for any given signal left turn phase shall be consistent during a particular peak traffic period (i.e. may be different in the AM and PM periods)
- Avoid consecutive stops. This includes through movements along the arterial, as well as heavy left turns from ramps onto the arterial.
- Need to examine both AM and PM peak hour needs. The more critical condition governs the intersection geometry and signal timing requirements. Turn bay storage, spill back, and blocking requirements must be satisfied for both AM and PM peak periods.
- Adjust for link OD for trips between 2 ramp intersections to eliminate freeway trips utilizing the interchange to make U-turns.
- For left turn volumes greater than 500 vph, double left turn lanes should be considered.
- Two lane approaches shall be used for ramp approaches for arterials with 2 or more lanes receiving the double left turns from the ramp approach
- Protected left turns shall be used for double left turn movements
- Shared through/left turn lanes may not be used along the arterials, unless such a lane configuration is commonly used in the region and only when the opposing through traffic volumes are light (less than 200 vph per lane)
- Split signal phasing shall not be used on major arterials or thoroughfares.

H.2.4.1 Synchro Modeling Parameters

Synchro Factors		Parameters	Recommended Values (* - non-adjustable)
H.2.4.1.1 Ideal Saturation Flow		Left Turns	1900 pc/h/ln *
		Through	1900 pc/h/ln *
		Right Turns	1900 pc/h/ln *
H.2.4.1.2 Lane Width		Left & Right Turns	3.5 m *
		Through	3.7 m *
H.2.4.1.3 Lost Time Adjustment			0 s *
H.2.4.1.4 Detectors	Left Turn Lane	No of Detectors	1 *
		Leading Detector	2 m *
		Trailing Detector	0 m *
		Detector 1 Position	0.0 m *
		Detector 1 Size	2.0 m *
		Detector 1 Type	Call + Extension *
	Through Lane	No of Detectors	1 *
		Leading Detector	10 m *
		Trailing Detector	0 m *
		Detector 1 Position	0.0 m *
		Detector 1 Size	0.6m *
		Detector 1 Type	Call + Extension *
	Right Turn Lane	No of Detectors	1 *
		Leading Detector	2 m *
		Trailing Detector	0 m *
		Detector 1 Position	0.0 m *
		Detector 1 Size	2.0 m *
		Detector 1 Type	Call + Extension *

Synchro Factors		Parameters	Recommended Values (* - non-adjustable)
H.2.4.1.5 Turning Speed		Left Turns	40 km/h (use higher speeds at locations where turn angle is > 100 degrees)
		Right Turns	30 / 40 / 50 km/h (use higher speeds if turning radii are designed for higher speeds)
H.2.4.1.6 Lane Utilization			Defaults *
H.2.4.1.7 Conflicting Peds			0 ped (ignore) *
H.2.4.1.8 Conflicting Bikes			0 bike (ignore) *
H.2.4.1.9 Peak Hour Factor			0.95 *
H.2.4.1.10 Heavy vehicles			5% * (unless specified noted otherwise)
H.2.4.1.11 Signal Timing	Min. Initial	Main Street	Major Arterial / Thoroughfare - 30 s * Minor Arterial / Collector / Non Thoroughfare – 20 s *
		Side Street	10 s *
		Left Arrows	7s *
	Amber	Through	Posted Speed: 5.0s for 80 km/h; 4.5s for 70 km/h; 4.0s for 60 km/h; 3.5s for 50 km/h *
		Lagging Left Arrow	3.0s amber *
		Leading Left arrow (Prot-Proh)	3.0s amber *
		Leading Left arrow (Prot-Perm)	3.0s amber *
	All Red	Through	From Major Road (Arterial) – 2.0 s * From Minor Road (Ramps), crossing 6 lanes – 2.5s * From Minor Road (Ramps), crossing 4 lanes – 2.0s *
		Lagging Left Arrow	Same as concurrent through phase *
		Leading Left arrow (Prot-Proh)	2.0s all red *
		Leading Left arrow (Prot-Perm)	1.0s al red *
H.2.4.1.12 Recall Mode		Major Street	C-Min *
		Minor Street	None (can be adjusted to min recall with the appropriate min Green setting if it is needed to create a desirable signal coordination pattern)
		Left Turns	None (can be adjusted to min recall with the appropriate min Green setting if it is needed to create a desirable signal coordination pattern)
H.2.4.1.13 Lead / Lag			Lead or Lag as warranted by operational benefits
H.2.4.1.14 Pedestrian Timings (generally not set except noted otherwise specifically. If that is the case, use these parameters)		Walk Time	7 s
		Walking Speed	1.2 m/s
		Flashing Don't Walk Time (FDW)	FDW = Crosswalk Distance / 1.2 – amber – Red; Crosswalk distance to be measured along the centre of crosswalk, measure to ~ 2 m beyond edge of conflicting through lane

H.2.5 SimTraffic Modeling Approach

- SimTraffic model must represent the proposed interchange accurately i.e. link length, bay length, turn radius, link speed, turn speed, etc
- Consider longer external links / boundary links to avoid potential denied entry occurring outside the model network
- Headway factor shall be adjusted for road segments with lower capacity (e.g. loop ramp and C-D Lanes) – apply adjustment factor using ratio of road segment capacity over ideal link capacity (See Table in Section H.2.5.1).
- Headway factor shall be adjusted for free-flow C-D roads / ramp segments with higher capacity. The headway factors for the following ramp / C-D lane operating speeds are:
- If there are long queues, add feeder intersection to simulate effects of upstream traffic signals (metering effect)
- May consider using signal coordination to dictate progression pattern so that arrival patterns of conflicting platoons can be separated. Longer ramp minimum green may be used to create gaps at downstream intersection
- If there is uneven lane distribution at double left turn lanes, the number of receiving lanes may be increased to improve the downstream traffic flow in the SimTraffic model. If that still does not work, the mandatory and positioning distance simulation settings may be modified.

H.2.5.1 SimTraffic Modeling Parameters

SimTraffic Simulation Settings	Parameters	Recommended Values (* - non-adjustable)
H.2.5.1.1 Interval Parameters	Seeding Interval	One 15 minutes interval *
	Recording Interval	Four 15 minutes intervals *
	PHF Adjust	Yes for Third Recording Interval *
	Anti-PHF Adjust	Yes for First, second and Fourth Recording Intervals *
H.2.5.1.2 Vehicle Parameters	Truck Percentage by Class	Use 0.05 Semi-1; 0.02 Semi-2; 0.03 Bus * (unless specifically stated otherwise)
H.2.5.1.3 Driver Parameters	All parameters	Use default values *
H.2.5.1.4 Enter Blocked Intersection?	Signalized Intersection	No *
	Unsignalized Intersection	No *
	Ramp Merge / Diverge Terminal	Yes *
H.2.5.1.5 Median Width	Single Left Turn Lane Without median	3.5m
	Single Left Turn Lane with Median	6.0m (= 3.5m + 2.5m)
	Double Left Turn Lanes with Median	9.5m (=3.5m + 3.5m + 2.5m)
H.2.5.1.6 Headway Factor	Ramp/C-D Lane with Operating Speed	Headway Factor
	> 80 km/h	0.97
	66 to 80 km/h	0.93
	51 to 65 km/h	0.88
	31 to 50 km/h	0.84
	≤ 30 km/h	0.80
H.2.5.1.7 Turning Speed	Left Turns	40 km/h (use higher speeds at locations where turn angle is > 100 degrees)
	Right Turns	30 / 40 / 50 km/h (use higher speeds if turning radii are designed for higher speeds)

H.2.5.2 SimTraffic Output Evaluation Criteria

- Average Delay Per Vehicle - Flag (for operational problems) raised when value > 60 s/veh
- Queue Length – view static queue plot or maximum queue length in simulation report. In cases where the maximum queue in the simulation report is very long and yet this level of queue is not observed in the simulation, the simulation visual observation will be used. The maximum queue length can be estimated by scaling the observed maximum queue length.
- Denied Entries – need to confirm at the end of the simulation run that there are minimum denied entries
- Lane Distribution – Check simulation for lane distribution in double left turn lanes to see if simulation is reasonable
- Optimum design is a balance between signal split timing allocation and bay storage / approach LOS (queue management / control)

H.3 Sensitivity Analysis – AHD Mainline Level of Service

H.3.1 Robustness of Recommended Long Term AHD Laning

Table No.	Description
Table H.3.1.1	Recommended Long Term AHD Laning with **80%** Long Term Traffic Volumes
Table H.3.1.2	Recommended Long Term AHD Laning with **90%** Long Term Traffic Volumes
Table H.3.1.3	Recommended Long Term AHD Laning with **100%** Long Term Traffic Volumes
Table H.3.1.4	Recommended Long Term AHD Laning with **110%** Long Term Traffic Volumes
Table H.3.1.5	Recommended Long Term AHD Laning with **120%** Long Term Traffic Volumes

Note: Results are summarized in **Table 4.11** in the main Report

Robustness of Recommended Long Term AHD Laning (Ref - Table 4.11)

Table H.3.1.1 Level of Service of Recommended Long Term AHD Laning (5 Basic Lanes) - with 80% Long Term Traffic Vol

Anthony Henday Dr		AHD Mainline Traffic Volumes (vph) (80% Long Term Traffic Volumes)				Recommended Long Term AHD Laning (5 Basic Lanes)											
						Long Term AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		3880	3296	2824	3592	4	4	8760	8760	0.44	0.38	0.32	0.41	B	B	A	B
Manning Dr	153 Ave	6336	5056	4616	6224	5	5	10950	10950	0.58	0.46	0.42	0.57	C	B	B	C
Under 153 Ave I/C		5992	4016	3824	5816	4	4	8760	8760	0.68	0.46	0.44	0.66	C	B	B	C
153 Ave	130 Ave	8880	5664	5304	7888	6	5	13140	10950	0.68	0.43	0.48	0.72	C	B	B	C
Under 130 Ave I/C		6864	4504	5056	7056	5	5	10950	10950	0.63	0.41	0.46	0.64	C	B	B	C
130 Ave	YHT	8008	5800	6072	7280	5	5	10950	10950	0.73	0.53	0.55	0.66	C	C	C	C
Under YHT I/C		5968	4040	4640	5288	4	4	8760	8760	0.68	0.46	0.53	0.60	C	B	C	C
YHT	Baseline Rd	8424	7320	7448	7896	6	5	13140	10950	0.64	0.56	0.68	0.72	C	C	C	C
Under Baseline Rd I/C		6664	6040	6408	6136	5	5	10950	10950	0.61	0.55	0.59	0.56	C	C	C	C
Baseline Rd	Sher Park Fwy	7464	7480	7768	7256	5	6	10950	13140	0.68	0.68	0.59	0.55	C	C	C	C
Under Sher Park Fwy I/C		5624	6400	6728	5416	5	5	10950	10950	0.51	0.58	0.61	0.49	C	C	C	B
Sher Park Fwy	Whitemud Dr	6264	8240	8648	6528	6	6	13140	13140	0.48	0.63	0.66	0.50	B	C	C	B
Under Whitemud Dr I/C		3824	5976	6672	4208	4	4	8760	8760	0.44	0.68	0.76	0.48	B	C	mD	B
Whitemud Dr	South Limit	4240	7536	8304	4976	5	5	10950	10950	0.39	0.69	0.76	0.45	B	C	mD	B

Robustness of Recommended Long Term AHD Laning (Ref - Table 4.11)

Table H.3.1.2 Level of Service of Recommended Long Term AHD Laning (5 Basic Lanes) - with 90% Long Term Traffic Volumes

Anthony Henday Dr		AHD Mainline Traffic Volumes (vph) (90% Long Term Traffic Volumes)				Recommended Long Term AHD Laning (5 Basic Lanes)											
						Long Term AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		4365	3708	3177	4041	4	4	8760	8760	0.50	0.42	0.36	0.46	B	B	B	B
Manning Dr	153 Ave	7128	5688	5193	7002	5	5	10950	10950	0.65	0.52	0.47	0.64	C	C	B	C
Under 153 Ave I/C		6741	4518	4302	6543	4	4	8760	8760	0.77	0.52	0.49	0.75	mD	C	B	mD
153 Ave	130 Ave	9990	6372	5967	8874	6	5	13140	10950	0.76	0.48	0.54	0.81	mD	B	C	mD
Under 130 Ave I/C		7722	5067	5688	7938	5	5	10950	10950	0.71	0.46	0.52	0.72	C	B	C	C
130 Ave	YHT	9009	6525	6831	8190	5	5	10950	10950	0.82	0.60	0.62	0.75	mD	C	C	mD
Under YHT I/C		6714	4545	5220	5949	4	4	8760	8760	0.77	0.52	0.60	0.68	mD	C	C	C
YHT	Baseline Rd	9477	8235	8379	8883	6	5	13140	10950	0.72	0.63	0.77	0.81	C	C	mD	mD
Under Baseline Rd I/C		7497	6795	7209	6903	5	5	10950	10950	0.68	0.62	0.66	0.63	C	C	C	C
Baseline Rd	Sher Park Fwy	8397	8415	8739	8163	5	6	10950	13140	0.77	0.77	0.67	0.62	mD	mD	C	C
Under Sher Park Fwy I/C		6327	7200	7569	6093	5	5	10950	10950	0.58	0.66	0.69	0.56	C	C	C	C
Sher Park Fwy	Whitemud Dr	7047	9270	9729	7344	6	6	13140	13140	0.54	0.71	0.74	0.56	C	C	mD	C
Under Whitemud Dr I/C		4302	6723	7506	4734	4	4	8760	8760	0.49	0.77	0.86	0.54	B	mD	D	C
Whitemud Dr	South Limit	4770	8478	9342	5598	5	5	10950	10950	0.44	0.77	0.85	0.51	B	mD	D	C

Robustness of Recommended Long Term AHD Laning (Ref - Table 4.11)

Table H.3.1.3 Level of Service of Recommended Long Term AHD Laning (5 Basic Lanes) - with 100% Long Term Traffic Volumes

Anthony Henday Dr		AHD Mainline Traffic Volumes (vph) (100% Long Term Traffic Volumes)				Recommended Long Term AHD Laning (5 Basic Lanes)											
						Long Term AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		4850	4120	3530	4490	4	4	8760	8760	0.55	0.47	0.40	0.51	C	B	B	C
Manning Dr	153 Ave	7920	6320	5770	7780	5	5	10950	10950	0.72	0.58	0.53	0.71	C	C	C	C
Under 153 Ave I/C		7490	5020	4780	7270	4	4	8760	8760	0.86	0.57	0.55	0.83	D	C	C	mD
153 Ave	130 Ave	11100	7080	6630	9860	6	5	13140	10950	0.84	0.54	0.61	0.90	mD	C	C	D
Under 130 Ave I/C		8580	5630	6320	8820	5	5	10950	10950	0.78	0.51	0.58	0.81	mD	C	C	mD
130 Ave	YHT	10010	7250	7590	9100	5	5	10950	10950	0.91	0.66	0.69	0.83	E	C	C	mD
Under YHT I/C		7460	5050	5800	6610	4	4	8760	8760	0.85	0.58	0.66	0.75	D	C	C	mD
YHT	Baseline Rd	10530	9150	9310	9870	6	5	13140	10950	0.80	0.70	0.85	0.90	mD	C	D	D
Under Baseline Rd I/C		8330	7550	8010	7670	5	5	10950	10950	0.76	0.69	0.73	0.70	mD	C	C	C
Baseline Rd	Sher Park Fwy	9330	9350	9710	9070	5	6	10950	13140	0.85	0.85	0.74	0.69	D	D	C	C
Under Sher Park Fwy I/C		7030	8000	8410	6770	5	5	10950	10950	0.64	0.73	0.77	0.62	C	C	mD	C
Sher Park Fwy	Whitemud Dr	7830	10300	10810	8160	6	6	13140	13140	0.60	0.78	0.82	0.62	C	mD	mD	C
Under Whitemud Dr I/C		4780	7470	8340	5260	4	4	8760	8760	0.55	0.85	0.95	0.60	C	D	E	C
Whitemud Dr	South Limit	5300	9420	10380	6220	5	5	10950	10950	0.48	0.86	0.95	0.57	B	D	E	C

Robustness of Recommended Long Term AHD Laning (Ref - Table 4.11)

Table H.3.1.4 Level of Service of Recommended Long Term AHD Laning (5 Basic Lanes) - with 110% Long Term Traffic Volumes

Anthony Henday Dr		AHD Mainline Traffic Volumes (vph) (110% Long Term Traffic Volumes)				Recommended Long Term AHD Laning (5 Basic Lanes)											
						Long Term AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		5335	4532	3883	4939	4	4	8760	8760	0.61	0.52	0.44	0.56	C	C	B	C
Manning Dr	153 Ave	8712	6952	6347	8558	5	5	10950	10950	0.80	0.63	0.58	0.78	mD	C	C	mD
Under 153 Ave I/C		8239	5522	5258	7997	4	4	8760	8760	0.94	0.63	0.60	0.91	E	C	C	E
153 Ave	130 Ave	12210	7788	7293	10846	6	5	13140	10950	0.93	0.59	0.67	0.99	E	C	C	E
Under 130 Ave I/C		9438	6193	6952	9702	5	5	10950	10950	0.86	0.57	0.63	0.89	D	C	C	D
130 Ave	YHT	11011	7975	8349	10010	5	5	10950	10950	1.01	0.73	0.76	0.91	F	C	mD	E
Under YHT I/C		8206	5555	6380	7271	4	4	8760	8760	0.94	0.63	0.73	0.83	E	C	C	mD
YHT	Baseline Rd	11583	10065	10241	10857	6	5	13140	10950	0.88	0.77	0.94	0.99	D	mD	E	E
Under Baseline Rd I/C		9163	8305	8811	8437	5	5	10950	10950	0.84	0.76	0.80	0.77	mD	mD	mD	mD
Baseline Rd	Sher Park Fwy	10263	10285	10681	9977	5	6	10950	13140	0.94	0.94	0.81	0.76	E	E	mD	mD
Under Sher Park Fwy I/C		7733	8800	9251	7447	5	5	10950	10950	0.71	0.80	0.84	0.68	C	mD	mD	C
Sher Park Fwy	Whitemud Dr	8613	11330	11891	8976	6	6	13140	13140	0.66	0.86	0.90	0.68	C	D	D	C
Under Whitemud Dr I/C		5258	8217	9174	5786	4	4	8760	8760	0.60	0.94	1.05	0.66	C	E	F	C
Whitemud Dr	South Limit	5830	10362	11418	6842	5	5	10950	10950	0.53	0.95	1.04	0.62	C	E	F	C

Robustness of Recommended Long Term AHD Laning (Ref - Table 4.11)

Table H.3.1.5 Level of Service of Recommended Long Term AHD Laning (5 Basic Lanes) - with 120% Long Term Traffic Volumes

Anthony Henday Dr		AHD Mainline Traffic Volumes (vph) (120% Long Term Traffic Volumes)				Recommended Long Term AHD Laning (5 Basic Lanes)											
						Long Term AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		5820	4944	4236	5388	4	4	8760	8760	0.66	0.56	0.48	0.62	C	C	B	C
Manning Dr	153 Ave	9504	7584	6924	9336	5	5	10950	10950	0.87	0.69	0.63	0.85	D	C	C	D
Under 153 Ave I/C		8988	6024	5736	8724	4	4	8760	8760	1.03	0.69	0.65	1.00	F	C	C	E
153 Ave	130 Ave	13320	8496	7956	11832	6	5	13140	10950	1.01	0.65	0.73	1.08	F	C	C	F
Under 130 Ave I/C		10296	6756	7584	10584	5	5	10950	10950	0.94	0.62	0.69	0.97	E	C	C	E
130 Ave	YHT	12012	8700	9108	10920	5	5	10950	10950	1.10	0.79	0.83	1.00	F	mD	mD	E
Under YHT I/C		8952	6060	6960	7932	4	4	8760	8760	1.02	0.69	0.79	0.91	F	C	mD	D
YHT	Baseline Rd	12636	10980	11172	11844	6	5	13140	10950	0.96	0.84	1.02	1.08	E	mD	F	F
Under Baseline Rd I/C		9996	9060	9612	9204	5	5	10950	10950	0.91	0.83	0.88	0.84	E	mD	D	mD
Baseline Rd	Sher Park Fwy	11196	11220	11652	10884	5	6	10950	13140	1.02	1.02	0.89	0.83	F	F	D	mD
Under Sher Park Fwy I/C		8436	9600	10092	8124	5	5	10950	10950	0.77	0.88	0.92	0.74	mD	D	E	mD
Sher Park Fwy	Whitemud Dr	9396	12360	12972	9792	6	6	13140	13140	0.72	0.94	0.99	0.75	C	E	E	mD
Under Whitemud Dr I/C		5736	8964	10008	6312	4	4	8760	8760	0.65	1.02	1.14	0.72	C	F	F	C
Whitemud Dr	South Limit	6360	11304	12456	7464	5	5	10950	10950	0.58	1.03	1.14	0.68	C	F	F	C

H.3.2 Robustness of Recommended 30 Year AHD Laning – Under Long Term Traffic

Table No.	Description
Table H.3.2.1	Recommended 30 Year (2041) AHD Laning with **80%** Long Term Traffic Volumes
Table H.3.2.2	Recommended 30 Year (2041) AHD Laning with **90%** Long Term Traffic Volumes
Table H.3.2.3	Recommended 30 Year (2041) AHD Laning with **100%** Long Term Traffic Volumes
Table H.3.2.4	Recommended 30 Year (2041) AHD Laning with **110%** Long Term Traffic Volumes
Table H.3.2.5	Recommended 30 Year (2041) AHD Laning with **120%** Long Term Traffic Volumes

Note: Results are summarized in **Table 4.13** in the main Report

Robustness of the 30 Year (2041) Horizon Laning - Under Long Term Traffic (Ref - Table 4.13)

Table 3.2.1 Level of Service of Recommended 30 Year AHD Laning (3 Basic Lanes) - with 80% Long Term Traffic Volumes

Anthony Henday Dr		AHD Mainline Traffic Volumes (vph) (80% Long Term Traffic Volumes)				Recommended 30 Year (2041) AHD Laning (3 Basic Lanes)											
						30 Year AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		3880	3296	2824	3592	3	3	6570	6570	0.59	0.50	0.43	0.55	C	B	B	C
Manning Dr	153 Ave	6336	5056	4616	6224	3	3	6570	6570	0.96	0.77	0.70	0.95	E	mD	C	E
Under 153 Ave I/C		5992	4016	3824	5816	3	3	6570	6570	0.91	0.61	0.58	0.89	E	C	C	D
153 Ave	130 Ave	8880	5664	5304	7888	4	4	8760	8760	1.01	0.65	0.61	0.90	F	C	C	D
Under 130 Ave I/C		6864	4504	5056	7056	4	4	8760	8760	0.78	0.51	0.58	0.81	mD	C	C	mD
130 Ave	YHT	8008	5800	6072	7280	4	4	8760	8760	0.91	0.66	0.69	0.83	E	C	C	mD
Under YHT I/C		5968	4040	4640	5288	3	3	6570	6570	0.91	0.61	0.71	0.80	D	C	C	mD
YHT	Baseline Rd	8424	7320	7448	7896	4	4	8760	8760	0.96	0.84	0.85	0.90	E	mD	D	D
Under Baseline Rd I/C		6664	6040	6408	6136	3	3	6570	6570	1.01	0.92	0.98	0.93	F	E	E	E
Baseline Rd	Sher Park Fwy	7464	7480	7768	7256	4	4	8760	8760	0.85	0.85	0.89	0.83	D	D	D	mD
Under Sher Park Fwy I/C		5624	6400	6728	5416	3	3	6570	6570	0.86	0.97	1.02	0.82	D	E	F	mD
Sher Park Fwy	Whitemud Dr	6264	8240	8648	6528	3	4	6570	8760	0.95	1.25	0.99	0.75	E	F	E	mD
Under Whitemud Dr I/C		3824	5976	6672	4208	3	3	6570	6570	0.58	0.91	1.02	0.64	C	D	F	C
Whitemud Dr	South Limit	4240	7536	8304	4976	3	3	6570	6570	0.65	1.15	1.26	0.76	C	F	F	mD

Robustness of the 30 Year (2041) Horizon Laning - Under Long Term Traffic (Ref - Table 4.13)

Table 3.2.2 Level of Service of Recommended 30 Year AHD Laning (3 Basic Lanes) - with 90% Long Term Traffic Volumes

Anthony Henday Dr		AHD Mainline Traffic Volumes (vph) (90% Long Term Traffic Volumes)				Recommended 30 Year (2041) AHD Laning (3 Basic Lanes)											
						30 Year AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		4365	3708	3177	4041	3	3	6570	6570	0.66	0.56	0.48	0.62	C	C	B	C
Manning Dr	153 Ave	7128	5688	5193	7002	3	3	6570	6570	1.08	0.87	0.79	1.07	F	D	mD	F
Under 153 Ave I/C		6741	4518	4302	6543	3	3	6570	6570	1.03	0.69	0.65	1.00	F	C	C	E
153 Ave	130 Ave	9990	6372	5967	8874	4	4	8760	8760	1.14	0.73	0.68	1.01	F	C	C	F
Under 130 Ave I/C		7722	5067	5688	7938	4	4	8760	8760	0.88	0.58	0.65	0.91	D	C	C	D
130 Ave	YHT	9009	6525	6831	8190	4	4	8760	8760	1.03	0.74	0.78	0.93	F	mD	mD	E
Under YHT I/C		6714	4545	5220	5949	3	3	6570	6570	1.02	0.69	0.79	0.91	F	C	mD	D
YHT	Baseline Rd	9477	8235	8379	8883	4	4	8760	8760	1.08	0.94	0.96	1.01	F	E	E	F
Under Baseline Rd I/C		7497	6795	7209	6903	3	3	6570	6570	1.14	1.03	1.10	1.05	F	F	F	F
Baseline Rd	Sher Park Fwy	8397	8415	8739	8163	4	4	8760	8760	0.96	0.96	1.00	0.93	E	E	E	E
Under Sher Park Fwy I/C		6327	7200	7569	6093	3	3	6570	6570	0.96	1.10	1.15	0.93	E	F	F	E
Sher Park Fwy	Whitemud Dr	7047	9270	9729	7344	3	4	6570	8760	1.07	1.41	1.11	0.84	F	F	F	mD
Under Whitemud Dr I/C		4302	6723	7506	4734	3	3	6570	6570	0.65	1.02	1.14	0.72	C	F	F	C
Whitemud Dr	South Limit	4770	8478	9342	5598	3	3	6570	6570	0.73	1.29	1.42	0.85	C	F	F	D

Robustness of the 30 Year (2041) Horizon Laning - Under Long Term Traffic (Ref - Table 4.13)

Table 3.2.3 Level of Service of Recommended 30 Year AHD Laning (3 Basic Lanes) - with 100% Long Term Traffic Volume

Anthony Henday Dr		AHD Mainline Traffic Volumes (vph) (100% Long Term Traffic Volumes)				Recommended 30 Year (2041) AHD Laning (3 Basic Lanes)											
						30 Year AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		4850	4120	3530	4490	3	3	6570	6570	0.74	0.63	0.54	0.68	C	C	C	C
Manning Dr	153 Ave	7920	6320	5770	7780	3	3	6570	6570	1.21	0.96	0.88	1.18	F	E	D	F
Under 153 Ave I/C		7490	5020	4780	7270	3	3	6570	6570	1.14	0.76	0.73	1.11	F	mD	C	F
153 Ave	130 Ave	11100	7080	6630	9860	4	4	8760	8760	1.27	0.81	0.76	1.13	F	mD	mD	F
Under 130 Ave I/C		8580	5630	6320	8820	4	4	8760	8760	0.98	0.64	0.72	1.01	E	C	C	F
130 Ave	YHT	10010	7250	7590	9100	4	4	8760	8760	1.14	0.83	0.87	1.04	F	mD	D	F
Under YHT I/C		7460	5050	5800	6610	3	3	6570	6570	1.14	0.77	0.88	1.01	F	mD	D	F
YHT	Baseline Rd	10530	9150	9310	9870	4	4	8760	8760	1.20	1.04	1.06	1.13	F	F	F	F
Under Baseline Rd I/C		8330	7550	8010	7670	3	3	6570	6570	1.27	1.15	1.22	1.17	F	F	F	F
Baseline Rd	Sher Park Fwy	9330	9350	9710	9070	4	4	8760	8760	1.07	1.07	1.11	1.04	F	F	F	F
Under Sher Park Fwy I/C		7030	8000	8410	6770	3	3	6570	6570	1.07	1.22	1.28	1.03	F	F	F	F
Sher Park Fwy	Whitemud Dr	7830	10300	10810	8160	3	4	6570	8760	1.19	1.57	1.23	0.93	F	F	F	E
Under Whitemud Dr I/C		4780	7470	8340	5260	3	3	6570	6570	0.73	1.14	1.27	0.80	C	F	F	mD
Whitemud Dr	South Limit	5300	9420	10380	6220	3	3	6570	6570	0.81	1.43	1.58	0.95	mD	F	F	E

Robustness of the 30 Year (2041) Horizon Laning - Under Long Term Traffic (Ref - Table 4.13)

Table 3.2.4 Level of Service of Recommended 30 Year AHD Laning (3 Basic Lanes) - with 110% Long Term Traffic Volume

Anthony Henday Dr		AHD Mainline Traffic Volumes (vph) (110% Long Term Traffic Volumes)				Recommended 30 Year (2041) AHD Laning (3 Basic Lanes)											
						30 Year AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		5335	4532	3883	4939	3	3	6570	6570	0.81	0.69	0.59	0.75	mD	C	C	mD
Manning Dr	153 Ave	8712	6952	6347	8558	3	3	6570	6570	1.33	1.06	0.97	1.30	F	F	E	F
Under 153 Ave I/C		8239	5522	5258	7997	3	3	6570	6570	1.25	0.84	0.80	1.22	F	mD	mD	F
153 Ave	130 Ave	12210	7788	7293	10846	4	4	8760	8760	1.39	0.89	0.83	1.24	F	D	mD	F
Under 130 Ave I/C		9438	6193	6952	9702	4	4	8760	8760	1.08	0.71	0.79	1.11	F	C	mD	F
130 Ave	YHT	11011	7975	8349	10010	4	4	8760	8760	1.26	0.91	0.95	1.14	F	E	E	F
Under YHT I/C		8206	5555	6380	7271	3	3	6570	6570	1.25	0.85	0.97	1.11	F	mD	E	F
YHT	Baseline Rd	11583	10065	10241	10857	4	4	8760	8760	1.32	1.15	1.17	1.24	F	F	F	F
Under Baseline Rd I/C		9163	8305	8811	8437	3	3	6570	6570	1.39	1.26	1.34	1.28	F	F	F	F
Baseline Rd	Sher Park Fwy	10263	10285	10681	9977	4	4	8760	8760	1.17	1.17	1.22	1.14	F	F	F	F
Under Sher Park Fwy I/C		7733	8800	9251	7447	3	3	6570	6570	1.18	1.34	1.41	1.13	F	F	F	F
Sher Park Fwy	Whitemud Dr	8613	11330	11891	8976	3	4	6570	8760	1.31	1.72	1.36	1.02	F	F	F	F
Under Whitemud Dr I/C		5258	8217	9174	5786	3	3	6570	6570	0.80	1.25	1.40	0.88	mD	F	F	D
Whitemud Dr	South Limit	5830	10362	11418	6842	3	3	6570	6570	0.89	1.58	1.74	1.04	D	F	F	F

Robustness of the 30 Year (2041) Horizon Laning - Under Long Term Traffic (Ref - Table 4.13)

Table 3.2.5 Level of Service of Recommended 30 Year AHD Laning (3 Basic Lanes) - with 120% Long Term Traffic Volum

Anthony Henday Dr		AHD Mainline Traffic Volumes (vph) (120% Long Term Traffic Volumes)				Recommended 30 Year (2041) AHD Laning (3 Basic Lanes)											
						30 Year AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		5820	4944	4236	5388	3	3	6570	6570	0.89	0.75	0.64	0.82	D	mD	C	mD
Manning Dr	153 Ave	9504	7584	6924	9336	3	3	6570	6570	1.45	1.15	1.05	1.42	F	F	F	F
Under 153 Ave I/C		8988	6024	5736	8724	3	3	6570	6570	1.37	0.92	0.87	1.33	F	E	D	F
153 Ave	130 Ave	13320	8496	7956	11832	4	4	8760	8760	1.52	0.97	0.91	1.35	F	E	D	F
Under 130 Ave I/C		10296	6756	7584	10584	4	4	8760	8760	1.18	0.77	0.87	1.21	F	mD	D	F
130 Ave	YHT	12012	8700	9108	10920	4	4	8760	8760	1.37	0.99	1.04	1.25	F	E	F	F
Under YHT I/C		8952	6060	6960	7932	3	3	6570	6570	1.36	0.92	1.06	1.21	F	E	F	F
YHT	Baseline Rd	12636	10980	11172	11844	4	4	8760	8760	1.44	1.25	1.28	1.35	F	F	F	F
Under Baseline Rd I/C		9996	9060	9612	9204	3	3	6570	6570	1.52	1.38	1.46	1.40	F	F	F	F
Baseline Rd	Sher Park Fwy	11196	11220	11652	10884	4	4	8760	8760	1.28	1.28	1.33	1.24	F	F	F	F
Under Sher Park Fwy I/C		8436	9600	10092	8124	3	3	6570	6570	1.28	1.46	1.54	1.24	F	F	F	F
Sher Park Fwy	Whitemud Dr	9396	12360	12972	9792	3	4	6570	8760	1.43	1.88	1.48	1.12	F	F	F	F
Under Whitemud Dr I/C		5736	8964	10008	6312	3	3	6570	6570	0.87	1.36	1.52	0.96	D	F	F	E
Whitemud Dr	South Limit	6360	11304	12456	7464	3	3	6570	6570	0.97	1.72	1.90	1.14	E	F	F	F

H.3.3 Robustness of Recommended 30 Year AHD Laning

Table No.	Description
Table H.3.3.1	Recommended 30 Year (2041) AHD Laning with **70%** 30 Year Traffic Volumes
Table H.3.3.2	Recommended 30 Year (2041) AHD Laning with **80%** 30 Year Traffic Volumes
Table H.3.3.3	Recommended 30 Year (2041) AHD Laning with **90%** 30 Year Traffic Volumes
Table H.3.3.4	Recommended 30 Year (2041) AHD Laning with **100%** 30 Year Traffic Volumes
Table H.3.3.5	Recommended 30 Year (2041) AHD Laning with **110%** 30 Year Traffic Volumes
Table H.3.3.6	Recommended 30 Year (2041) AHD Laning with **120%** 30 Year Traffic Volumes

Note: Results are summarized in **Table 4.15** in the main Report

Robustness of the Recommended 30 Year (2041) AHD Laning (Ref - Table 4.15)

Table H.3.3.1 Level of Service of Recommended 30 Year AHD Laning (3 Basic Lanes) - with 70% 30 Year Traffic Volumes

Anthony Henday Drive		AHD Mainline Traffic Volumes (vph) (70% 30 Year Traffic Volumes) [Note]				Recommended 30 Year (2041) AHD Laning (3 Basic Lanes)											
						30 Year AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		2240	2100	2030	2205	3	3	6570	6570	0.34	0.32	0.31	0.34	B	A	A	B
Manning Dr	153 Ave	2940	2870	2800	3045	3	3	6570	6570	0.45	0.44	0.43	0.46	B	B	B	B
Under 153 Ave I/C		2660	2030	2170	2765	3	3	6570	6570	0.40	0.31	0.33	0.42	B	A	B	B
153 Ave	130 Ave	4340	3045	2940	4095	4	4	8760	8760	0.50	0.35	0.34	0.47	B	B	B	B
Under 130 Ave I/C		4130	2835	2590	3850	4	4	8760	8760	0.47	0.32	0.30	0.44	B	A	A	B
130 Ave	YHT	4200	2975	2800	3920	4	4	8760	8760	0.48	0.34	0.32	0.45	B	B	A	B
Under YHT I/C		3360	1995	2100	3360	3	3	6570	6570	0.51	0.30	0.32	0.51	C	A	A	C
YHT	Baseline Rd	5040	3780	3885	5215	4	4	8760	8760	0.58	0.43	0.44	0.60	C	B	B	C
Under Baseline Rd I/C		3780	2870	3045	3920	3	3	6570	6570	0.58	0.44	0.46	0.60	C	B	B	C
Baseline Rd	Sher Park Fwy	4410	3920	3885	4690	4	4	8760	8760	0.50	0.45	0.44	0.54	B	B	B	C
Under Sher Park Fwy I/C		3115	3010	2975	3150	3	3	6570	6570	0.47	0.46	0.45	0.48	B	B	B	B
Sher Park Fwy	Whitemud Dr	3535	3920	4165	3710	3	4	6570	8760	0.54	0.60	0.48	0.42	C	C	B	B
Under Whitemud Dr I/C		2310	3150	3325	2485	3	3	6570	6570	0.35	0.48	0.51	0.38	B	B	B	B
Whitemud Dr	South Limit	2660	3955	4095	2800	3	3	6570	6570	0.40	0.60	0.62	0.43	B	C	C	B

[Note]: 70% of 30 Year Traffic is estimated to be the traffic volumes within a year after Opening Day

Robustness of the Recommended 30 Year (2041) AHD Laning (Ref - Table 4.15)

Table H.3.3.2 Level of Service of Recommended 30 Year AHD Laning (3 Basic Lanes) - with 80% 30 Year Traffic Volumes

Anthony Henday Drive		AHD Mainline Traffic Volumes (vph) (80% 30 Year Traffic Volumes) [Note]				Recommended 30 Year (2041) AHD Laning (3 Basic Lanes)											
						30 Year AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		2560	2400	2320	2520	3	3	6570	6570	0.39	0.37	0.35	0.38	B	B	B	B
Manning Dr	153 Ave	3360	3280	3200	3480	3	3	6570	6570	0.51	0.50	0.49	0.53	C	B	B	C
Under 153 Ave I/C		3040	2320	2480	3160	3	3	6570	6570	0.46	0.35	0.38	0.48	B	B	B	B
153 Ave	130 Ave	4960	3480	3360	4680	4	4	8760	8760	0.57	0.40	0.38	0.53	C	B	B	C
Under 130 Ave I/C		4720	3240	2960	4400	4	4	8760	8760	0.54	0.37	0.34	0.50	C	B	B	B
130 Ave	YHT	4800	3400	3200	4480	4	4	8760	8760	0.55	0.39	0.37	0.51	C	B	B	C
Under YHT I/C		3840	2280	2400	3840	3	3	6570	6570	0.58	0.35	0.37	0.58	C	B	B	C
YHT	Baseline Rd	5760	4320	4440	5960	4	4	8760	8760	0.66	0.49	0.51	0.68	C	B	B	C
Under Baseline Rd I/C		4320	3280	3480	4480	3	3	6570	6570	0.66	0.50	0.53	0.68	C	B	C	C
Baseline Rd	Sher Park Fwy	5040	4480	4440	5360	4	4	8760	8760	0.58	0.51	0.51	0.61	C	C	B	C
Under Sher Park Fwy I/C		3560	3440	3400	3600	3	3	6570	6570	0.54	0.52	0.52	0.55	C	C	C	C
Sher Park Fwy	Whitemud Dr	4040	4480	4760	4240	3	4	6570	8760	0.61	0.68	0.54	0.48	C	C	C	B
Under Whitemud Dr I/C		2640	3600	3800	2840	3	3	6570	6570	0.40	0.55	0.58	0.43	B	C	C	B
Whitemud Dr	South Limit	3040	4520	4680	3200	3	3	6570	6570	0.46	0.69	0.71	0.49	B	C	C	B

[Note]: 80% of 30 Year Traffic is estimated to be the traffic volumes in 10 years after Opening Day

Robustness of the Recommended 30 Year (2041) AHD Laning (Ref - Table 4.15)

Table H.3.3.3 Level of Service of Recommended 30 Year AHD Laning (3 Basic Lanes) - with 90% 30 Year Traffic Volumes

Anthony Henday Drive		AHD Mainline Traffic Volumes (vph) (90% 30 Year Traffic Volumes) [Note]				Recommended 30 Year (2041) AHD Laning (3 Basic Lanes)											
						30 Year AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		2880	2700	2610	2835	3	3	6570	6570	0.44	0.41	0.40	0.43	B	B	B	B
Manning Dr	153 Ave	3780	3690	3600	3915	3	3	6570	6570	0.58	0.56	0.55	0.60	C	C	C	C
Under 153 Ave I/C		3420	2610	2790	3555	3	3	6570	6570	0.52	0.40	0.42	0.54	C	B	B	C
153 Ave	130 Ave	5580	3915	3780	5265	4	4	8760	8760	0.64	0.45	0.43	0.60	C	B	B	C
Under 130 Ave I/C		5310	3645	3330	4950	4	4	8760	8760	0.61	0.42	0.38	0.57	C	B	B	C
130 Ave	YHT	5400	3825	3600	5040	4	4	8760	8760	0.62	0.44	0.41	0.58	C	B	B	C
Under YHT I/C		4320	2565	2700	4320	3	3	6570	6570	0.66	0.39	0.41	0.66	C	B	B	C
YHT	Baseline Rd	6480	4860	4995	6705	4	4	8760	8760	0.74	0.55	0.57	0.77	C	C	C	mD
Under Baseline Rd I/C		4860	3690	3915	5040	3	3	6570	6570	0.74	0.56	0.60	0.77	C	C	C	mD
Baseline Rd	Sher Park Fwy	5670	5040	4995	6030	4	4	8760	8760	0.65	0.58	0.57	0.69	C	C	C	C
Under Sher Park Fwy I/C		4005	3870	3825	4050	3	3	6570	6570	0.61	0.59	0.58	0.62	C	C	C	C
Sher Park Fwy	Whitemud Dr	4545	5040	5355	4770	3	4	6570	8760	0.69	0.77	0.61	0.54	C	mD	C	C
Under Whitemud Dr I/C		2970	4050	4275	3195	3	3	6570	6570	0.45	0.62	0.65	0.49	B	C	C	B
Whitemud Dr	South Limit	3420	5085	5265	3600	3	3	6570	6570	0.52	0.77	0.80	0.55	C	mD	mD	C

[Note]: 90% of 30 Year Traffic is estimated to be the traffic volumes in 20 years after Opening Day

Robustness of the Recommended 30 Year (2041) AHD Laning (Ref - Table 4.15)

Table H.3.3.4 Level of Service of Recommended 30 Year AHD Laning (3 Basic Lanes) - with 100% 30 Year Traffic Volumes

Anthony Henday Drive		AHD Mainline Traffic Volumes (vph) (100% 30 Year Traffic Volumes)				Recommended 30 Year (2041) AHD Laning (3 Basic Lanes)											
						30 Year AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		3200	3000	2900	3150	3	3	6570	6570	0.49	0.46	0.44	0.48	B	B	B	B
Manning Dr	153 Ave	4200	4100	4000	4350	3	3	6570	6570	0.64	0.62	0.61	0.66	C	C	C	C
Under 153 Ave I/C		3800	2900	3100	3950	3	3	6570	6570	0.58	0.44	0.47	0.60	C	B	B	C
153 Ave	130 Ave	6200	4350	4200	5850	4	4	8760	8760	0.71	0.50	0.48	0.67	C	B	B	C
Under 130 Ave I/C		5900	4050	3700	5500	4	4	8760	8760	0.67	0.46	0.42	0.63	C	B	B	C
130 Ave	YHT	6000	4250	4000	5600	4	4	8760	8760	0.68	0.49	0.46	0.64	C	B	B	C
Under YHT I/C		4800	2850	3000	4800	3	3	6570	6570	0.73	0.43	0.46	0.73	C	B	B	C
YHT	Baseline Rd	7200	5400	5550	7450	4	4	8760	8760	0.82	0.62	0.63	0.85	mD	C	C	D
Under Baseline Rd I/C		5400	4100	4350	5600	3	3	6570	6570	0.82	0.62	0.66	0.85	mD	C	C	D
Baseline Rd	Sher Park Fwy	6300	5600	5550	6700	4	4	8760	8760	0.72	0.64	0.63	0.76	C	C	C	mD
Under Sher Park Fwy I/C		4450	4300	4250	4500	3	3	6570	6570	0.68	0.65	0.65	0.68	C	C	C	C
Sher Park Fwy	Whitemud Dr	5050	5600	5950	5300	3	4	6570	8760	0.77	0.85	0.68	0.61	mD	D	C	C
Under Whitemud Dr I/C		3300	4500	4750	3550	3	3	6570	6570	0.50	0.68	0.72	0.54	B	C	C	C
Whitemud Dr	South Limit	3800	5650	5850	4000	3	3	6570	6570	0.58	0.86	0.89	0.61	C	D	D	C

Robustness of the Recommended 30 Year (2041) AHD Laning (Ref - Table 4.15)

Table H.3.3.5 Level of Service of Recommended 30 Year AHD Laning (3 Basic Lanes) - with 110% 30 Year Traffic Volumes

Anthony Henday Drive		AHD Mainline Traffic Volumes (vph) (110% 30 Year Traffic Volumes)				Recommended 30 Year (2041) AHD Laning (3 Basic Lanes)											
						30 Year AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		3520	3300	3190	3465	3	3	6570	6570	0.54	0.50	0.49	0.53	C	B	B	C
Manning Dr	153 Ave	4620	4510	4400	4785	3	3	6570	6570	0.70	0.69	0.67	0.73	C	C	C	C
Under 153 Ave I/C		4180	3190	3410	4345	3	3	6570	6570	0.64	0.49	0.52	0.66	C	B	C	C
153 Ave	130 Ave	6820	4785	4620	6435	4	4	8760	8760	0.78	0.55	0.53	0.73	mD	C	C	C
Under 130 Ave I/C		6490	4455	4070	6050	4	4	8760	8760	0.74	0.51	0.46	0.69	mD	B	B	C
130 Ave	YHT	6600	4675	4400	6160	4	4	8760	8760	0.75	0.53	0.50	0.70	mD	C	B	C
Under YHT I/C		5280	3135	3300	5280	3	3	6570	6570	0.80	0.48	0.50	0.80	mD	B	B	mD
YHT	Baseline Rd	7920	5940	6105	8195	4	4	8760	8760	0.90	0.68	0.70	0.94	D	C	C	**E**
Under Baseline Rd I/C		5940	4510	4785	6160	3	3	6570	6570	0.90	0.69	0.73	0.94	D	C	C	**E**
Baseline Rd	Sher Park Fwy	6930	6160	6105	7370	4	4	8760	8760	0.79	0.70	0.70	0.84	mD	C	C	mD
Under Sher Park Fwy I/C		4895	4730	4675	4950	3	3	6570	6570	0.75	0.72	0.71	0.75	mD	C	C	mD
Sher Park Fwy	Whitemud Dr	5555	6160	6545	5830	3	4	6570	8760	0.85	0.94	0.75	0.67	mD	**E**	mD	C
Under Whitemud Dr I/C		3630	4950	5225	3905	3	3	6570	6570	0.55	0.75	0.80	0.59	C	mD	mD	C
Whitemud Dr	South Limit	4180	6215	6435	4400	3	3	6570	6570	0.64	0.95	0.98	0.67	C	**E**	**E**	C

Robustness of the Recommended 30 Year (2041) AHD Laning (Ref - Table 4.15)

Table H.3.3.6 Level of Service of Recommended 30 Year AHD Laning (3 Basic Lanes) - with 120% 30 Year Traffic Volumes

Anthony Henday Drive		AHD Mainline Traffic Volumes (vph) (120% 30 Year Traffic Volumes)				Recommended 30 Year (2041) AHD Laning (3 Basic Lanes)											
						30 Year AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		3840	3600	3480	3780	3	3	6570	6570	0.58	0.55	0.53	0.58	C	C	C	C
Manning Dr	153 Ave	5040	4920	4800	5220	3	3	6570	6570	0.77	0.75	0.73	0.79	mD	mD	C	mD
Under 153 Ave I/C		4560	3480	3720	4740	3	3	6570	6570	0.69	0.53	0.57	0.72	C	C	C	C
153 Ave	130 Ave	7440	5220	5040	7020	4	4	8760	8760	0.85	0.60	0.58	0.80	mD	C	C	mD
Under 130 Ave I/C		7080	4860	4440	6600	4	4	8760	8760	0.81	0.55	0.51	0.75	mD	C	B	mD
130 Ave	YHT	7200	5100	4800	6720	4	4	8760	8760	0.82	0.58	0.55	0.77	mD	C	C	mD
Under YHT I/C		5760	3420	3600	5760	3	3	6570	6570	0.88	0.52	0.55	0.88	D	C	C	D
YHT	Baseline Rd	8640	6480	6660	8940	4	4	8760	8760	0.99	0.74	0.76	1.02	E	C	mD	F
Under Baseline Rd I/C		6480	4920	5220	6720	3	3	6570	6570	0.99	0.75	0.79	1.02	E	mD	mD	F
Baseline Rd	Sher Park Fwy	7560	6720	6660	8040	4	4	8760	8760	0.86	0.77	0.76	0.92	D	mD	mD	E
Under Sher Park Fwy I/C		5340	5160	5100	5400	3	3	6570	6570	0.81	0.79	0.78	0.82	mD	mD	mD	mD
Sher Park Fwy	Whitemud Dr	6060	6720	7140	6360	3	4	6570	8760	0.92	1.02	0.82	0.73	E	F	mD	C
Under Whitemud Dr I/C		3960	5400	5700	4260	3	3	6570	6570	0.60	0.82	0.87	0.65	C	mD	D	C
Whitemud Dr	South Limit	4560	6780	7020	4800	3	3	6570	6570	0.69	1.03	1.07	0.73	C	F	F	C

H.3.4 Robustness of Existing AHD Laning

Table No.	Description
Table H.3.4.1	Recommended Existing AHD Laning with **70%** 30 Year Traffic Volumes
Table H.3.4.2	Recommended Existing AHD Laning with **80%** 30 Year Traffic Volumes
Table H.3.4.3	Recommended Existing AHD Laning with **85%** 30 Year Traffic Volumes
Table H.3.4.4	Recommended Existing AHD Laning with **90%** 30 Year Traffic Volumes
Table H.3.4.5	Recommended Existing AHD Laning with **100%** 30 Year Traffic Volumes
Table H.3.4.6	Recommended Existing AHD Laning with **110%** 30 Year Traffic Volumes
Table H.3.4.7	Recommended Existing AHD Laning with **120%** 30 Year Traffic Volumes

Note: Results are summarized in **Table 4.17** in the main Report

Robustness of Existing AHD Laning (Ref - Table 4.17)

Table H.3.4.1 Level Of Service of Existing AHD Laning (2 Basic Lanes) - with 70% 30 Year Traffic Volumes

Anthony Henday Drive		AHD Mainline Traffic Volumes (70% 30 Year Traffic Volumes) [Note]				Existing AHD Laning (2 Basic Lane)											
						Existing AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		2240	2100	2030	2205	2	2	4200	4200	0.53	0.50	0.48	0.53	C	B	B	C
Manning Dr	153 Ave	2940	2870	2800	3045	2	2	4200	4200	0.70	0.68	0.67	0.73	C	C	C	C
Under 153 Ave I/C		2660	2030	2170	2765	2	2	4200	4200	0.63	0.48	0.52	0.66	C	B	C	C
153 Ave	130 Ave	4340	3045	2940	4095	2	2	4200	4200	1.03	0.73	0.70	0.98	F	C	C	E
Under 130 Ave I/C		4130	2835	2590	3850	2	2	4200	4200	0.98	0.68	0.62	0.92	E	C	C	E
130 Ave	YHT	4200	2975	2800	3920	2	2	4200	4200	1.00	0.71	0.67	0.93	E	C	C	E
Under YHT I/C		3360	1995	2100	3360	2	2	4200	4200	0.80	0.48	0.50	0.80	mD	B	B	mD
YHT	Baseline Rd	5040	3780	3885	5215	3	3	6570	6570	0.77	0.58	0.59	0.79	mD	C	C	mD
Under Baseline Rd I/C		3780	2870	3045	3920	2	2	4200	4200	0.90	0.68	0.73	0.93	D	C	C	E
Baseline Rd	Sher Park Fwy	4410	3920	3885	4690	2	2	4200	4200	1.05	0.93	0.93	1.12	F	E	E	F
Under Sher Park Fwy I/C		3115	3010	2975	3150	3	3	6570	6570	0.47	0.46	0.45	0.48	B	B	B	B
Sher Park Fwy	Whitemud Dr	3535	3920	4165	3710	2	2	4200	4200	0.84	0.93	0.99	0.88	mD	E	E	D
Under Whitemud Dr I/C		2310	3150	3325	2485	2	2	4200	4200	0.55	0.75	0.79	0.59	C	mD	mD	C
Whitemud Dr	South Limit	2660	3955	4095	2800	2	2	4200	4200	0.63	0.94	0.98	0.67	C	E	E	C

[Note]: 70% of 30 Year Traffic is estimated to be the traffic volumes within a year after Opening Day

Robustness of Existing AHD Laning (Ref - Table 4.17)

Table H.3.4.2 Level Of Service of Existing AHD Laning (2 Basic Lanes) - with 80% 30 Year Traffic Volumes

affic is estimated to be the traff		AHD Mainline Traffic Volumes (80% 30 Year Traffic Volumes) [Note]				Existing AHD Laning (2 Basic Lane)											
						Existing AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		2560	2400	2320	2520	2	2	4200	4200	0.61	0.57	0.55	0.60	C	C	C	C
Manning Dr	153 Ave	3360	3280	3200	3480	2	2	4200	4200	0.80	0.78	0.76	0.83	mD	mD	mD	mD
Under 153 Ave I/C		3040	2320	2480	3160	2	2	4200	4200	0.72	0.55	0.59	0.75	C	C	C	mD
153 Ave	130 Ave	4960	3480	3360	4680	2	2	4200	4200	1.18	0.83	0.80	1.11	F	mD	mD	F
Under 130 Ave I/C		4720	3240	2960	4400	2	2	4200	4200	1.12	0.77	0.70	1.05	F	mD	C	F
130 Ave	YHT	4800	3400	3200	4480	2	2	4200	4200	1.14	0.81	0.76	1.07	F	mD	mD	F
Under YHT I/C		3840	2280	2400	3840	2	2	4200	4200	0.91	0.54	0.57	0.91	E	C	C	E
YHT	Baseline Rd	5760	4320	4440	5960	3	3	6570	6570	0.88	0.66	0.68	0.91	D	C	C	D
Under Baseline Rd I/C		4320	3280	3480	4480	2	2	4200	4200	1.03	0.78	0.83	1.07	F	mD	mD	F
Baseline Rd	Sher Park Fwy	5040	4480	4440	5360	2	2	4200	4200	1.20	1.07	1.06	1.28	F	F	F	F
Under Sher Park Fwy I/C		3560	3440	3400	3600	3	3	6570	6570	0.54	0.52	0.52	0.55	C	C	C	C
Sher Park Fwy	Whitemud Dr	4040	4480	4760	4240	2	2	4200	4200	0.96	1.07	1.13	1.01	E	F	F	F
Under Whitemud Dr I/C		2640	3600	3800	2840	2	2	4200	4200	0.63	0.86	0.90	0.68	C	D	D	C
Whitemud Dr	South Limit	3040	4520	4680	3200	2	2	4200	4200	0.72	1.08	1.11	0.76	C	F	F	mD

[Note]: 80% of 30 Year Traffic is estimated to be the traffic volumes in 10 Years after Opening Day

Robustness of Existing AHD Laning (Ref - Table 4.17)

Table H.3.4.3 Level Of Service of Existing AHD Laning (2 Basic Lanes) - with 85% 30 Year Traffic Volumes

affic is estimated to be the traff		AHD Mainline Traffic Volumes (85% 30 Year Traffic Volumes) [Note]				Existing AHD Laning (2 Basic Lane)											
						Existing AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		2720	2550	2470	2680	2	2	4200	4200	0.65	0.61	0.59	0.64	C	C	C	C
Manning Dr	153 Ave	3570	3490	3400	3700	2	2	4200	4200	0.85	0.83	0.81	0.88	mD	mD	mD	D
Under 153 Ave I/C		3230	2470	2640	3360	2	2	4200	4200	0.77	0.59	0.63	0.80	mD	C	C	mD
153 Ave	130 Ave	5270	3700	3570	4970	2	2	4200	4200	1.25	0.88	0.85	1.18	F	D	mD	F
Under 130 Ave I/C		5020	3440	3150	4680	2	2	4200	4200	1.20	0.82	0.75	1.11	F	mD	mD	F
130 Ave	YHT	5100	3610	3400	4760	2	2	4200	4200	1.21	0.86	0.81	1.13	F	D	mD	F
Under YHT I/C		4080	2420	2550	4080	2	2	4200	4200	0.97	0.58	0.61	0.97	E	C	C	E
YHT	Baseline Rd	6120	4590	4720	6330	3	3	6570	6570	0.93	0.70	0.72	0.96	E	C	C	E
Under Baseline Rd I/C		4590	3490	3700	4760	2	2	4200	4200	1.09	0.83	0.88	1.13	F	mD	D	F
Baseline Rd	Sher Park Fwy	5360	4760	4720	5700	2	2	4200	4200	1.28	1.13	1.12	1.36	F	F	F	F
Under Sher Park Fwy I/C		3780	3660	3610	3830	3	3	6570	6570	0.58	0.56	0.55	0.58	C	C	C	C
Sher Park Fwy	Whitemud Dr	4290	4760	5060	4510	2	2	4200	4200	1.02	1.13	1.20	1.07	F	F	F	F
Under Whitemud Dr I/C		2810	3830	4040	3020	2	2	4200	4200	0.67	0.91	0.96	0.72	C	E	E	C
Whitemud Dr	South Limit	3230	4800	4970	3400	2	2	4200	4200	0.77	1.14	1.18	0.81	mD	F	F	mD

[Note]: 85% of 30 Year Traffic is estimated to be the traffic volumes in 15 years after Opening Day

Robustness of Existing AHD Laning (Ref - Table 4.17)

Table H.3.4.4 Level Of Service of Existing AHD Laning (2 Basic Lanes) - with 90% 30 Year Traffic Volumes

affic is estimated to be the traff		AHD Mainline Traffic Volumes (90% 30 Year Traffic Volumes) [Note]				Existing AHD Laning (2 Basic Lane)											
						Existing AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		2880	2700	2610	2835	2	2	4200	4200	0.69	0.64	0.62	0.68	C	C	C	C
Manning Dr	153 Ave	3780	3690	3600	3915	2	2	4200	4200	0.90	0.88	0.86	0.93	D	D	D	E
Under 153 Ave I/C		3420	2610	2790	3555	2	2	4200	4200	0.81	0.62	0.66	0.85	mD	C	C	mD
153 Ave	130 Ave	5580	3915	3780	5265	2	2	4200	4200	1.33	0.93	0.90	1.25	F	E	D	F
Under 130 Ave I/C		5310	3645	3330	4950	2	2	4200	4200	1.26	0.87	0.79	1.18	F	D	mD	F
130 Ave	YHT	5400	3825	3600	5040	2	2	4200	4200	1.29	0.91	0.86	1.20	F	E	D	F
Under YHT I/C		4320	2565	2700	4320	2	2	4200	4200	1.03	0.61	0.64	1.03	F	C	C	F
YHT	Baseline Rd	6480	4860	4995	6705	3	3	6570	6570	0.99	0.74	0.76	1.02	E	C	mD	F
Under Baseline Rd I/C		4860	3690	3915	5040	2	2	4200	4200	1.16	0.88	0.93	1.20	F	D	E	F
Baseline Rd	Sher Park Fwy	5670	5040	4995	6030	2	2	4200	4200	1.35	1.20	1.19	1.44	F	F	F	F
Under Sher Park Fwy I/C		4005	3870	3825	4050	3	3	6570	6570	0.61	0.59	0.58	0.62	C	C	C	C
Sher Park Fwy	Whitemud Dr	4545	5040	5355	4770	2	2	4200	4200	1.08	1.20	1.28	1.14	F	F	F	F
Under Whitemud Dr I/C		2970	4050	4275	3195	2	2	4200	4200	0.71	0.96	1.02	0.76	C	E	F	mD
Whitemud Dr	South Limit	3420	5085	5265	3600	2	2	4200	4200	0.81	1.21	1.25	0.86	mD	F	F	D

[Note]: 90% of 30 Year Traffic is estimated to be the traffic volumes in 20 years after Opening Day

Robustness of Existing AHD Laning (Ref - Table 4.17)

Table H.3.4.5 Level Of Service of Existing AHD Laning (2 Basic Lanes) - with 100% 30 Year Traffic Volumes

Anthony Henday Drive		AHD Mainline Traffic Volumes (100% 30 Year Traffic Volumes)				Existing AHD Laning (2 Basic Lane)											
						Existing AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		3200	3000	2900	3150	2	2	4200	4200	0.76	0.71	0.69	0.75	mD	C	C	mD
Manning Dr	153 Ave	4200	4100	4000	4350	2	2	4200	4200	1.00	0.98	0.95	1.04	E	E	E	F
Under 153 Ave I/C		3800	2900	3100	3950	2	2	4200	4200	0.90	0.69	0.74	0.94	D	C	C	E
153 Ave	130 Ave	6200	4350	4200	5850	2	2	4200	4200	1.48	1.04	1.00	1.39	F	F	E	F
Under 130 Ave I/C		5900	4050	3700	5500	2	2	4200	4200	1.40	0.96	0.88	1.31	F	E	D	F
130 Ave	YHT	6000	4250	4000	5600	2	2	4200	4200	1.43	1.01	0.95	1.33	F	F	E	F
Under YHT I/C		4800	2850	3000	4800	2	2	4200	4200	1.14	0.68	0.71	1.14	F	C	C	F
YHT	Baseline Rd	7200	5400	5550	7450	3	3	6570	6570	1.10	0.82	0.84	1.13	F	mD	mD	F
Under Baseline Rd I/C		5400	4100	4350	5600	2	2	4200	4200	1.29	0.98	1.04	1.33	F	E	F	F
Baseline Rd	Sher Park Fwy	6300	5600	5550	6700	2	2	4200	4200	1.50	1.33	1.32	1.60	F	F	F	F
Under Sher Park Fwy I/C		4450	4300	4250	4500	3	3	6570	6570	0.68	0.65	0.65	0.68	C	C	C	C
Sher Park Fwy	Whitemud Dr	5050	5600	5950	5300	2	2	4200	4200	1.20	1.33	1.42	1.26	F	F	F	F
Under Whitemud Dr I/C		3300	4500	4750	3550	2	2	4200	4200	0.79	1.07	1.13	0.85	mD	F	F	mD
Whitemud Dr	South Limit	3800	5650	5850	4000	2	2	4200	4200	0.90	1.35	1.39	0.95	D	F	F	E

Robustness of Existing AHD Laning (Ref - Table 4.17)

Table H.3.4.6 Level Of Service of Existing AHD Laning(2 Basic Lanes) - with 110% 30 Year Traffic Volumes

Anthony Henday Drive		AHD Mainline Traffic Volumes (110% 30 Year Traffic Volumes)				Existing AHD Laning (2 Basic Lane)											
						Existing AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		3520	3300	3190	3465	2	2	4200	4200	0.84	0.79	0.76	0.83	mD	mD	mD	mD
Manning Dr	153 Ave	4620	4510	4400	4785	2	2	4200	4200	1.10	1.07	1.05	1.14	F	F	F	F
Under 153 Ave I/C		4180	3190	3410	4345	2	2	4200	4200	1.00	0.76	0.81	1.03	E	mD	mD	F
153 Ave	130 Ave	6820	4785	4620	6435	2	2	4200	4200	1.62	1.14	1.10	1.53	F	F	F	F
Under 130 Ave I/C		6490	4455	4070	6050	2	2	4200	4200	1.55	1.06	0.97	1.44	F	F	E	F
130 Ave	YHT	6600	4675	4400	6160	2	2	4200	4200	1.57	1.11	1.05	1.47	F	F	F	F
Under YHT I/C		5280	3135	3300	5280	2	2	4200	4200	1.26	0.75	0.79	1.26	F	mD	mD	F
YHT	Baseline Rd	7920	5940	6105	8195	3	3	6570	6570	1.21	0.90	0.93	1.25	F	D	E	F
Under Baseline Rd I/C		5940	4510	4785	6160	2	2	4200	4200	1.41	1.07	1.14	1.47	F	F	F	F
Baseline Rd	Sher Park Fwy	6930	6160	6105	7370	2	2	4200	4200	1.65	1.47	1.45	1.75	F	F	F	F
Under Sher Park Fwy I/C		4895	4730	4675	4950	3	3	6570	6570	0.75	0.72	0.71	0.75	mD	C	C	mD
Sher Park Fwy	Whitemud Dr	5555	6160	6545	5830	2	2	4200	4200	1.32	1.47	1.56	1.39	F	F	F	F
Under Whitemud Dr I/C		3630	4950	5225	3905	2	2	4200	4200	0.86	1.18	1.24	0.93	D	F	F	E
Whitemud Dr	South Limit	4180	6215	6435	4400	2	2	4200	4200	1.00	1.48	1.53	1.05	E	F	F	F

Robustness of Existing AHD Laning (Ref - Table 4.17)

Table H.3.4.7 Level Of Service of Existing AHD Laning (2 Basic Lanes) - with 120% 30 Year Traffic Volumes

Anthony Henday Drive		AHD Mainline Traffic Volumes (120% 30 Year Traffic Volumes)				Existing AHD Laning (2 Basic Lane)											
						Existing AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		3840	3600	3480	3780	2	2	4200	4200	0.91	0.86	0.83	0.90	E	D	mD	D
Manning Dr	153 Ave	5040	4920	4800	5220	2	2	4200	4200	1.20	1.17	1.14	1.24	F	F	F	F
Under 153 Ave I/C		4560	3480	3720	4740	2	2	4200	4200	1.09	0.83	0.89	1.13	F	mD	D	F
153 Ave	130 Ave	7440	5220	5040	7020	2	2	4200	4200	1.77	1.24	1.20	1.67	F	F	F	F
Under 130 Ave I/C		7080	4860	4440	6600	2	2	4200	4200	1.69	1.16	1.06	1.57	F	F	F	F
130 Ave	YHT	7200	5100	4800	6720	2	2	4200	4200	1.71	1.21	1.14	1.60	F	F	F	F
Under YHT I/C		5760	3420	3600	5760	2	2	4200	4200	1.37	0.81	0.86	1.37	F	mD	D	F
YHT	Baseline Rd	8640	6480	6660	8940	3	3	6570	6570	1.32	0.99	1.01	1.36	F	E	F	F
Under Baseline Rd I/C		6480	4920	5220	6720	2	2	4200	4200	1.54	1.17	1.24	1.60	F	F	F	F
Baseline Rd	Sher Park Fwy	7560	6720	6660	8040	2	2	4200	4200	1.80	1.60	1.59	1.91	F	F	F	F
Under Sher Park Fwy I/C		5340	5160	5100	5400	3	3	6570	6570	0.81	0.79	0.78	0.82	mD	mD	mD	mD
Sher Park Fwy	Whitemud Dr	6060	6720	7140	6360	2	2	4200	4200	1.44	1.60	1.70	1.51	F	F	F	F
Under Whitemud Dr I/C		3960	5400	5700	4260	2	2	4200	4200	0.94	1.29	1.36	1.01	E	F	F	F
Whitemud Dr	South Limit	4560	6780	7020	4800	2	2	4200	4200	1.09	1.61	1.67	1.14	F	F	F	F

H.3.5 Robustness of Minimum Opening Day AHD Laning

Table No.	Description
Table H.3.5.1	Recommended Minimum Opening Day AHD Laning with **70%** 30 Year Traffic Volumes
Table H.3.5.2	Recommended Minimum Opening Day AHD Laning with **80%** 30 Year Traffic Volumes
Table H.3.5.3	Recommended Minimum Opening Day AHD Laning with **85%** 30 Year Traffic Volumes
Table H.3.5.4	Recommended Minimum Opening Day AHD Laning with **90%** 30 Year Traffic Volumes
Table H.3.5.5	Recommended Minimum Opening Day AHD Laning with **100%** 30 Year Traffic Volumes
Table H.3.5.6	Recommended Minimum Opening Day AHD Laning with **110%** 30 Year Traffic Volumes
Table H.3.5.7	Recommended Minimum Opening Day AHD Laning with **120%** 30 Year Traffic Volumes

Note: Results are summarized in **Table 4.19** in the main Report

Robustness of Minimum Opening Day AHD Laning (Ref - Table 4.19)

Table H.3.5.1 Level Of Service of Minimum Opening Day AHD Laning (3 Basic Lanes) - with 70% 30 Year Traffic Volumes

Anthony Henday Drive		AHD Mainline Traffic Volumes (vph) (70% 30 Year Traffic Volumes) [Note]				Minimum Opening Day AHD Laning (3 Basic Lanes)											
						Min Opening Day AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		2240	2100	2030	2205	2	2	4200	4200	0.53	0.50	0.48	0.53	C	B	B	C
Manning Dr	153 Ave	2940	2870	2800	3045	3	3	6570	6570	0.45	0.44	0.43	0.46	B	B	B	B
Under 153 Ave I/C		2660	2030	2170	2765	2	2	4200	4200	0.63	0.48	0.52	0.66	C	B	C	C
153 Ave	130 Ave	4340	3045	2940	4095	3	3	6570	6570	0.66	0.46	0.45	0.62	C	B	B	C
Under 130 Ave I/C		4130	2835	2590	3850	3	3	6570	6570	0.63	0.43	0.39	0.59	C	B	B	C
130 Ave	YHT	4200	2975	2800	3920	3	3	6570	6570	0.64	0.45	0.43	0.60	C	B	B	C
Under YHT I/C		3360	1995	2100	3360	3	3	6570	6570	0.51	0.30	0.32	0.51	C	A	A	C
YHT	Baseline Rd	5040	3780	3885	5215	4	4	8760	8760	0.58	0.43	0.44	0.60	C	B	B	C
Under Baseline Rd I/C		3780	2870	3045	3920	3	3	6570	6570	0.58	0.44	0.46	0.60	C	B	B	C
Baseline Rd	Sher Park Fwy	4410	3920	3885	4690	3	3	6570	6570	0.67	0.60	0.59	0.71	C	C	C	C
Under Sher Park Fwy I/C		3115	3010	2975	3150	3	3	6570	6570	0.47	0.46	0.45	0.48	B	B	B	B
Sher Park Fwy	Whitemud Dr	3535	3920	4165	3710	3	3	6570	6570	0.54	0.60	0.63	0.56	C	C	C	C
Under Whitemud Dr I/C		2310	3150	3325	2485	2	2	4200	4200	0.55	0.75	0.79	0.59	C	mD	mD	C
Whitemud Dr	South Limit	2660	3955	4095	2800	3	3	6570	6570	0.40	0.60	0.62	0.43	B	C	C	B

[Note]: 70% of 30 Year Traffic is estimated to be the traffic volumes within a year after Opening Day

Robustness of Minimum Opening Day AHD Laning - Under 30 Year Traffic (Ref - Table 4.19)

Table H.3.5.2 Level Of Service of Minimum Opening Day AHD Laning (3 Basic Lanes) - with 80% 30 Year Traffic Volumes

Anthony Henday Drive		AHD Mainline Traffic Volumes (vph) (80% 30 Year Traffic Volumes) [Note]				Minimum Opening Day AHD Laning (3 Basic Lanes)											
						Min Opening Day AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		2560	2400	2320	2520	2	2	4200	4200	0.61	0.57	0.55	0.60	C	C	C	C
Manning Dr	153 Ave	3360	3280	3200	3480	3	3	6570	6570	0.51	0.50	0.49	0.53	C	B	B	C
Under 153 Ave I/C		3040	2320	2480	3160	2	2	4200	4200	0.72	0.55	0.59	0.75	C	C	C	mD
153 Ave	130 Ave	4960	3480	3360	4680	3	3	6570	6570	0.75	0.53	0.51	0.71	mD	C	C	C
Under 130 Ave I/C		4720	3240	2960	4400	3	3	6570	6570	0.72	0.49	0.45	0.67	C	B	B	C
130 Ave	YHT	4800	3400	3200	4480	3	3	6570	6570	0.73	0.52	0.49	0.68	C	C	B	C
Under YHT I/C		3840	2280	2400	3840	3	3	6570	6570	0.58	0.35	0.37	0.58	C	B	B	C
YHT	Baseline Rd	5760	4320	4440	5960	4	4	8760	8760	0.66	0.49	0.51	0.68	C	B	B	C
Under Baseline Rd I/C		4320	3280	3480	4480	3	3	6570	6570	0.66	0.50	0.53	0.68	C	B	C	C
Baseline Rd	Sher Park Fwy	5040	4480	4440	5360	3	3	6570	6570	0.77	0.68	0.68	0.82	mD	C	C	mD
Under Sher Park Fwy I/C		3560	3440	3400	3600	3	3	6570	6570	0.54	0.52	0.52	0.55	C	C	C	C
Sher Park Fwy	Whitemud Dr	4040	4480	4760	4240	3	3	6570	6570	0.61	0.68	0.72	0.65	C	C	C	C
Under Whitemud Dr I/C		2640	3600	3800	2840	2	2	4200	4200	0.63	0.86	0.90	0.68	C	D	D	C
Whitemud Dr	South Limit	3040	4520	4680	3200	3	3	6570	6570	0.46	0.69	0.71	0.49	B	C	C	B

[Note]: 80% of 30 Year Traffic is estimated to be the traffic volumes in 10 years after Opening Day

Robustness of Minimum Opening Day AHD Laning - Under 30 Year Traffic (Ref - Table 4.19)

Table H.3.5.3 Level Of Service of Minimum Opening Day AHD Laning (3 Basic Lanes) - with 85% 30 Year Traffic Volumes

Anthony Henday Drive		AHD Mainline Traffic Volumes (vph) (85% 30 Year Traffic Volumes) [Note]				Minimum Opening Day AHD Laning (3 Basic Lanes)											
						Min Opening Day AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		2720	2550	2470	2680	2	2	4200	4200	0.65	0.61	0.59	0.64	C	C	C	C
Manning Dr	153 Ave	3570	3490	3400	3700	3	3	6570	6570	0.54	0.53	0.52	0.56	C	C	C	C
Under 153 Ave I/C		3230	2470	2640	3360	2	2	4200	4200	0.77	0.59	0.63	0.80	mD	C	C	mD
153 Ave	130 Ave	5270	3700	3570	4970	3	3	6570	6570	0.80	0.56	0.54	0.76	mD	C	C	mD
Under 130 Ave I/C		5020	3440	3150	4680	3	3	6570	6570	0.76	0.52	0.48	0.71	mD	C	B	C
130 Ave	YHT	5100	3610	3400	4760	3	3	6570	6570	0.78	0.55	0.52	0.72	mD	C	C	C
Under YHT I/C		4080	2420	2550	4080	3	3	6570	6570	0.62	0.37	0.39	0.62	C	B	B	C
YHT	Baseline Rd	6120	4590	4720	6330	4	4	8760	8760	0.70	0.52	0.54	0.72	C	C	C	C
Under Baseline Rd I/C		4590	3490	3700	4760	3	3	6570	6570	0.70	0.53	0.56	0.72	C	C	C	C
Baseline Rd	Sher Park Fwy	5360	4760	4720	5700	3	3	6570	6570	0.82	0.72	0.72	0.87	mD	C	C	D
Under Sher Park Fwy I/C		3780	3660	3610	3830	3	3	6570	6570	0.58	0.56	0.55	0.58	C	C	C	C
Sher Park Fwy	Whitemud Dr	4290	4760	5060	4510	3	3	6570	6570	0.65	0.72	0.77	0.69	C	C	mD	C
Under Whitemud Dr I/C		2810	3830	4040	3020	2	2	4200	4200	0.67	0.91	0.96	0.72	C	**E**	**E**	C
Whitemud Dr	South Limit	3230	4800	4970	3400	3	3	6570	6570	0.49	0.73	0.76	0.52	B	C	mD	C

[Note]: 85% of 30 Year Traffic is estimated to be the traffic volumes in 15 years after Opening Day

Robustness of Minimum Opening Day AHD Laning - Under 30 Year Traffic (Ref - Table 4.19)

Table H.3.5.4 Level Of Service of Minimum Opening Day AHD Laning (3 Basic Lanes) - with 90% 30 Year Traffic Volumes

Anthony Henday Drive		AHD Mainline Traffic Volumes (vph) (90% 30 Year Traffic Volumes) [Note]				Minimum Opening Day AHD Laning (3 Basic Lanes)											
						Min Opening Day AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		2880	2700	2610	2835	2	2	4200	4200	0.69	0.64	0.62	0.68	C	C	C	C
Manning Dr	153 Ave	3780	3690	3600	3915	3	3	6570	6570	0.58	0.56	0.55	0.60	C	C	C	C
Under 153 Ave I/C		3420	2610	2790	3555	2	2	4200	4200	0.81	0.62	0.66	0.85	mD	C	C	mD
153 Ave	130 Ave	5580	3915	3780	5265	3	3	6570	6570	0.85	0.60	0.58	0.80	mD	C	C	mD
Under 130 Ave I/C		5310	3645	3330	4950	3	3	6570	6570	0.81	0.55	0.51	0.75	mD	C	B	mD
130 Ave	YHT	5400	3825	3600	5040	3	3	6570	6570	0.82	0.58	0.55	0.77	mD	C	C	mD
Under YHT I/C		4320	2565	2700	4320	3	3	6570	6570	0.66	0.39	0.41	0.66	C	B	B	C
YHT	Baseline Rd	6480	4860	4995	6705	4	4	8760	8760	0.74	0.55	0.57	0.77	C	C	C	mD
Under Baseline Rd I/C		4860	3690	3915	5040	3	3	6570	6570	0.74	0.56	0.60	0.77	C	C	C	mD
Baseline Rd	Sher Park Fwy	5670	5040	4995	6030	3	3	6570	6570	0.86	0.77	0.76	0.92	D	mD	mD	**E**
Under Sher Park Fwy I/C		4005	3870	3825	4050	3	3	6570	6570	0.61	0.59	0.58	0.62	C	C	C	C
Sher Park Fwy	Whitemud Dr	4545	5040	5355	4770	3	3	6570	6570	0.69	0.77	0.82	0.73	C	mD	mD	C
Under Whitemud Dr I/C		2970	4050	4275	3195	2	2	4200	4200	0.71	0.96	1.02	0.76	C	**E**	**F**	mD
Whitemud Dr	South Limit	3420	5085	5265	3600	3	3	6570	6570	0.52	0.77	0.80	0.55	C	mD	mD	C

[Note]: 90% of 30 Year Traffic is estimated to be the traffic volumes in 20 years after Opening Day

Robustness of Minimum Opening Day AHD Laning - Under 30 Year Traffic (Ref - Table 4.19)

Table H.3.5.5 Level Of Service of Minimum Opening Day AHD Laning (3 Basic Lanes) - with 100% 30 Year Traffic Volumes

Anthony Henday Drive		AHD Mainline Traffic Volumes (vph) (100% 30 Year Traffic Volumes)				Minimum Opening Day AHD Laning (3 Basic Lanes)											
						Min Opening Day AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		3200	3000	2900	3150	2	2	4200	4200	0.76	0.71	0.69	0.75	mD	C	C	mD
Manning Dr	153 Ave	4200	4100	4000	4350	3	3	6570	6570	0.64	0.62	0.61	0.66	C	C	C	C
Under 153 Ave I/C		3800	2900	3100	3950	2	2	4200	4200	0.90	0.69	0.74	0.94	D	C	C	**E**
153 Ave	130 Ave	6200	4350	4200	5850	3	3	6570	6570	0.94	0.66	0.64	0.89	**E**	C	C	D
Under 130 Ave I/C		5900	4050	3700	5500	3	3	6570	6570	0.90	0.62	0.56	0.84	D	C	C	mD
130 Ave	YHT	6000	4250	4000	5600	3	3	6570	6570	0.91	0.65	0.61	0.85	**E**	C	C	D
Under YHT I/C		4800	2850	3000	4800	3	3	6570	6570	0.73	0.43	0.46	0.73	C	B	B	C
YHT	Baseline Rd	7200	5400	5550	7450	4	4	8760	8760	0.82	0.62	0.63	0.85	mD	C	C	D
Under Baseline Rd I/C		5400	4100	4350	5600	3	3	6570	6570	0.82	0.62	0.66	0.85	mD	C	C	D
Baseline Rd	Sher Park Fwy	6300	5600	5550	6700	3	3	6570	6570	0.96	0.85	0.84	1.02	**E**	D	mD	**F**
Under Sher Park Fwy I/C		4450	4300	4250	4500	3	3	6570	6570	0.68	0.65	0.65	0.68	C	C	C	C
Sher Park Fwy	Whitemud Dr	5050	5600	5950	5300	3	3	6570	6570	0.77	0.85	0.91	0.81	mD	D	D	mD
Under Whitemud Dr I/C		3300	4500	4750	3550	2	2	4200	4200	0.79	1.07	1.13	0.85	mD	**F**	**F**	mD
Whitemud Dr	South Limit	3800	5650	5850	4000	3	3	6570	6570	0.58	0.86	0.89	0.61	C	D	D	C

Robustness of Minimum Opening Day AHD Laning - Under 30 Year Traffic (Ref - Table 4.19)

Table H.3.5.6 Level Of Service of Minimum Opening Day AHD Laning (3 Basic Lanes) - with 110% 30 Year Traffic Volumes

Anthony Henday Drive		AHD Mainline Traffic Volumes (vph) (110% 30 Year Traffic Volumes)				Minimum Opening Day AHD Laning (3 Basic Lanes)											
						Min Opening Day AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		3520	3300	3190	3465	2	2	4200	4200	0.84	0.79	0.76	0.83	mD	mD	mD	mD
Manning Dr	153 Ave	4620	4510	4400	4785	3	3	6570	6570	0.70	0.69	0.67	0.73	C	C	C	C
Under 153 Ave I/C		4180	3190	3410	4345	2	2	4200	4200	1.00	0.76	0.81	1.03	E	mD	mD	F
153 Ave	130 Ave	6820	4785	4620	6435	3	3	6570	6570	1.04	0.73	0.70	0.98	F	C	C	E
Under 130 Ave I/C		6490	4455	4070	6050	3	3	6570	6570	0.99	0.68	0.62	0.92	E	C	C	E
130 Ave	YHT	6600	4675	4400	6160	3	3	6570	6570	1.00	0.71	0.67	0.94	F	C	C	E
Under YHT I/C		5280	3135	3300	5280	3	3	6570	6570	0.80	0.48	0.50	0.80	mD	B	B	mD
YHT	Baseline Rd	7920	5940	6105	8195	4	4	8760	8760	0.90	0.68	0.70	0.94	D	C	C	E
Under Baseline Rd I/C		5940	4510	4785	6160	3	3	6570	6570	0.90	0.69	0.73	0.94	D	C	C	E
Baseline Rd	Sher Park Fwy	6930	6160	6105	7370	3	3	6570	6570	1.05	0.94	0.93	1.12	F	E	E	F
Under Sher Park Fwy I/C		4895	4730	4675	4950	3	3	6570	6570	0.75	0.72	0.71	0.75	mD	C	C	mD
Sher Park Fwy	Whitemud Dr	5555	6160	6545	5830	3	3	6570	6570	0.85	0.94	1.00	0.89	mD	E	E	D
Under Whitemud Dr I/C		3630	4950	5225	3905	2	2	4200	4200	0.86	1.18	1.24	0.93	D	F	F	E
Whitemud Dr	South Limit	4180	6215	6435	4400	3	3	6570	6570	0.64	0.95	0.98	0.67	C	E	E	C

Robustness of Minimum Opening Day AHD Laning (Ref - Table 4.19)

Table H.3.5.7 Level Of Service of Minimum Opening Day AHD Laning (3 Basic Lanes) - with 120% 30 Year Traffic Volumes

Anthony Henday Drive		AHD Mainline Traffic Volumes (vph) (120% 30 Year Traffic Volumes)				Minimum Opening Day AHD Laning (3 Basic Lanes)											
						Min Opening Day AHD Laning				V/C Ratio				LOS			
Segment / Under IC		SB		NB		# Lanes		Capacity (vph)		SB	SB	NB	NB	SB	SB	NB	NB
From	To	AM	PM	AM	PM	SB	NB	SB	NB	AM	PM	AM	PM	AM	PM	AM	PM
Under Manning Dr I/C		3840	3600	3480	3780	2	2	4200	4200	0.91	0.86	0.83	0.90	E	D	mD	D
Manning Dr	153 Ave	5040	4920	4800	5220	3	3	6570	6570	0.77	0.75	0.73	0.79	mD	mD	C	mD
Under 153 Ave I/C		4560	3480	3720	4740	2	2	4200	4200	1.09	0.83	0.89	1.13	F	mD	D	F
153 Ave	130 Ave	7440	5220	5040	7020	3	3	6570	6570	1.13	0.79	0.77	1.07	F	mD	mD	F
Under 130 Ave I/C		7080	4860	4440	6600	3	3	6570	6570	1.08	0.74	0.68	1.00	F	C	C	F
130 Ave	YHT	7200	5100	4800	6720	3	3	6570	6570	1.10	0.78	0.73	1.02	F	mD	C	F
Under YHT I/C		5760	3420	3600	5760	3	3	6570	6570	0.88	0.52	0.55	0.88	D	C	C	D
YHT	Baseline Rd	8640	6480	6660	8940	4	4	8760	8760	0.99	0.74	0.76	1.02	E	C	mD	F
Under Baseline Rd I/C		6480	4920	5220	6720	3	3	6570	6570	0.99	0.75	0.79	1.02	E	mD	mD	F
Baseline Rd	Sher Park Fwy	7560	6720	6660	8040	3	3	6570	6570	1.15	1.02	1.01	1.22	F	F	F	F
Under Sher Park Fwy I/C		5340	5160	5100	5400	3	3	6570	6570	0.81	0.79	0.78	0.82	mD	mD	mD	mD
Sher Park Fwy	Whitemud Dr	6060	6720	7140	6360	3	3	6570	6570	0.92	1.02	1.09	0.97	E	F	F	E
Under Whitemud Dr I/C		3960	5400	5700	4260	2	2	4200	4200	0.94	1.29	1.36	1.01	E	F	F	F
Whitemud Dr	South Limit	4560	6780	7020	4800	3	3	6570	6570	0.69	1.03	1.07	0.73	C	F	F	C

H.4 Sensitivity Analysis – YHT Mainline Level of Service

H.4.1 Robustness of Recommended Long Term YHT Laning

Table No.	Description
Table H.4.1.1	Recommended Long Term YHT Laning with **80%** Long Term Traffic Volumes
Table H.4.1.2	Recommended Long Term YHT Laning with **90%** Long Term Traffic Volumes
Table H.4.1.3	Recommended Long Term YHT Laning with **100%** Long Term Traffic Volumes
Table H.4.1.4	Recommended Long Term YHT Laning with **110%** Long Term Traffic Volumes
Table H.4.1.5	Recommended Long Term YHT Laning with **120%** Long Term Traffic Volumes

Note: Results are summarized in **Table 4.21** in the main Report

Robustness of the Recommended Long Term YHT Laning

Table H.4.1.1 Level Of Service of Recommended Long Term YHT Laning - with 80% Long Term Traffic Volumes

Yellowhead Tr		YHT Mainline Traffic Volumes (vph) (80% Long Term Traffic Volumes)				Recommended Long Term YHT Laning											
						Long Term YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity (vph)		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	5408	4888	4776	6040	4	4	8760	8760	0.62	0.56	0.55	0.69	C	C	C	C
Under AHD I/C		3616	2512	2784	3672	3	3	6570	6570	0.55	0.38	0.42	0.56	C	B	B	C
AHD	Broadmoor Bv	5584	4136	3280	4608	4	3	8760	6570	0.64	0.47	0.50	0.70	C	B	B	C
Under Broadmoor Bv		4872	3096	1696	3112	4	3	8760	6570	0.56	0.35	0.26	0.47	C	B	A	B
Broadmoor Bv	Sherwood Dr	6960	4776	3728	5480	5	4	10950	8760	0.64	0.44	0.43	0.63	C	B	B	C
@ Sherwood Dr		6160	3976	4128	6480	5	5	10950	10950	0.56	0.36	0.38	0.59	C	B	B	C
Sherwood Dr	Cloverbar Rd	6840	4496	4648	7200	5	5	10950	10950	0.62	0.41	0.42	0.66	C	B	B	C
Under Cloverbar Rd I/C		5400	3536	3688	5680	5	5	10950	10950	0.49	0.32	0.34	0.52	B	A	B	C
Cloverbar Rd	Highway 21	3624	2464	1640	2808	3	3	6570	6570	0.55	0.38	0.25	0.43	C	B	A	B
Under Highway 21 I/C		2904	2160	2000	3368	3	3	6570	6570	0.44	0.33	0.30	0.51	B	A	A	C
Highway 21	East Limit	3840	3280	2960	4160	4	4	8760	8760	0.44	0.37	0.34	0.47	B	B	B	B

Robustness of the Recommended Long Term YHT Laning

Table H.4.1.2 Level Of Service of Recommended Long Term YHT Laning - with 90% Long Term Traffic Volumes

Yellowhead Tr		YHT Mainline Traffic Volumes (vph) (90% Long Term Traffic Volumes)				Recommended Long Term YHT Laning											
						Long Term YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity (vph)		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	6084	5499	5373	6795	4	4	8760	8760	0.69	0.63	0.61	0.78	C	C	C	mD
Under AHD I/C		4068	2826	3132	4131	3	3	6570	6570	0.62	0.43	0.48	0.63	C	B	B	C
AHD	Broadmoor Bv	6282	4653	3690	5184	4	3	8760	6570	0.72	0.53	0.56	0.79	C	C	C	mD
Under Broadmoor Bv		5481	3483	1908	3501	4	3	8760	6570	0.63	0.40	0.29	0.53	C	B	A	C
Broadmoor Bv	Sherwood Dr	7830	5373	4194	6165	5	4	10950	8760	0.72	0.49	0.48	0.70	C	B	B	C
@ Sherwood Dr		6930	4473	4644	7290	5	5	10950	10950	0.63	0.41	0.42	0.67	C	B	B	C
Sherwood Dr	Cloverbar Rd	7695	5058	5229	8100	5	5	10950	10950	0.70	0.46	0.48	0.74	C	B	B	C
Under Cloverbar Rd I/C		6075	3978	4149	6390	5	5	10950	10950	0.55	0.36	0.38	0.58	C	B	B	C
Cloverbar Rd	Highway 21	4077	2772	1845	3159	3	3	6570	6570	0.62	0.42	0.28	0.48	C	B	A	B
Under Highway 21 I/C		3267	2430	2250	3789	3	3	6570	6570	0.50	0.37	0.34	0.58	B	B	B	C
Highway 21	East Limit	4320	3690	3330	4680	4	4	8760	8760	0.49	0.42	0.38	0.53	B	B	B	C

Robustness of the Recommended Long Term YHT Laning

Table H.4.1.3 Level Of Service of Recommended Long Term YHT Laning - with 100% Long Term Traffic Volumes

Yellowhead Tr		YHT Mainline Traffic Volumes (vph) (100% Long Term Traffic Volumes)				Recommended Long Term YHT Laning											
						Long Term YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity (vph)		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	6760	6110	5970	7550	4	4	8760	8760	0.77	0.70	0.68	0.86	mD	C	C	D
Under AHD I/C		4520	3140	3480	4590	3	3	6570	6570	0.69	0.48	0.53	0.70	C	B	C	C
AHD	Broadmoor Bv	6980	5170	4100	5760	4	3	8760	6570	0.80	0.59	0.62	0.88	mD	C	C	D
Under Broadmoor Bv		6090	3870	2120	3890	4	3	8760	6570	0.70	0.44	0.32	0.59	C	B	A	C
Broadmoor Bv	Sherwood Dr	8700	5970	4660	6850	5	4	10950	8760	0.79	0.55	0.53	0.78	mD	C	C	mD
@ Sherwood Dr		7700	4970	5160	8100	5	5	10950	10950	0.70	0.45	0.47	0.74	C	B	B	C
Sherwood Dr	Cloverbar Rd	8550	5620	5810	9000	5	5	10950	10950	0.78	0.51	0.53	0.82	mD	C	C	mD
Under Cloverbar Rd I/C		6750	4420	4610	7100	5	5	10950	10950	0.62	0.40	0.42	0.65	C	B	B	C
Cloverbar Rd	Highway 21	4530	3080	2050	3510	3	3	6570	6570	0.69	0.47	0.31	0.53	C	B	A	C
Under Highway 21 I/C		3630	2700	2500	4210	3	3	6570	6570	0.55	0.41	0.38	0.64	C	B	B	C
Highway 21	East Limit	4800	4100	3700	5200	4	4	8760	8760	0.55	0.47	0.42	0.59	C	B	B	C

Robustness of the Recommended Long Term YHT Laning

Table H.4.1.4 Level Of Service of Recommended Long Term YHT Laning - 110% Long Term Traffic Volumes

Yellowhead Tr		YHT Mainline Traffic Volumes (vph) (110% Long Term Traffic Volumes)				Recommended Long Term YHT Laning											
						Long Term YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity (vph)		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	7436	6721	6567	8305	4	4	8760	8760	0.85	0.77	0.75	0.95	mD	mD	mD	E
Under AHD I/C		4972	3454	3828	5049	3	3	6570	6570	0.76	0.53	0.58	0.77	mD	C	C	mD
AHD	Broadmoor Bv	7678	5687	4510	6336	4	3	8760	6570	0.88	0.65	0.69	0.96	D	C	C	E
Under Broadmoor Bv		6699	4257	2332	4279	4	3	8760	6570	0.76	0.49	0.35	0.65	mD	B	B	C
Broadmoor Bv	Sherwood Dr	9570	6567	5126	7535	5	4	10950	8760	0.87	0.60	0.59	0.86	D	C	C	D
@ Sherwood Dr		8470	5467	5676	8910	5	5	10950	10950	0.77	0.50	0.52	0.81	mD	B	C	mD
Sherwood Dr	Cloverbar Rd	9405	6182	6391	9900	5	5	10950	10950	0.86	0.56	0.58	0.90	D	C	C	D
Under Cloverbar Rd I/C		7425	4862	5071	7810	5	5	10950	10950	0.68	0.44	0.46	0.71	C	B	B	C
Cloverbar Rd	Highway 21	4983	3388	2255	3861	3	3	6570	6570	0.76	0.52	0.34	0.59	mD	C	B	C
Under Highway 21 I/C		3993	2970	2750	4631	3	3	6570	6570	0.61	0.45	0.42	0.70	C	B	B	C
Highway 21	East Limit	5280	4510	4070	5720	4	4	8760	8760	0.60	0.51	0.46	0.65	C	C	B	C

Robustness of the Recommended Long Term YHT Laning

Table H.4.1.5 Level Of Service of Recommended Long Term YHT Laning - 120% Long Term Traffic Volumes

Yellowhead Tr		YHT Mainline Traffic Volumes (vph) (120% Long Term Traffic Volumes)				Recommended Long Term YHT Laning											
						Long Term YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity (vph)		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	8112	7332	7164	9060	4	4	8760	8760	0.93	0.84	0.82	1.03	E	mD	mD	F
Under AHD I/C		5424	3768	4176	5508	3	3	6570	6570	0.83	0.57	0.64	0.84	mD	C	C	mD
AHD	Broadmoor Bv	8376	6204	4920	6912	4	3	8760	6570	0.96	0.71	0.75	1.05	E	C	mD	F
Under Broadmoor Bv		7308	4644	2544	4668	4	3	8760	6570	0.83	0.53	0.39	0.71	mD	C	B	C
Broadmoor Bv	Sherwood Dr	10440	7164	5592	8220	5	4	10950	8760	0.95	0.65	0.64	0.94	E	C	C	E
@ Sherwood Dr		9240	5964	6192	9720	5	5	10950	10950	0.84	0.54	0.57	0.89	mD	C	C	D
Sherwood Dr	Cloverbar Rd	10260	6744	6972	10800	5	5	10950	10950	0.94	0.62	0.64	0.99	E	C	C	E
Under Cloverbar Rd I/C		8100	5304	5532	8520	5	5	10950	10950	0.74	0.48	0.51	0.78	C	B	B	mD
Cloverbar Rd	Highway 21	5436	3696	2460	4212	3	3	6570	6570	0.83	0.56	0.37	0.64	mD	C	B	C
Under Highway 21 I/C		4356	3240	3000	5052	3	3	6570	6570	0.66	0.49	0.46	0.77	C	B	B	mD
Highway 21	East Limit	5760	4920	4440	6240	4	4	8760	8760	0.66	0.56	0.51	0.71	C	C	B	C

H.4.2 Robustness of Recommended 30 Year YHT Laning – Under Long Term Traffic

Table No.	Description
Table H.4.2.1	Recommended 30 Year (2041) YHT Laning with **80%** Long Term Traffic Volumes
Table H.4.2.2	Recommended 30 Year (2041) YHT Laning with **90%** Long Term Traffic Volumes
Table H.4.2.3	Recommended 30 Year (2041) YHT Laning with **100%** Long Term Traffic Volumes
Table H.4.2.4	Recommended 30 Year (2041) YHT Laning with **110%** Long Term Traffic Volumes
Table H.4.2.5	Recommended 30 Year (2041) YHT Laning with **120%** Long Term Traffic Volumes

Note: Results are summarized in **Table 4.23** in the main Report

YHT Mainline LOS Sensitivity Analysis - Long Term

Table 4.2.1 Level Of Service of Recommended Long Term YHT Laning - with 80% Long Term Traffic Volumes

Yellowhead Tr		YHT Mainline Traffic Volumes (vph) (80% Long Term Traffic Volumes)				Recommended Long Term YHT Laning											
						Long Term YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	5408	4888	4776	6040	3	3	6570	6570	0.82	0.74	0.73	0.92	mD	mD	C	E
Under AHD I/C		3616	2512	2784	3672	2	3	4200	6570	0.86	0.60	0.42	0.56	D	C	B	C
AHD	Broadmoor Bv	5584	4136	3280	4608	3	3	6570	6570	0.85	0.63	0.50	0.70	mD	C	B	C
Under Broadmoor Bv		4872	3096	1696	3112	3	2	6570	4200	0.74	0.47	0.40	0.74	mD	B	B	mD
Broadmoor Bv	Sherwood Dr	6960	4776	3728	5480	3	3	6570	6570	1.06	0.73	0.57	0.83	F	C	C	mD
@ Sherwood Dr		6160	3976	4128	6480	3	3	6570	6570	0.94	0.61	0.63	0.99	E	C	C	E
Sherwood Dr	Cloverbar Rd	6840	4496	4648	7200	3	3	6570	6570	1.04	0.68	0.71	1.10	F	C	C	F
Under Cloverbar Rd I/C		5400	3536	3688	5680	3	3	6570	6570	0.82	0.54	0.56	0.86	mD	C	C	D
Cloverbar Rd	Highway 21	3624	2464	1640	2808	2	3	4200	6570	0.86	0.59	0.25	0.43	D	C	A	B
Under Highway 21 I/C		2904	2160	2000	3368	2	2	4200	4200	0.69	0.51	0.48	0.80	C	C	B	mD
Highway 21	East Limit	3840	3280	2960	4160	2	2	4200	4200	0.91	0.78	0.70	0.99	E	mD	C	E

YHT Mainline LOS Sensitivity Analysis - Long Term

Table 4.2.2 Level Of Service of Recommended Long Term YHT Laning - with 90% Long Term Traffic Volumes

Yellowhead Tr		YHT Mainline Traffic Volumes (vph) (90% Long Term Traffic Volumes)				Recommended Long Term YHT Laning											
						Long Term YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	6084	5499	5373	6795	3	3	6570	6570	0.93	0.84	0.82	1.03	E	mD	mD	F
Under AHD I/C		4068	2826	3132	4131	2	3	4200	6570	0.97	0.67	0.48	0.63	E	C	B	C
AHD	Broadmoor Bv	6282	4653	3690	5184	3	3	6570	6570	0.96	0.71	0.56	0.79	E	C	C	mD
Under Broadmoor Bv		5481	3483	1908	3501	3	2	6570	4200	0.83	0.53	0.45	0.83	mD	C	B	mD
Broadmoor Bv	Sherwood Dr	7830	5373	4194	6165	3	3	6570	6570	1.19	0.82	0.64	0.94	F	mD	C	E
@ Sherwood Dr		6930	4473	4644	7290	3	3	6570	6570	1.05	0.68	0.71	1.11	F	C	C	F
Sherwood Dr	Cloverbar Rd	7695	5058	5229	8100	3	3	6570	6570	1.17	0.77	0.80	1.23	F	mD	mD	F
Under Cloverbar Rd I/C		6075	3978	4149	6390	3	3	6570	6570	0.92	0.61	0.63	0.97	E	C	C	E
Cloverbar Rd	Highway 21	4077	2772	1845	3159	2	3	4200	6570	0.97	0.66	0.28	0.48	E	C	A	B
Under Highway 21 I/C		3267	2430	2250	3789	2	2	4200	4200	0.78	0.58	0.54	0.90	mD	C	C	D
Highway 21	East Limit	4320	3690	3330	4680	2	2	4200	4200	1.03	0.88	0.79	1.11	F	D	mD	F

YHT Mainline LOS Sensitivity Analysis - Long Term

Table 4.2.3 Level Of Service of Recommended Long Term YHT Laning - with 100% Long Term Traffic Volumes

Yellowhead Tr		YHT Mainline Traffic Volumes (vph) (100% Long Term Traffic Volumes)				Recommended Long Term YHT Laning											
						Long Term YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	6760	6110	5970	7550	3	3	6570	6570	1.03	0.93	0.91	1.15	F	E	D	F
Under AHD I/C		4520	3140	3480	4590	2	3	4200	6570	1.08	0.75	0.53	0.70	F	mD	C	C
AHD	Broadmoor Bv	6980	5170	4100	5760	3	3	6570	6570	1.06	0.79	0.62	0.88	F	mD	C	D
Under Broadmoor Bv		6090	3870	2120	3890	3	2	6570	4200	0.93	0.59	0.50	0.93	E	C	B	E
Broadmoor Bv	Sherwood Dr	8700	5970	4660	6850	3	3	6570	6570	1.32	0.91	0.71	1.04	F	D	C	F
@ Sherwood Dr		7700	4970	5160	8100	3	3	6570	6570	1.17	0.76	0.79	1.23	F	mD	mD	F
Sherwood Dr	Cloverbar Rd	8550	5620	5810	9000	3	3	6570	6570	1.30	0.86	0.88	1.37	F	D	D	F
Under Cloverbar Rd I/C		6750	4420	4610	7100	3	3	6570	6570	1.03	0.67	0.70	1.08	F	C	C	F
Cloverbar Rd	Highway 21	4530	3080	2050	3510	2	3	4200	6570	1.08	0.73	0.31	0.53	F	C	A	C
Under Highway 21 I/C		3630	2700	2500	4210	2	2	4200	4200	0.86	0.64	0.60	1.00	D	C	C	F
Highway 21	East Limit	4800	4100	3700	5200	2	2	4200	4200	1.14	0.98	0.88	1.24	F	E	D	F

YHT Mainline LOS Sensitivity Analysis - Long Term

Table 4.2.4 Level Of Service of Recommended Long Term YHT Laning - with 110% Long Term Traffic Volumes

Yellowhead Tr		YHT Mainline Traffic Volumes (vph) (110% Long Term Traffic Volumes)				Recommended Long Term YHT Laning											
						Long Term YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	7436	6721	6567	8305	3	3	6570	6570	1.13	1.02	1.00	1.26	F	F	E	F
Under AHD I/C		4972	3454	3828	5049	2	3	4200	6570	1.18	0.82	0.58	0.77	F	mD	C	mD
AHD	Broadmoor Bv	7678	5687	4510	6336	3	3	6570	6570	1.17	0.87	0.69	0.96	F	D	C	E
Under Broadmoor Bv		6699	4257	2332	4279	3	2	6570	4200	1.02	0.65	0.56	1.02	F	C	C	F
Broadmoor Bv	Sherwood Dr	9570	6567	5126	7535	3	3	6570	6570	1.46	1.00	0.78	1.15	F	E	mD	F
@ Sherwood Dr		8470	5467	5676	8910	3	3	6570	6570	1.29	0.83	0.86	1.36	F	mD	D	F
Sherwood Dr	Cloverbar Rd	9405	6182	6391	9900	3	3	6570	6570	1.43	0.94	0.97	1.51	F	E	E	F
Under Cloverbar Rd I/C		7425	4862	5071	7810	3	3	6570	6570	1.13	0.74	0.77	1.19	F	mD	mD	F
Cloverbar Rd	Highway 21	4983	3388	2255	3861	2	3	4200	6570	1.19	0.81	0.34	0.59	F	mD	B	C
Under Highway 21 I/C		3993	2970	2750	4631	2	2	4200	4200	0.95	0.71	0.65	1.10	E	C	C	F
Highway 21	East Limit	5280	4510	4070	5720	2	2	4200	4200	1.26	1.07	0.97	1.36	F	F	E	F

YHT Mainline LOS Sensitivity Analysis - Long Term

Table 4.2.5 Level Of Service of Recommended Long Term YHT Laning - with 120% Long Term Traffic Volumes

Yellowhead Tr		YHT Mainline Traffic Volumes (vph) (120% Long Term Traffic Volumes)				Recommended Long Term YHT Laning											
						Long Term YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	8112	7332	7164	9060	3	3	6570	6570	1.23	1.12	1.09	1.38	F	F	F	F
Under AHD I/C		5424	3768	4176	5508	2	3	4200	6570	1.29	0.90	0.64	0.84	F	D	C	mD
AHD	Broadmoor Bv	8376	6204	4920	6912	3	3	6570	6570	1.27	0.94	0.75	1.05	F	E	mD	F
Under Broadmoor Bv		7308	4644	2544	4668	3	2	6570	4200	1.11	0.71	0.61	1.11	F	C	C	F
Broadmoor Bv	Sherwood Dr	10440	7164	5592	8220	3	3	6570	6570	1.59	1.09	0.85	1.25	F	F	D	F
@ Sherwood Dr		9240	5964	6192	9720	3	3	6570	6570	1.41	0.91	0.94	1.48	F	D	E	F
Sherwood Dr	Cloverbar Rd	10260	6744	6972	10800	3	3	6570	6570	1.56	1.03	1.06	1.64	F	F	F	F
Under Cloverbar Rd I/C		8100	5304	5532	8520	3	3	6570	6570	1.23	0.81	0.84	1.30	F	mD	mD	F
Cloverbar Rd	Highway 21	5436	3696	2460	4212	2	3	4200	6570	1.29	0.88	0.37	0.64	F	D	B	C
Under Highway 21 I/C		4356	3240	3000	5052	2	2	4200	4200	1.04	0.77	0.71	1.20	F	mD	C	F
Highway 21	East Limit	5760	4920	4440	6240	2	2	4200	4200	1.37	1.17	1.06	1.49	F	F	F	F

H.4.3 Robustness of Recommended 30 Year YHT Laning

Table No.	Description
Table H.4.3.1	Recommended 30 Year (2041) YHT Laning with **70%** 30 Year Traffic Volumes
Table H.4.3.2	Recommended 30 Year (2041) YHT Laning with **80%** 30 Year Traffic Volumes
Table H.4.3.3	Recommended 30 Year (2041) YHT Laning with **90%** 30 Year Traffic Volumes
Table H.4.3.4	Recommended 30 Year (2041) YHT Laning with **100%** 30 Year Traffic Volumes
Table H.4.3.5	Recommended 30 Year (2041) YHT Laning with **110%** 30 Year Traffic Volumes
Table H.4.3.6	Recommended 30 Year (2041) YHT Laning with **120%** 30 Year Traffic Volumes

Note: Results are summarized in **Table 4.25** in the main Report

Robustness of the Recommended 30 Year (2041) YHT Laning (Ref - Table 4.25)

Table H.4.3.1 Level Of Service of Recommended 30 Year YHT Laning - with 70% 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (70% 30 Year Traffic Volumes) [Note]				Recommended 30 Year (2041) YHT Laning											
						30 Year YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	3360	3255	2520	3010	3	3	6570	6570	0.51	0.50	0.38	0.46	C	B	B	B
Under AHD I/C		2065	1190	1120	2205	2	3	4200	6570	0.49	0.28	0.17	0.34	B	A	A	B
AHD	Br Bv	2800	1715	1120	2310	3	3	6570	6570	0.43	0.26	0.17	0.35	B	A	A	B
Under Br Bv		2254	1078	490	1295	3	2	6570	4200	0.34	0.16	0.12	0.31	B	A	A	A
Br Bv	Sh Dr	3465	2065	1120	2380	3	3	6570	6570	0.53	0.31	0.17	0.36	C	A	A	B
@ Sh Dr		2765	1575	1365	2940	3	3	6570	6570	0.42	0.24	0.21	0.45	B	A	A	B
Sh Dr	Cloverbar Rd	3045	1855	1680	3220	3	3	6570	6570	0.46	0.28	0.26	0.49	B	A	A	B
Under Cloverbar Rd I/C		1855	1400	1120	2310	3	3	6570	6570	0.28	0.21	0.17	0.35	A	A	A	B
Cloverbar Rd	Hwy 21	2135	1820	1330	2800	3	3	6570	6570	0.32	0.28	0.20	0.43	A	A	A	B
Under Hwy 21 I/C		700	700	630	1645	2	2	4200	4200	0.17	0.17	0.15	0.39	A	A	A	B
Hwy 21	East Limit	875	875	805	1855	2	2	4200	4200	0.21	0.21	0.19	0.44	A	A	A	B

[Note]: 70% of 30 Year Traffic is estimated to be the traffic volumes within a year after Opening Day

Robustness of the Recommended 30 Year (2041) YHT Laning (Ref - Table 4.25)

Table H.4.3.2 Level Of Service of Recommended 30 Year YHT Laning - with 80% 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (80% 30 Year Traffic Volumes) [Note]				Recommended 30 Year (2041) YHT Laning											
						30 Year YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	3840	3720	2880	3440	3	3	6570	6570	0.58	0.57	0.44	0.52	C	C	B	C
Under AHD I/C		2360	1360	1280	2520	2	3	4200	6570	0.56	0.32	0.19	0.38	C	A	A	B
AHD	Br Bv	3200	1960	1280	2640	3	3	6570	6570	0.49	0.30	0.19	0.40	B	A	A	B
Under Br Bv		2576	1232	560	1480	3	2	6570	4200	0.39	0.19	0.13	0.35	B	A	A	B
Br Bv	Sh Dr	3960	2360	1280	2720	3	3	6570	6570	0.60	0.36	0.19	0.41	C	B	A	B
@ Sh Dr		3160	1800	1560	3360	3	3	6570	6570	0.48	0.27	0.24	0.51	B	A	A	C
Sh Dr	Cloverbar Rd	3480	2120	1920	3680	3	3	6570	6570	0.53	0.32	0.29	0.56	C	A	A	C
Under Cloverbar Rd I/C		2120	1600	1280	2640	3	3	6570	6570	0.32	0.24	0.19	0.40	A	A	A	B
Cloverbar Rd	Hwy 21	2440	2080	1520	3200	3	3	6570	6570	0.37	0.32	0.23	0.49	B	A	A	B
Under Hwy 21 I/C		800	800	720	1880	2	2	4200	4200	0.19	0.19	0.17	0.45	A	A	A	B
Hwy 21	East Limit	1000	1000	920	2120	2	2	4200	4200	0.24	0.24	0.22	0.50	A	A	A	B

[Note]: 80% of 30 Year Traffic is estimated to be the traffic volumes in 10 years after Opening Day

Robustness of the Recommended 30 Year (2041) YHT Laning (Ref - Table 4.25)

Table H.4.3.3 Level Of Service of Recommended 30 Year YHT Laning - with 85% 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (85% 30 Year Traffic Volumes) [Note]				Recommended 30 Year (2041) YHT Laning											
						30 Year YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	4080	3950	3060	3660	3	3	6570	6570	0.62	0.60	0.47	0.56	C	C	B	C
Under AHD I/C		2510	1450	1360	2680	2	3	4200	6570	0.60	0.35	0.21	0.41	C	B	A	B
AHD	Br Bv	3400	2080	1360	2810	3	3	6570	6570	0.52	0.32	0.21	0.43	C	A	A	B
Under Br Bv		2740	1310	600	1570	3	2	6570	4200	0.42	0.20	0.14	0.37	B	A	A	B
Br Bv	Sh Dr	4210	2510	1360	2890	3	3	6570	6570	0.64	0.38	0.21	0.44	C	B	A	B
@ Sh Dr		3360	1910	1660	3570	3	3	6570	6570	0.51	0.29	0.25	0.54	C	A	A	C
Sh Dr	Cloverbar Rd	3700	2250	2040	3910	3	3	6570	6570	0.56	0.34	0.31	0.60	C	B	A	C
Under Cloverbar Rd I/C		2250	1700	1360	2810	3	3	6570	6570	0.34	0.26	0.21	0.43	B	A	A	B
Cloverbar Rd	Hwy 21	2590	2210	1620	3400	3	3	6570	6570	0.39	0.34	0.25	0.52	B	B	A	C
Under Hwy 21 I/C		850	850	770	2000	2	2	4200	4200	0.20	0.20	0.18	0.48	A	A	A	B
Hwy 21	East Limit	1060	1060	980	2250	2	2	4200	4200	0.25	0.25	0.23	0.54	A	A	A	C

[Note]: 85% of 30 Year Traffic is estimated to be the traffic volumes in 15 years after Opening Day

Robustness of the Recommended 30 Year (2041) YHT Laning (Ref - Table 4.25)

Table H.4.3.4 Level Of Service of Recommended 30 Year YHT Laning - with 90% 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (90% 30 Year Traffic Volumes)				Recommended 30 Year (2041) YHT Laning											
						30 Year YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	4320	4185	3240	3870	3	3	6570	6570	0.66	0.64	0.49	0.59	C	C	B	C
Under AHD I/C		2655	1530	1440	2835	2	3	4200	6570	0.63	0.36	0.22	0.43	C	B	A	B
AHD	Br Bv	3600	2205	1440	2970	3	3	6570	6570	0.55	0.34	0.22	0.45	C	B	A	B
Under Br Bv		2898	1386	630	1665	3	2	6570	4200	0.44	0.21	0.15	0.40	B	A	A	B
Br Bv	Sh Dr	4455	2655	1440	3060	3	3	6570	6570	0.68	0.40	0.22	0.47	C	B	A	B
@ Sh Dr		3555	2025	1755	3780	3	3	6570	6570	0.54	0.31	0.27	0.58	C	A	A	C
Sh Dr	Cloverbar Rd	3915	2385	2160	4140	3	3	6570	6570	0.60	0.36	0.33	0.63	C	B	A	C
Under Cloverbar Rd I/C		2385	1800	1440	2970	3	3	6570	6570	0.36	0.27	0.22	0.45	B	A	A	B
Cloverbar Rd	Hwy 21	2745	2340	1710	3600	3	3	6570	6570	0.42	0.36	0.26	0.55	B	B	A	C
Under Hwy 21 I/C		900	900	810	2115	2	2	4200	4200	0.21	0.21	0.19	0.50	A	A	A	B
Hwy 21	East Limit	1125	1125	1035	2385	2	2	4200	4200	0.27	0.27	0.25	0.57	A	A	A	C

[Note]: 90% of 30 Year Traffic is estimated to be the traffic volumes in 20 years after Opening Day

Robustness of the Recommended 30 Year (2041) YHT Laning (Ref - Table 4.25)

Table H.4.3.5 Level Of Service of Recommended 30 Year YHT Laning - with 100% 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (100% 30 Year Traffic Volumes)				Recommended 30 Year (2041) YHT Laning											
						30 Year YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	4800	4650	3600	4300	3	3	6570	6570	0.73	0.71	0.55	0.65	C	C	C	C
Under AHD I/C		2950	1700	1600	3150	2	3	4200	6570	0.70	0.40	0.24	0.48	C	B	A	B
AHD	Br Bv	4000	2450	1600	3300	3	3	6570	6570	0.61	0.37	0.24	0.50	C	B	A	B
Under Br Bv		3220	1540	700	1850	3	2	6570	4200	0.49	0.23	0.17	0.44	B	A	A	B
Br Bv	Sh Dr	4950	2950	1600	3400	3	3	6570	6570	0.75	0.45	0.24	0.52	mD	B	A	C
@ Sh Dr		3950	2250	1950	4200	3	3	6570	6570	0.60	0.34	0.30	0.64	C	B	A	C
Sh Dr	Cloverbar Rd	4350	2650	2400	4600	3	3	6570	6570	0.66	0.40	0.37	0.70	C	B	B	C
Under Cloverbar Rd I/C		2650	2000	1600	3300	3	3	6570	6570	0.40	0.30	0.24	0.50	B	A	A	B
Cloverbar Rd	Hwy 21	3050	2600	1900	4000	3	3	6570	6570	0.46	0.40	0.29	0.61	B	B	A	C
Under Hwy 21 I/C		1000	1000	900	2350	2	2	4200	4200	0.24	0.24	0.21	0.56	A	A	A	C
Hwy 21	East Limit	1250	1250	1150	2650	2	2	4200	4200	0.30	0.30	0.27	0.63	A	A	A	C

Robustness of the Recommended 30 Year (2041) YHT Laning (Ref - Table 4.25)

Table H.4.3.6 Level Of Service of Recommended 30 Year YHT Laning - with 110% 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (110% 30 Year Traffic Volumes)				Recommended 30 Year (2041) YHT Laning											
						30 Year YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	5280	5115	3960	4730	3	3	6570	6570	0.80	0.78	0.60	0.72	mD	mD	C	C
Under AHD I/C		3245	1870	1760	3465	2	3	4200	6570	0.77	0.45	0.27	0.53	mD	B	A	C
AHD	Br Bv	4400	2695	1760	3630	3	3	6570	6570	0.67	0.41	0.27	0.55	C	B	A	C
Under Br Bv		3542	1694	770	2035	3	2	6570	4200	0.54	0.26	0.18	0.48	C	A	A	B
Br Bv	Sh Dr	5445	3245	1760	3740	3	3	6570	6570	0.83	0.49	0.27	0.57	mD	B	A	C
@ Sh Dr		4345	2475	2145	4620	3	3	6570	6570	0.66	0.38	0.33	0.70	C	B	A	C
Sh Dr	Cloverbar Rd	4785	2915	2640	5060	3	3	6570	6570	0.73	0.44	0.40	0.77	C	B	B	mD
Under Cloverbar Rd I/C		2915	2200	1760	3630	3	3	6570	6570	0.44	0.33	0.27	0.55	B	B	A	C
Cloverbar Rd	Hwy 21	3355	2860	2090	4400	3	3	6570	6570	0.51	0.44	0.32	0.67	C	B	A	C
Under Hwy 21 I/C		1100	1100	990	2585	2	2	4200	4200	0.26	0.26	0.24	0.62	A	A	A	C
Hwy 21	East Limit	1375	1375	1265	2915	2	2	4200	4200	0.33	0.33	0.30	0.69	A	A	A	C

Robustness of the Recommended 30 Year (2041) YHT Laning (Ref - Table 4.25)

Table H.4.3.7 Level Of Service of Recommended 30 Year YHT Laning - with 120% 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (120% 30 Year Traffic Volumes)				Recommended 30 Year (2041) YHT Laning											
						30 Year YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	5760	5580	4320	5160	3	3	6570	6570	0.88	0.85	0.66	0.79	D	mD	C	mD
Under AHD I/C		3540	2040	1920	3780	2	3	4200	6570	0.84	0.49	0.29	0.58	mD	B	A	C
AHD	Br Bv	4800	2940	1920	3960	3	3	6570	6570	0.73	0.45	0.29	0.60	C	B	A	C
Under Br Bv		3864	1848	840	2220	3	2	6570	4200	0.59	0.28	0.20	0.53	C	A	A	C
Br Bv	Sh Dr	5940	3540	1920	4080	3	3	6570	6570	0.90	0.54	0.29	0.62	D	C	A	C
@ Sh Dr		4740	2700	2340	5040	3	3	6570	6570	0.72	0.41	0.36	0.77	C	B	B	mD
Sh Dr	Cloverbar Rd	5220	3180	2880	5520	3	3	6570	6570	0.79	0.48	0.44	0.84	mD	B	B	mD
Under Cloverbar Rd I/C		3180	2400	1920	3960	3	3	6570	6570	0.48	0.37	0.29	0.60	B	B	A	C
Cloverbar Rd	Hwy 21	3660	3120	2280	4800	3	3	6570	6570	0.56	0.47	0.35	0.73	C	B	B	C
Under Hwy 21 I/C		1200	1200	1080	2820	2	2	4200	4200	0.29	0.29	0.26	0.67	A	A	A	C
Hwy 21	East Limit	1500	1500	1380	3180	2	2	4200	4200	0.36	0.36	0.33	0.76	B	B	A	mD

H.4.4 Robustness of Existing YHT Laning

Table No.	Description
Table H.4.4.1	Recommended Existing YHT Laning with **70%** 30 Year Traffic Volumes
Table H.4.4.2	Recommended Existing YHT Laning with **80%** 30 Year Traffic Volumes
Table H.4.4.3	Recommended Existing YHT Laning with **85%** 30 Year Traffic Volumes
Table H.4.4.4	Recommended Existing YHT Laning with **90%** 30 Year Traffic Volumes
Table H.4.4.5	Recommended Existing YHT Laning with **100%** 30 Year Traffic Volumes
Table H.4.4.6	Recommended Existing YHT Laning with **110%** 30 Year Traffic Volumes
Table H.4.4.7	Recommended Existing YHT Laning with **120%** 30 Year Traffic Volumes

Note: Results are summarized in **Table 4.27** in the main Report

Robustness of Existing YHT Laning (Ref - Table 4.27)

Table H.4.4.1 Level Of Service of Existing YHT Laning - with 70% 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (70% 30 Year Traffic Volumes) [Note]				Existing YHT Laning											
						Existing YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	3360	3255	2520	3010	3	3	6570	6570	0.51	0.50	0.38	0.46	C	B	B	B
Under AHD I/C		2065	1190	1120	2205	2	2	4200	4200	0.49	0.28	0.27	0.53	B	A	A	C
AHD	Broadmoor Bv	2800	1715	1120	2310	2	3	4200	6570	0.67	0.41	0.17	0.35	C	B	A	B
Under Broadmoor Bv		2254	1078	490	1295	2	3	4200	6570	0.54	0.26	0.07	0.20	C	A	A	A
Broadmoor Bv	Sherwood Dr	3465	2065	1120	2380	2	2	4200	4200	0.83	0.49	0.27	0.57	mD	B	A	C
Under Sherwood Dr		2765	1575	1365	2940	2	2	4200	4200	0.66	0.38	0.33	0.70	C	B	A	C
Sherwood Dr	Cloverbar Rd	3045	1855	1680	3220	2	2	4200	4200	0.73	0.44	0.40	0.77	C	B	B	mD
Under Cloverbar Rd I/C		1855	1400	1120	2310	2	2	4200	4200	0.44	0.33	0.27	0.55	B	B	A	C
Cloverbar Rd	Highway 21	2135	1820	1330	2800	2	2	4200	4200	0.51	0.43	0.32	0.67	B	B	A	C
Under Highway 21 I/C		700	700	630	1645	2	2	4200	4200	0.17	0.17	0.15	0.39	A	A	A	B
Highway 21	East Limit	875	875	805	1855	2	2	4200	4200	0.21	0.21	0.19	0.44	A	A	A	B

[Note]: 70% of 30 Year Traffic is estimated to be the traffic volumes within a year after Opening Day

Robustness of Existing YHT Laning (Ref - Table 4.27)

Table H.4.4.2 Level Of Service of Existing YHT Laning - with 80% 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (80% 30 Year Traffic Volumes) [Note]				Existing YHT Laning											
						Existing YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	3840	3720	2880	3440	3	3	6570	6570	0.58	0.57	0.44	0.52	C	C	B	C
Under AHD I/C		2360	1360	1280	2520	2	2	4200	4200	0.56	0.32	0.30	0.60	C	A	A	C
AHD	Broadmoor Bv	3200	1960	1280	2640	2	3	4200	6570	0.76	0.47	0.19	0.40	mD	B	A	B
Under Broadmoor Bv		2576	1232	560	1480	2	3	4200	6570	0.61	0.29	0.09	0.23	C	A	A	A
Broadmoor Bv	Sherwood Dr	3960	2360	1280	2720	2	2	4200	4200	0.94	0.56	0.30	0.65	E	C	A	C
Under Sherwood Dr		3160	1800	1560	3360	2	2	4200	4200	0.75	0.43	0.37	0.80	mD	B	B	mD
Sherwood Dr	Cloverbar Rd	3480	2120	1920	3680	2	2	4200	4200	0.83	0.50	0.46	0.88	mD	B	B	D
Under Cloverbar Rd I/C		2120	1600	1280	2640	2	2	4200	4200	0.50	0.38	0.30	0.63	B	B	A	C
Cloverbar Rd	Highway 21	2440	2080	1520	3200	2	2	4200	4200	0.58	0.50	0.36	0.76	C	B	B	mD
Under Highway 21 I/C		800	800	720	1880	2	2	4200	4200	0.19	0.19	0.17	0.45	A	A	A	B
Highway 21	East Limit	1000	1000	920	2120	2	2	4200	4200	0.24	0.24	0.22	0.50	A	A	A	B

[Note]: 80% of 30 Year Traffic is estimated to be the traffic volumes in 10 years after Opening Day

Robustness of Existing YHT Laning (Ref - Table 4.27)

Table H.4.4.3 Level Of Service of Existing YHT Laning - with 85% 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (85% 30 Year Traffic Volumes) [Note]				Existing YHT Laning											
						Existing YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	4080	3950	3060	3660	3	3	6570	6570	0.62	0.60	0.47	0.56	C	C	B	C
Under AHD I/C		2510	1450	1360	2680	2	2	4200	4200	0.60	0.35	0.32	0.64	C	B	A	C
AHD	Broadmoor Bv	3400	2080	1360	2810	2	3	4200	6570	0.81	0.50	0.21	0.43	mD	B	A	B
Under Broadmoor Bv		2740	1310	600	1570	2	3	4200	6570	0.65	0.31	0.09	0.24	C	A	A	A
Broadmoor Bv	Sherwood Dr	4210	2510	1360	2890	2	2	4200	4200	1.00	0.60	0.32	0.69	F	C	A	C
Under Sherwood Dr		3360	1910	1660	3570	2	2	4200	4200	0.80	0.45	0.40	0.85	mD	B	B	mD
Sherwood Dr	Cloverbar Rd	3700	2250	2040	3910	2	2	4200	4200	0.88	0.54	0.49	0.93	D	C	B	E
Under Cloverbar Rd I/C		2250	1700	1360	2810	2	2	4200	4200	0.54	0.40	0.32	0.67	C	B	A	C
Cloverbar Rd	Highway 21	2590	2210	1620	3400	2	2	4200	4200	0.62	0.53	0.39	0.81	C	C	B	mD
Under Highway 21 I/C		850	850	770	2000	2	2	4200	4200	0.20	0.20	0.18	0.48	A	A	A	B
Highway 21	East Limit	1060	1060	980	2250	2	2	4200	4200	0.25	0.25	0.23	0.54	A	A	A	C

[Note]: 85% of 30 Year Traffic is estimated to be the traffic volumes in 15 years after Opening Day

Robustness of Existing YHT Laning (Ref - Table 4.27)

Table H.4.4.4 Level Of Service of Existing YHT Laning - with 90% 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (90% 30 Year Traffic Volumes) [Note]				Existing YHT Laning											
						Existing YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	4320	4185	3240	3870	3	3	6570	6570	0.66	0.64	0.49	0.59	C	C	B	C
Under AHD I/C		2655	1530	1440	2835	2	2	4200	4200	0.63	0.36	0.34	0.68	C	B	B	C
AHD	Broadmoor Bv	3600	2205	1440	2970	2	3	4200	6570	0.86	0.53	0.22	0.45	D	C	A	B
Under Broadmoor Bv		2898	1386	630	1665	2	3	4200	6570	0.69	0.33	0.10	0.25	C	A	A	A
Broadmoor Bv	Sherwood Dr	4455	2655	1440	3060	2	2	4200	4200	1.06	0.63	0.34	0.73	F	C	B	C
Under Sherwood Dr		3555	2025	1755	3780	2	2	4200	4200	0.85	0.48	0.42	0.90	mD	B	B	D
Sherwood Dr	Cloverbar Rd	3915	2385	2160	4140	2	2	4200	4200	0.93	0.57	0.51	0.99	E	C	C	E
Under Cloverbar Rd I/C		2385	1800	1440	2970	2	2	4200	4200	0.57	0.43	0.34	0.71	C	B	B	C
Cloverbar Rd	Highway 21	2745	2340	1710	3600	2	2	4200	4200	0.65	0.56	0.41	0.86	C	C	B	D
Under Highway 21 I/C		900	900	810	2115	2	2	4200	4200	0.21	0.21	0.19	0.50	A	A	A	B
Highway 21	East Limit	1125	1125	1035	2385	2	2	4200	4200	0.27	0.27	0.25	0.57	A	A	A	C

[Note]: 90% of 30 Year Traffic is estimated to be the traffic volumes in 20 years after Opening Day

Robustness of Existing YHT Laning (Ref - Table 4.27)

Table H.4.4.5 Level Of Service of Existing YHT Laning - with 100% 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (100% 30 Year Traffic Volumes)				Existing YHT Laning											
						Existing YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	4800	4650	3600	4300	3	3	6570	6570	0.73	0.71	0.55	0.65	C	C	C	C
Under AHD I/C		2950	1700	1600	3150	2	2	4200	4200	0.70	0.40	0.38	0.75	C	B	B	mD
AHD	Broadmoor Bv	4000	2450	1600	3300	2	3	4200	6570	0.95	0.58	0.24	0.50	E	C	A	B
Under Broadmoor Bv		3220	1540	700	1850	2	3	4200	6570	0.77	0.37	0.11	0.28	mD	B	A	A
Broadmoor Bv	Sherwood Dr	4950	2950	1600	3400	2	2	4200	4200	1.18	0.70	0.38	0.81	F	C	B	mD
Under Sherwood Dr		3950	2250	1950	4200	2	2	4200	4200	0.94	0.54	0.46	1.00	E	C	B	E
Sherwood Dr	Cloverbar Rd	4350	2650	2400	4600	2	2	4200	4200	1.04	0.63	0.57	1.10	F	C	C	F
Under Cloverbar Rd I/C		2650	2000	1600	3300	2	2	4200	4200	0.63	0.48	0.38	0.79	C	B	B	mD
Cloverbar Rd	Highway 21	3050	2600	1900	4000	2	2	4200	4200	0.73	0.62	0.45	0.95	C	C	B	E
Under Highway 21 I/C		1000	1000	900	2350	2	2	4200	4200	0.24	0.24	0.21	0.56	A	A	A	C
Highway 21	East Limit	1250	1250	1150	2650	2	2	4200	4200	0.30	0.30	0.27	0.63	A	A	A	C

Robustness of Existing YHT Laning (Ref - Table 4.27)

Table H.4.4.6 Level Of Service of Existing YHT Laning - with 110% 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (110% 30 Year Traffic Volumes)				Existing YHT Laning											
						Existing YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	5280	5115	3960	4730	3	3	6570	6570	0.80	0.78	0.60	0.72	mD	mD	C	C
Under AHD I/C		3245	1870	1760	3465	2	2	4200	4200	0.77	0.45	0.42	0.83	mD	B	B	mD
AHD	Broadmoor Bv	4400	2695	1760	3630	2	3	4200	6570	1.05	0.64	0.27	0.55	F	C	A	C
Under Broadmoor Bv		3542	1694	770	2035	2	3	4200	6570	0.84	0.40	0.12	0.31	mD	B	A	A
Broadmoor Bv	Sherwood Dr	5445	3245	1760	3740	2	2	4200	4200	1.30	0.77	0.42	0.89	F	mD	B	D
Under Sherwood Dr		4345	2475	2145	4620	2	2	4200	4200	1.03	0.59	0.51	1.10	F	C	C	F
Sherwood Dr	Cloverbar Rd	4785	2915	2640	5060	2	2	4200	4200	1.14	0.69	0.63	1.20	F	C	C	F
Under Cloverbar Rd I/C		2915	2200	1760	3630	2	2	4200	4200	0.69	0.52	0.42	0.86	C	C	B	D
Cloverbar Rd	Highway 21	3355	2860	2090	4400	2	2	4200	4200	0.80	0.68	0.50	1.05	mD	C	B	F
Under Highway 21 I/C		1100	1100	990	2585	2	2	4200	4200	0.26	0.26	0.24	0.62	A	A	A	C
Highway 21	East Limit	1375	1375	1265	2915	2	2	4200	4200	0.33	0.33	0.30	0.69	A	A	A	C

Robustness of Existing YHT Laning (Ref - Table 4.27)

Table H.4.4.7 Level Of Service of Existing YHT Laning - with 120% 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (120% 30 Year Traffic Volumes)				Existing YHT Laning											
						Existing YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	5760	5580	4320	5160	3	3	6570	6570	0.88	0.85	0.66	0.79	D	mD	C	mD
Under AHD I/C		3540	2040	1920	3780	2	2	4200	4200	0.84	0.49	0.46	0.90	mD	B	B	D
AHD	Broadmoor Bv	4800	2940	1920	3960	2	3	4200	6570	1.14	0.70	0.29	0.60	F	C	A	C
Under Broadmoor Bv		3864	1848	840	2220	2	3	4200	6570	0.92	0.44	0.13	0.34	E	B	A	B
Broadmoor Bv	Sherwood Dr	5940	3540	1920	4080	2	2	4200	4200	1.41	0.84	0.46	0.97	F	mD	B	E
Under Sherwood Dr		4740	2700	2340	5040	2	2	4200	4200	1.13	0.64	0.56	1.20	F	C	C	F
Sherwood Dr	Cloverbar Rd	5220	3180	2880	5520	2	2	4200	4200	1.24	0.76	0.69	1.31	F	mD	C	F
Under Cloverbar Rd I/C		3180	2400	1920	3960	2	2	4200	4200	0.76	0.57	0.46	0.94	mD	C	B	E
Cloverbar Rd	Highway 21	3660	3120	2280	4800	2	2	4200	4200	0.87	0.74	0.54	1.14	D	mD	C	F
Under Highway 21 I/C		1200	1200	1080	2820	2	2	4200	4200	0.29	0.29	0.26	0.67	A	A	A	C
Highway 21	East Limit	1500	1500	1380	3180	2	2	4200	4200	0.36	0.36	0.33	0.76	B	B	A	mD

H.4.5 Robustness of Minimum Opening Day YHT Laning

Table No.	Description
Table H.4.5.1	Recommended Minimum Opening Day YHT Laning with **70%** 30 Year Traffic Volumes
Table H.4.5.2	Recommended Minimum Opening Day YHT Laning with **80%** 30 Year Traffic Volumes
Table H.4.5.3	Recommended Minimum Opening Day YHT Laning with **85%** 30 Year Traffic Volumes
Table H.4.5.4	Recommended Minimum Opening Day YHT Laning with **90%** 30 Year Traffic Volumes
Table H.4.5.5	Recommended Minimum Opening Day YHT Laning with **100%** 30 Year Traffic Volumes
Table H.4.5.6	Recommended Minimum Opening Day YHT Laning with **110%** 30 Year Traffic Volumes
Table H.4.5.7	Recommended Minimum Opening Day YHT Laning with **120%** 30 Year Traffic Volumes

Note: Results are summarized in **Table 4.29** in the main Report

Robustness of Minimum Opening Day YHT Laning (Ref - Table 4.29)

Table H.4.5.1 Level Of Service of Minimum Opening Day YHT Laning - with 70% of 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (70% 30 Year Traffic Volumes) [Note]				Minimum Opening Day YHT Laning											
						Min Opening Day YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	3360	3255	2520	3010	3	3	6570	6570	0.51	0.50	0.38	0.46	C	B	B	B
Under AHD I/C		2065	1190	1120	2205	3	3	6570	6570	0.31	0.18	0.17	0.34	A	A	A	B
AHD	Broadmoor Bv	2800	1715	1120	2310	3	3	6570	6570	0.43	0.26	0.17	0.35	B	A	A	B
Under Broadmoor Bv		2254	1078	490	1295	3	3	6570	6570	0.34	0.16	0.07	0.20	B	A	A	A
Broadmoor Bv	Sherwood Dr	3465	2065	1120	2380	3	3	6570	6570	0.53	0.31	0.17	0.36	C	A	A	B
Under Sherwood Dr		2765	1575	1365	2940	2	2	4200	4200	0.66	0.38	0.33	0.70	C	B	A	C
Sherwood Dr	Cloverbar Rd	3045	1855	1680	3220	2	2	4200	4200	0.73	0.44	0.40	0.77	C	B	B	mD
Under Cloverbar Rd I/C		1855	1400	1120	2310	2	2	4200	4200	0.44	0.33	0.27	0.55	B	B	A	C
Cloverbar Rd	Highway 21	2135	1820	1330	2800	2	2	4200	4200	0.51	0.43	0.32	0.67	B	B	A	C
Under Highway 21 I/C		700	700	630	1645	2	2	4200	4200	0.17	0.17	0.15	0.39	A	A	A	B
Highway 21	East Limit	875	875	805	1855	2	2	4200	4200	0.21	0.21	0.19	0.44	A	A	A	B

[Note]: 70% of 30 Year Traffic is estimated to be the traffic volumes within a year after Opening Day

Robustness of Minimum Opening Day YHT Laning (Ref - Table 4.29)

Table H.4.5.2 Level Of Service of Minimum Opening Day YHT Laning - with 80% of 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (80% 30 Year Traffic Volumes) [Note]				Minimum Opening Day YHT Laning											
						Min Opening Day YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	3840	3720	2880	3440	3	3	6570	6570	0.58	0.57	0.44	0.52	C	C	B	C
Under AHD I/C		2360	1360	1280	2520	3	3	6570	6570	0.36	0.21	0.19	0.38	B	A	A	B
AHD	Broadmoor Bv	3200	1960	1280	2640	3	3	6570	6570	0.49	0.30	0.19	0.40	B	A	A	B
Under Broadmoor Bv		2576	1232	560	1480	3	3	6570	6570	0.39	0.19	0.09	0.23	B	A	A	A
Broadmoor Bv	Sherwood Dr	3960	2360	1280	2720	3	3	6570	6570	0.60	0.36	0.19	0.41	C	B	A	B
Under Sherwood Dr		3160	1800	1560	3360	2	2	4200	4200	0.75	0.43	0.37	0.80	mD	B	B	mD
Sherwood Dr	Cloverbar Rd	3480	2120	1920	3680	2	2	4200	4200	0.83	0.50	0.46	0.88	mD	B	B	D
Under Cloverbar Rd I/C		2120	1600	1280	2640	2	2	4200	4200	0.50	0.38	0.30	0.63	B	B	A	C
Cloverbar Rd	Highway 21	2440	2080	1520	3200	2	2	4200	4200	0.58	0.50	0.36	0.76	C	B	B	mD
Under Highway 21 I/C		800	800	720	1880	2	2	4200	4200	0.19	0.19	0.17	0.45	A	A	A	B
Highway 21	East Limit	1000	1000	920	2120	2	2	4200	4200	0.24	0.24	0.22	0.50	A	A	A	B

[Note]: 80% of 30 Year Traffic is estimated to be the traffic volumes in 10 years after Opening Day

Robustness of Minimum Opening Day YHT Laning (Ref - Table 4.29)

Table H.4.5.3 Level Of Service of Minimum Opening Day YHT Laning - with 85% of 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (85% 30 Year Traffic Volumes) [Note]				Minimum Opening Day YHT Laning											
						Min Opening Day YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	4080	3950	3060	3660	3	3	6570	6570	0.62	0.60	0.47	0.56	C	C	B	C
Under AHD I/C		2510	1450	1360	2680	3	3	6570	6570	0.38	0.22	0.21	0.41	B	A	A	B
AHD	Broadmoor Bv	3400	2080	1360	2810	3	3	6570	6570	0.52	0.32	0.21	0.43	C	A	A	B
Under Broadmoor Bv		2740	1310	600	1570	3	3	6570	6570	0.42	0.20	0.09	0.24	B	A	A	A
Broadmoor Bv	Sherwood Dr	4210	2510	1360	2890	3	3	6570	6570	0.64	0.38	0.21	0.44	C	B	A	B
Under Sherwood Dr		3360	1910	1660	3570	2	2	4200	4200	0.80	0.45	0.40	0.85	mD	B	B	mD
Sherwood Dr	Cloverbar Rd	3700	2250	2040	3910	2	2	4200	4200	0.88	0.54	0.49	0.93	D	C	B	**E**
Under Cloverbar Rd I/C		2250	1700	1360	2810	2	2	4200	4200	0.54	0.40	0.32	0.67	C	B	A	C
Cloverbar Rd	Highway 21	2590	2210	1620	3400	2	2	4200	4200	0.62	0.53	0.39	0.81	C	C	B	mD
Under Highway 21 I/C		850	850	770	2000	2	2	4200	4200	0.20	0.20	0.18	0.48	A	A	A	B
Highway 21	East Limit	1060	1060	980	2250	2	2	4200	4200	0.25	0.25	0.23	0.54	A	A	A	C

[Note]: 85% of 30 Year Traffic is estimated to be the traffic volumes in 15 years after Opening Day

Robustness of Minimum Opening Day YHT Laning (Ref - Table 4.29)

Table H.4.5.4 Level Of Service of Minimum Opening Day YHT Laning - with 90% of 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (90% 30 Year Traffic Volumes) [Note]				Minimum Opening Day YHT Laning											
						Min Opening Day YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	4320	4185	3240	3870	3	3	6570	6570	0.66	0.64	0.49	0.59	C	C	B	C
Under AHD I/C		2655	1530	1440	2835	3	3	6570	6570	0.40	0.23	0.22	0.43	B	A	A	B
AHD	Broadmoor Bv	3600	2205	1440	2970	3	3	6570	6570	0.55	0.34	0.22	0.45	C	B	A	B
Under Broadmoor Bv		2898	1386	630	1665	3	3	6570	6570	0.44	0.21	0.10	0.25	B	A	A	A
Broadmoor Bv	Sherwood Dr	4455	2655	1440	3060	3	3	6570	6570	0.68	0.40	0.22	0.47	C	B	A	B
Under Sherwood Dr		3555	2025	1755	3780	2	2	4200	4200	0.85	0.48	0.42	0.90	mD	B	B	D
Sherwood Dr	Cloverbar Rd	3915	2385	2160	4140	2	2	4200	4200	0.93	0.57	0.51	0.99	**E**	C	C	**E**
Under Cloverbar Rd I/C		2385	1800	1440	2970	2	2	4200	4200	0.57	0.43	0.34	0.71	C	B	B	C
Cloverbar Rd	Highway 21	2745	2340	1710	3600	2	2	4200	4200	0.65	0.56	0.41	0.86	C	C	B	D
Under Highway 21 I/C		900	900	810	2115	2	2	4200	4200	0.21	0.21	0.19	0.50	A	A	A	B
Highway 21	East Limit	1125	1125	1035	2385	2	2	4200	4200	0.27	0.27	0.25	0.57	A	A	A	C

[Note]: 90% of 30 Year Traffic is estimated to be the traffic volumes in 20 years after Opening Day

Robustness of Minimum Opening Day YHT Laning (Ref - Table 4.29)

Table H.4.5.5 Level Of Service of Minimum Opening Day YHT Laning - with 100% of 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (100% 30 Year Traffic Volumes)				Minimum Opening Day YHT Laning											
						Min Opening Day YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	4800	4650	3600	4300	3	3	6570	6570	0.73	0.71	0.55	0.65	C	C	C	C
Under AHD I/C		2950	1700	1600	3150	3	3	6570	6570	0.45	0.26	0.24	0.48	B	A	A	B
AHD	Broadmoor Bv	4000	2450	1600	3300	3	3	6570	6570	0.61	0.37	0.24	0.50	C	B	A	B
Under Broadmoor Bv		3220	1540	700	1850	3	3	6570	6570	0.49	0.23	0.11	0.28	B	A	A	A
Broadmoor Bv	Sherwood Dr	4950	2950	1600	3400	3	3	6570	6570	0.75	0.45	0.24	0.52	mD	B	A	C
Under Sherwood Dr		3950	2250	1950	4200	2	2	4200	4200	0.94	0.54	0.46	1.00	**E**	C	B	**E**
Sherwood Dr	Cloverbar Rd	4350	2650	2400	4600	2	2	4200	4200	1.04	0.63	0.57	1.10	**F**	C	C	**F**
Under Cloverbar Rd I/C		2650	2000	1600	3300	2	2	4200	4200	0.63	0.48	0.38	0.79	C	B	B	mD
Cloverbar Rd	Highway 21	3050	2600	1900	4000	2	2	4200	4200	0.73	0.62	0.45	0.95	C	C	B	**E**
Under Highway 21 I/C		1000	1000	900	2350	2	2	4200	4200	0.24	0.24	0.21	0.56	A	A	A	C
Highway 21	East Limit	1250	1250	1150	2650	2	2	4200	4200	0.30	0.30	0.27	0.63	A	A	A	C

Robustness of Minimum Opening Day YHT Laning (Ref - Table 4.29)

Table H.4.5.6 Level Of Service of Minimum Opening Day YHT Laning - with 110% of 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (110% 30 Year Traffic Volumes)				Minimum Opening Day YHT Laning											
						Min Opening Day YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	5280	5115	3960	4730	3	3	6570	6570	0.80	0.78	0.60	0.72	mD	mD	C	C
Under AHD I/C		3245	1870	1760	3465	3	3	6570	6570	0.49	0.28	0.27	0.53	B	A	A	C
AHD	Broadmoor Bv	4400	2695	1760	3630	3	3	6570	6570	0.67	0.41	0.27	0.55	C	B	A	C
Under Broadmoor Bv		3542	1694	770	2035	3	3	6570	6570	0.54	0.26	0.12	0.31	C	A	A	A
Broadmoor Bv	Sherwood Dr	5445	3245	1760	3740	3	3	6570	6570	0.83	0.49	0.27	0.57	mD	B	A	C
Under Sherwood Dr		4345	2475	2145	4620	2	2	4200	4200	1.03	0.59	0.51	1.10	F	C	C	F
Sherwood Dr	Cloverbar Rd	4785	2915	2640	5060	2	2	4200	4200	1.14	0.69	0.63	1.20	F	C	C	F
Under Cloverbar Rd I/C		2915	2200	1760	3630	2	2	4200	4200	0.69	0.52	0.42	0.86	C	C	B	D
Cloverbar Rd	Highway 21	3355	2860	2090	4400	2	2	4200	4200	0.80	0.68	0.50	1.05	mD	C	B	F
Under Highway 21 I/C		1100	1100	990	2585	2	2	4200	4200	0.26	0.26	0.24	0.62	A	A	A	C
Highway 21	East Limit	1375	1375	1265	2915	2	2	4200	4200	0.33	0.33	0.30	0.69	A	A	A	C

Robustness of Minimum Opening Day YHT Laning (Ref - Table 4.29)

Table H.4.5.7 Level Of Service of Minimum Opening Day YHT Laning - with 120% of 30 Year Traffic Volumes

Yellowhead Trail		YHT Mainline Traffic Volumes (vph) (120% 30 Year Traffic Volumes)				Minimum Opening Day YHT Laning											
						Min Opening Day YHT Laning				V/C Ratio				LOS			
Segment / Under IC		WB		EB		# Lanes		Capacity		WB	WB	EB	EB	WB	WB	EB	EB
From	To	AM	PM	AM	PM	WB	EB	WB	EB	AM	PM	AM	PM	AM	PM	AM	PM
West Limit	AHD	5760	5580	4320	5160	3	3	6570	6570	0.88	0.85	0.66	0.79	D	mD	C	mD
Under AHD I/C		3540	2040	1920	3780	3	3	6570	6570	0.54	0.31	0.29	0.58	C	A	A	C
AHD	Broadmoor Bv	4800	2940	1920	3960	3	3	6570	6570	0.73	0.45	0.29	0.60	C	B	A	C
Under Broadmoor Bv		3864	1848	840	2220	3	3	6570	6570	0.59	0.28	0.13	0.34	C	A	A	B
Broadmoor Bv	Sherwood Dr	5940	3540	1920	4080	3	3	6570	6570	0.90	0.54	0.29	0.62	D	C	A	C
Under Sherwood Dr		4740	2700	2340	5040	2	2	4200	4200	1.13	0.64	0.56	1.20	F	C	C	F
Sherwood Dr	Cloverbar Rd	5220	3180	2880	5520	2	2	4200	4200	1.24	0.76	0.69	1.31	F	mD	C	F
Under Cloverbar Rd I/C		3180	2400	1920	3960	2	2	4200	4200	0.76	0.57	0.46	0.94	mD	C	B	E
Cloverbar Rd	Highway 21	3660	3120	2280	4800	2	2	4200	4200	0.87	0.74	0.54	1.14	D	mD	C	F
Under Highway 21 I/C		1200	1200	1080	2820	2	2	4200	4200	0.29	0.29	0.26	0.67	A	A	A	C
Highway 21	East Limit	1500	1500	1380	3180	2	2	4200	4200	0.36	0.36	0.33	0.76	B	B	A	mD