



# Skeleton Lake Estates ASP

## Transportation Impact Assessment

Final Report

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Prepared for  
Eins Consulting

Date  
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Project No.  
03-24-0102

## CORPORATE AUTHORIZATION

Prepared By: Nicole Farn, P.Eng.

Bunt & Associates Engineering Ltd.  
500-10339 124 Street NW  
Edmonton, AB T5N 3W1  
Canada

Reviewed By: Alyssa Lefebvre, P.Eng.

Telephone: +1 (780) 732-5373

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*Written with respect and gratitude for the Traditional Territories upon which we work and live.*

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# 1. INTRODUCTION

Eins Consulting is preparing an Area Structure Plan (ASP) to support the next phase of development of Skeleton Lake Estates in Athabasca County. As part of the planning process, Bunt & Associates has been retained to complete a Transportation Impact Assessment (TIA) to confirm that the roadway network is able to appropriately accommodate the proposed subdivision and to identify mitigation measures as required to maintain acceptable operations.

## 1.1 Study Purpose and Objectives

Skeleton Lake is located north of Edmonton, AB, east of Highway 63. The proposed Skeleton Lake Estates ASP represents the expansion of a land subdivision completed in 2008. Within the ASP boundary, 47 new country residential/recreational lots (min. 1 acres in size) have been identified in addition to the existing 20 lots. Access is planned to continue to be provided via the existing Radman Drive intersection with Twp Rd 653.

The focus of this assessment is to identify the transportation characteristics associated with the subdivision initiative and any transportation improvements required to successfully integrate the proposed expansion into its surrounding context. The impacts of the proposed development on key intersections will be evaluated during peak periods and improvements identified, if required, to maintain appropriate levels of service. The key intersections include:

- Twp Rd 653/Radman Drive
- Twp Rd 653/Range Road 192

## 1.2 Study Methodology

The assessment was completed using the following methodology:

- Establishment of existing traffic volumes on key study roadways and intersections.
- Estimation of future background traffic volumes for one study horizon (2035 ASP Buildout).
- Estimation of ASP-generated site generated vehicle traffic at the study intersections.
- Development of total traffic volume estimates by adding site generated estimates to future background traffic estimates.
- Assessment of weekday peak hour intersection operations to confirm geometry and traffic control required to accommodate traffic projections at the study intersections.
- Assessment of Transportation Association of Canada (TAC) illumination warrants for the study intersections.

## 2. BACKGROUND CONDITIONS

### 2.1 Site Location

The subject lands, located on the north side of Skeleton Lake in Athabasca County, are identified in **Figure 2.1** along with the area roadway network.

**Twp Rd 653** is a two-lane rural gravel east-west collector roadway. This grid road provides an east-west connection between the study area and Rge Rd 192, intersecting as the stop-controlled east leg of a T-intersection with Rge Rd 192. The speed limit on this roadway is 80km/h.

A residential subdivision exists east of and immediately adjacent to the east boundary of the Skeleton Lake Estates ASP. Two access routes are available for the adjacent subdivision. Access is provided via Radman Drive through the Skeleton Lake Estates ASP and also provided via the extension of Twp Rd 653 to the east as Twp Rd 653A (transitioning to Willow Road), which provides a looped roadway connection to Cottonwood Ave and Birch Street which provide access to adjacent lakeside residential properties.

**Rge Rd 192** is a two-lane rural gravel north-south collector grid road which connects Highway 663 (south of Skeleton Lake) and Twp Rd 661 to the north. The network of east-west Township Roads provide access between Rge Rd 192 and Highway 63. While Twp Rd 653 does not extend to Highway 63, Rge Rd 192 provides a north-south connection to Twp Rd 652 and Twp Rd 654 which both intersect with Highway 63 (north and south of Twp Rd 653, respectively). The speed limit of Rge Rd 192 is 80km/h.

**Radman Drive** is a two-lane rural gravel residential roadway providing access to the Skeleton Lake Estates ASP area from Twp Rd 653. Historically, a gated emergency access was provided between the east extent of Radman Drive (which terminated in a cul-de-sac at the east boundary of the Skeleton Lake Estates ASP) and the west extent of Birch Drive (which terminated at the west boundary of the adjacent subdivision). It is understood, however, that the connection between the two has long-since been permanently open and was confirmed through discussions with the landowner and a site visit. The speed limit on Radman Drive is 50km/h.



## 2.2 Background Traffic

### 2.2.1 Existing Traffic

Lands in the vicinity of Skeleton Lake are largely agricultural, country residential, and seasonal (recreational properties) in nature. The existing roadway network represents low-volume roadways which are anticipated to exhibit an increase in volume during spring, summer, and fall months when the use of recreational lots increases (anticipated to peak in July/August).

Notwithstanding the anticipated seasonal variation in traffic volume, given the timing of the study, Bunt & Associated completed weekday AM and PM peak hour turning movement counts at the intersections of Twp Rd 653/Rge Rd 192 and Twp Rd 653/Radman Drive during the month of January (2025) which establishes off-peak traffic volume in the study area.

Background traffic anticipated to represent existing off-peak traffic volume at the key study intersections is presented in **Figure 2.2**. As presented, the volume observed on the three approaches of the Twp Rd 653/Rge Rd 192 intersection was 10 vehicles or less during the peak hours. The observed peak hour volume of traffic on Radman Drive was fewer than 5 vehicles. This volume of traffic reflects the low utilization of the existing lots during winter months. Based on discussions with the landowner, it is understood that only two of the existing lots in Skeleton Lake Estates are occupied by full-time residents.

In order to estimate high-season background traffic volume potential for the existing subdivided lots, high-season trips anticipated to be generated by existing lots in both the Skeleton Lake Estates ASP area and the adjacent subdivision have been estimated. **Table 2.1** summarizes the trip generation rates considered for use in the analysis. The rates include those sourced from the ITE Trip Generation Handbook (11<sup>th</sup> edition) for both a single-family home and a recreational home, in addition to Country Residential trip rates measured by Bunt.

**Table 2.1: Trip Generation Rate Comparison**

LAND USE	SOURCE	AM PEAK HOUR	PM PEAK HOUR
Residential	ITE LUC 210 Single-Family Detached Housing	0.70 trips/unit (25%in/75% out)	0.94 trips/unit (63%in/37% out)
Recreational Home	ITE LUC 260 Recreational Homes	0.22 trips/unit (55% in/45% out)	0.29 trips/unit (46% in/54% out)
Country Residential	Bunt Database <sup>1</sup>	0.71 trips/unit (14% in/86% out)	0.62 trips/unit (70% in/30% out)

1. Measured rates based on a survey of 90 country residential units in Leduc County.

Notwithstanding the anticipated recreational nature of the homes which typically generate fewer trips than a typical residential dwelling, the Country Residential trip rate summarized in Table 2.1 has been used to estimate background traffic volumes. The application of Country Residential trip rates is anticipated to represent a conservative estimate of traffic activity for lots anticipated to be largely used as recreational properties while also acknowledging their potential use for full-time living.

**Table 2.2** summarizes the site generated traffic estimate for existing lots within Skeleton Lake Estates and the adjacent subdivision.

**Table 2.2: Background Trip Generation Estimate**

LAND USE	AM PEAK HOUR			PM PEAK HOUR		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Existing Lots Skeleton Lake Estates	2	12	14	9	3	12
Existing Lots Adjacent Subdivision	6	38	44	27	12	39

The trips were assigned to the key study intersections based on trips accessing the area to/from Twp Rd 653, with 20% of trips to/from the north and 80% to/from the south. Given the directness of the Radman Drive route to the adjacent subdivision, the majority of trips generated were assigned via Radman Drive with about 10% of trips using the Twp Rd 653A route.

**Figure 2.3** presents the AM and PM peak hour background traffic estimated to represent existing peak season traffic activity at the key study intersections.

### 2.2.2 Horizon Year Background Traffic

A 2035 horizon year is assumed to represent the full build-out of the subject lands. Based on the location of the lands and the agricultural nature of the area, increases in background traffic in the horizon year time frame are anticipated to be development driven. For the purpose of this assessment, the existing forecast peak season background traffic has been assumed to be consistent in the 2035 horizon year (Figure 2.3).

Figure 2.2: Existing January 2025 Traffic

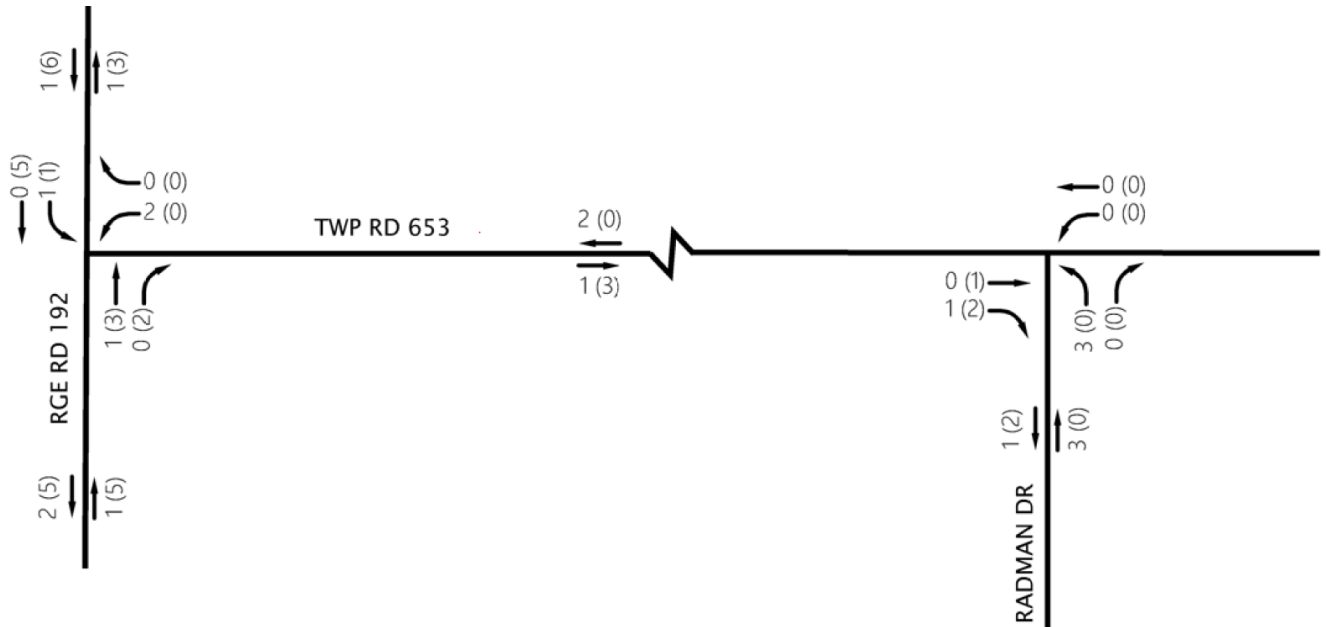


Figure 2.3: Estimated Peak-Season Background Traffic



### 3. PROPOSED DEVELOPMENT

#### 3.1 Land Use Concept

The proposed buildout of the Skeleton Lake Estates ASP is anticipated to include 47 new country residential lots in addition to the existing 23 country residential lots, representing a total lot count of 70 lots.

**Figure 3.1** presents the ASP land use concept plan which identifies both the existing and new country residential lots. As presented, new lots are planned on both sides of Radman Drive. The cul-de-sacs illustrated to provide access to the new lots represent new roadway construction.

Notwithstanding that the concept plan illustrates the existing Radman Drive corridor terminating as a cul-de-sac at the east boundary of the plan area, as mentioned previously, a continuous connection exists between Radman Drive and Brich Street to the east.

#### 3.2 Site Generated Traffic

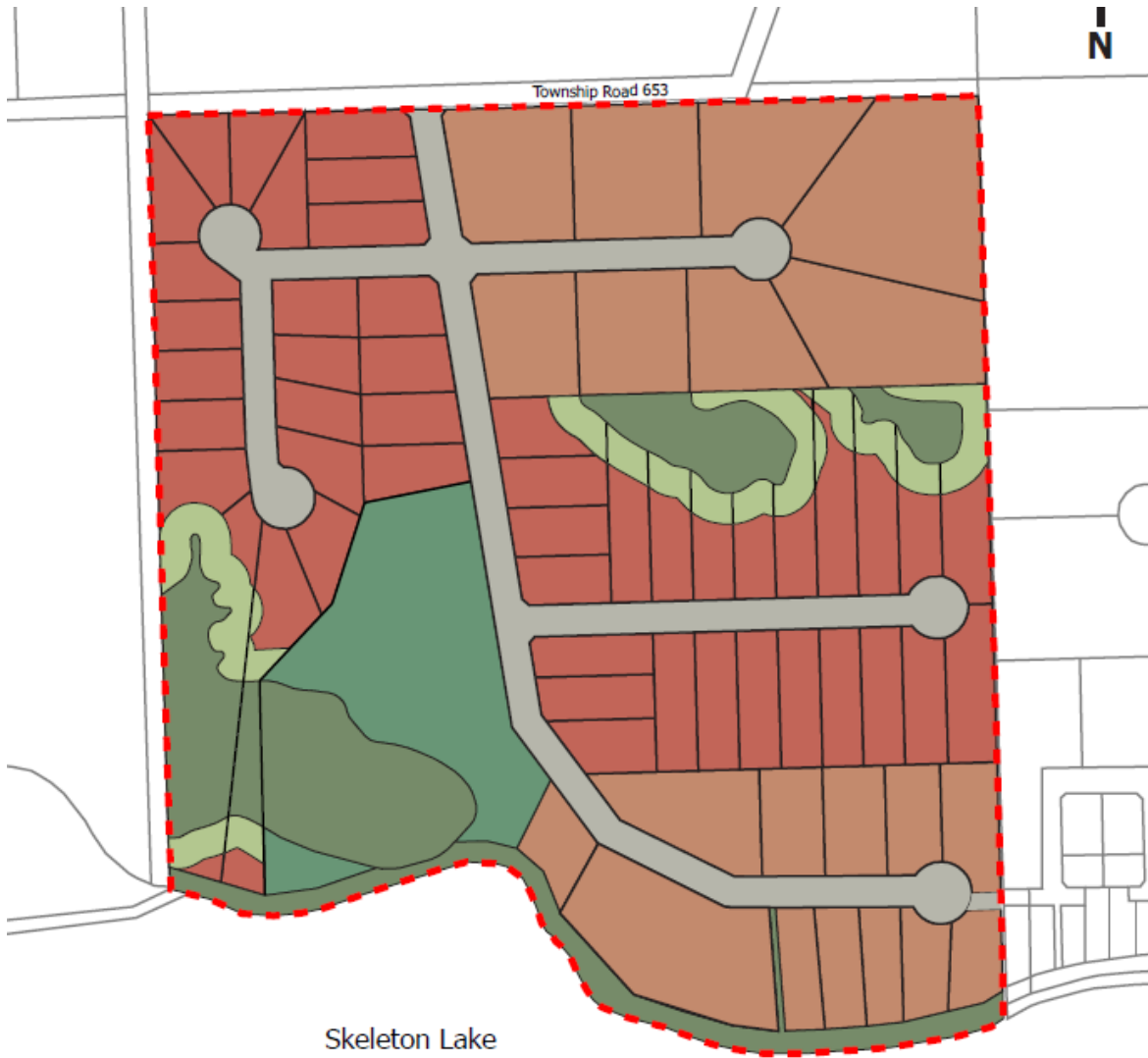
Trips generated by the proposed new lots were estimated based on the Country Residential trip rate applied to the existing land uses. **Table 3.1** summarizes the trips estimated to be generated by the new lots.

**Table 3.1: Site Generated Trip Estimate**

LAND USE		AM PEAK HOUR			PM PEAK HOUR		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Proposed Lots	47 units	5	29	34	20	9	29

The distribution and assignment of site generated traffic is consistent with the background traffic forecast. **Figure 3.2** presents the assignment of the site generated traffic, and **Figure 3.3** presents the total traffic (representing the addition of the site generated traffic to the background traffic).

Figure 3.1: Land Use Concept Plan (Source: Eins Consulting)



**SKELETON LAKE ESTATES AREA STRUCTURE PLAN**

FIGURE 5: LAND USE CONCEPT PLAN

LEGEND

PLAN AREA	ENVIRONMENTAL RESERVE
EXISTING COUNTRY RESIDENTIAL	ENVIRONMENTAL RESERVE EASEMENT
NEW COUNTRY RESIDENTIAL	MUNICIPAL RESERVE
INTERNAL ROADWAY	




Figure 3.2: Site Traffic Assignment

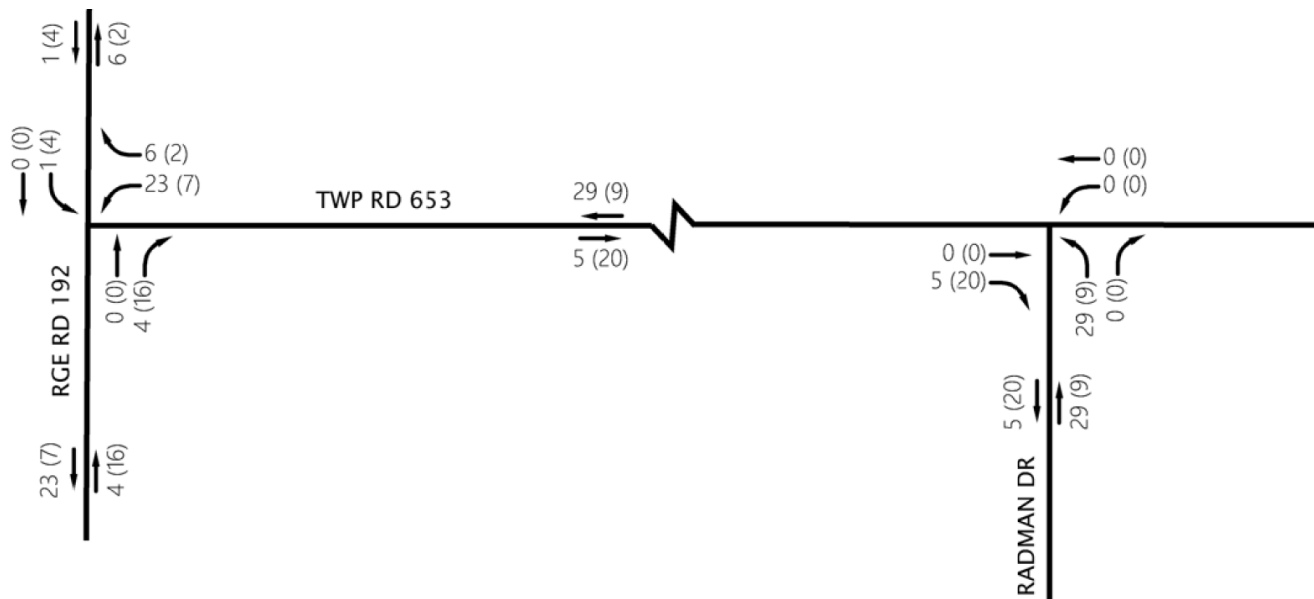
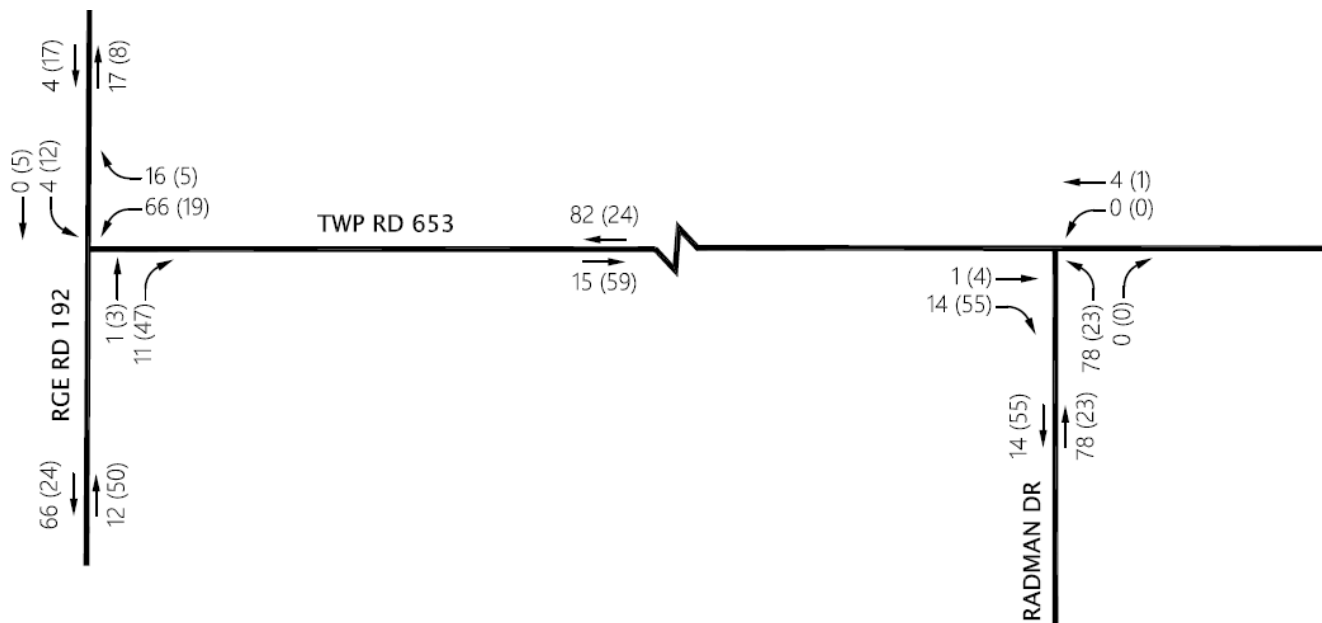


Figure 3.3: Total Traffic



## 4. TRAFFIC ASSESSMENT

### 4.1 Intersection Capacity Assessment

#### 4.1.1 Intersection Capacity Assessment Methodology

The intersection capacity assessments were completed using Synchro 11. Intersection operations are typically rated by two measures. The volume to capacity (v/c) ratio describes the extent to which the traffic volumes can be accommodated by the physical capacity of the road configuration and intersection control. A value (measured during the peak hour) less than 0.90 indicates that generally, there is sufficient capacity and projected traffic volumes can be accommodated at the intersection. A value between 0.90 and 1.0 suggests unstable operations may occur and volumes are nearing capacity conditions. A calculated value over 1.0 indicates that traffic volumes are theoretically exceeding capacity. The second measure of performance, Level of Service (LOS), is based on the estimated average delay per vehicle among all traffic passing through the intersection. A low average delay merits a LOS A rating. Average delays greater than 50 seconds per vehicle generally produce a LOS F rating for unsignalized intersections.

The methodology includes a number of assumptions that relate to the operating conditions present at the intersections. The following assumptions were used in the assessment:

- Peak Hour Factor – 0.92
- %HV: 2%

The geometry assumed for each intersection is included in the assessment tables. Left turn movements, through movements, and right turn movements are represented by “L”, “T”, and “R” respectively in the assessment tables, and lanes are separated by a “/”. For example, an approach whose geometry is described as LT/R features two lanes: one lane accommodating shared left/through movements and a second lane accommodating right turning movements.

As per the HCM 6<sup>th</sup> Edition methodology, unsignalized intersection assessment results are reported for lanes including critical movements only.

#### 4.1.2 Twp Rd 653/Rge Rd 192

Existing traffic control and geometry has been assumed in the assessment, which includes westbound stop-control and single shared lanes on each approach of the T-intersection.

**Table 4.1** summarizes the results of the AM peak hour and PM peak hour intersection capacity assessments upon build out of the Skeleton Lake Estates ASP. As presented, the intersection is anticipated to continue to operate at appropriate levels of service upon the addition of site-generated traffic.

**Table 4.1: Twp Rd 653/Rge Rd 192**

DIRECTION	WESTBOUND		NORTHBOUND		SOUTHBOUND	
MOVEMENT	L	R	T	R	L	T
<b>AM PEAK HOUR – WB Stop Control</b>						
<b>Geometry</b>	LR		TR		LT	
<b>Volume (vph)</b>	66	16	*5	11	4	*5
<b>v/c</b>	0.09				0.01	
<b>Delay (s)</b>	8.9				7.3	
<b>LOS</b>	A				A	
<b>95<sup>th</sup> Queue (m)</b>	2.5				0	
<b>Intersection Delay:</b>				<b>7.1</b>	<b>Intersection LOS:</b>	
<b>PM PEAK HOUR – WB Stop Control</b>						
<b>Geometry</b>	LR		TR		LT	
<b>Volume (vph)</b>	19	5	*5	47	12	5
<b>v/c</b>	0.03				0.01	
<b>Delay (s)</b>	8.9				7.3	
<b>LOS</b>	A				A	
<b>95<sup>th</sup> Queue (m)</b>	1.0				0	
<b>Intersection Delay:</b>				<b>3.2</b>	<b>Intersection LOS:</b>	
						<b>A</b>

\*Movement projected to be low-volume; a nominal 5 vph was used in the assessment.

**4.1.3 Twp Rd 653/Radman Drive**

Existing traffic control and geometry has been assumed in the assessment, which includes northbound stop-control and single shared lanes on each approach of the T-intersection.

**Table 4.2** summarizes the results of the AM peak hour and PM peak hour intersection capacity assessments upon build out of the Skeleton Lake Estates ASP. As presented, the intersection is anticipated to continue to operate at appropriate levels of service upon the addition of site-generated traffic.

**Table 4.2: Twp Rd 653/Radman Drive**

DIRECTION	EASTBOUND		WESTBOUND		NORTHBOUND		
MOVEMENT	T	R	L	T	L	R	
<b>AM PEAK HOUR – NB Stop Control</b>							
<b>Geometry</b>	TR		LT		LR		
<b>Volume (vph)</b>	1	14	0	4	78	0	
<b>v/c</b>			-		0.08		
<b>Delay (s)</b>			0		8.9		
<b>LOS</b>			A		A		
<b>95<sup>th</sup> Queue (m)</b>			0		2.5		
<b>Intersection Delay:</b>				<b>7.2</b>	<b>Intersection LOS:</b>		<b>A</b>
<b>PM PEAK HOUR – NB Stop Control</b>							
<b>Geometry</b>	TR		LT		LR		
<b>Volume (vph)</b>	4	55	0	1	23	0	
<b>v/c</b>			-		0.03		
<b>Delay (s)</b>			0		8.8		
<b>LOS</b>			A		A		
<b>95<sup>th</sup> Queue (m)</b>			0		1.0		
<b>Intersection Delay:</b>				<b>2.4</b>	<b>Intersection LOS:</b>		<b>A</b>

## 5. ADDITIONAL CONSIDERATIONS

It is noted that the trip generation rates applied in the traffic assessment were derived from country residential land uses in Leduc County located such that a residential daily commute to a major municipal centre is anticipated. It should be noted that while the use of these conservative peak hour rates has demonstrated that there is significant capacity at the key single-lane approach T-intersections to accommodate additional traffic activity under existing stop-control without resulting in significant delay, the rates are anticipated to over-estimate the magnitude of traffic anticipated based on the following:

- The rates assume typical residential activity reflective of full-time occupancy and located in areas conducive to daily commutes and activity travel.
- There are only two full-time residences developed in the existing Skeleton Lake Estates ASP (out of 20 lots).
- Based on a winter field visit completed, it is suggested that the lots in the adjacent subdivision are also primarily seasonal in nature as the majority of driveways were not passable.
- The location of the ASP is such that traffic activity to surrounding activity and employment centres is anticipated to be limited.

With respect to the application of a daily trip generation rate, the County's methodology for forecasting daily traffic based on the County's Roadway Paving Priority Criteria has been applied to estimate daily traffic activity. The Roadway Paving Priority Criteria estimates daily traffic at a rate of 2 vehicle trips per day per County residence that a roadway may directly serve.

The application of a 2 trip per day rate would result in an estimation of daily traffic volume on key study roadways, generated by the immediate area, as summarized in **Table 5.1**. As presented, daily traffic volume on Radman Drive and Twp Rd 653 is anticipated to primarily accommodate ASP traffic generation and can be estimated to be in the order of 250 two-way vehicles and 270 two-way vehicles on Radman Drive and Twp Rd 653, respectively. Rge Rd 192 is anticipated to accommodate background traffic not associated with the subject area and has been estimated based on adjacent development.

**Table 5.1: Skeleton Lake Estates ASP and Adjacent Subdivision - Daily Traffic Estimate**

LAND USE	EXISTING SKELETON LAKE ESTATES LOTS (20 LOTS)	ADJACENT SUBDIVISION LOTS (63 LOTS)	PROPOSED (47 LOTS)	BACKGROUND TRAFFIC <sup>1</sup>	TOTAL DAILY TRAFFIC ESTIMATE
Radman Drive South of Twp Rd 653	40	113	94	-	247 vpd
Twp Rd 653 East of Rge Rd 192	40	126	94	4	264 vpd
Rge Rd 192 North of Twp Rd 653	8	25	20	6	59 vpd
Rge Rd 192 South of Twp Rd 653	32	101	74	50	257 vpd

1. Estimated based on existing adjacent development

In considering pavement priorities, the County’s Roadway Paving Priority Criteria considers factors including tie-ins to existing paved roadways, residential density, traffic type, roadway function, growth potential, and cost benefit. The existing gravel nature of the study area roadways is consistent with the roadway standard providing access to other existing summer village subdivisions on Skeleton Lake.

## 6. ILLUMINATION WARRANTS

Lighting warrant assessments were completed based on the Transportation Association of Canada's (TAC) Guide for the Design of Roadway Lighting (2006). At unsignalized intersections, the need for and type of illumination warranted is based on geometric, operational, environmental, and collision factors. A point-score of 240 or more indicates full illumination is required; partial or delineation lighting may be considered at intersections with point scores between 120 and 240; and no illumination is required with a point score less than 120. It is noted that collision data from within the past five years is not available; therefore, the results reflect the analysis based on geometric, operational, and environmental factors only.

**Table 6.1** summarizes the point-score and illumination warrant at the study intersection under the total traffic volume scenario. As shown, illumination is not warranted at the study intersections. Illumination assessment summaries are included in **Appendix A**.

**Table 6.1: Illumination Warrant Review Summary**

INTERSECTION	SCENARIO	POINT SCORE	WARRANT
Twp Rd 653/Rge Rd 192	Total Buildout Traffic	53	Lighting is not warranted
Twp Rd 653/Radman Drive	Total Buildout Traffic	53	Lighting is not warranted

## 7. CONCLUSIONS AND RECOMMENDATIONS

The proposed new lots have been estimated to generate in the order of 34 two-way trips in the AM peak hour and 29 two-way trips in the PM peak hour when country residential trip rates are applied. This estimate is anticipated to be conservative as existing lots are largely seasonal in nature, and it is anticipated that new lots will represent a combination of both seasonal and full-time use.

Upon the addition of site generated traffic to Radman Drive, Twp Rd 653 and Rge Rd 192, the key study intersections are anticipated to continue to operate at good levels of service. No upgrades to existing intersections or roadways have been identified.

It is recommended that the new cul-de-sac roadways and intersections with Radman Drive meet Athabasca County Residential Road design and construction standards and that access approaches to individual lots meet Athabasca County Access Approach Standards.

# APPENDIX A

## Illumination Warrants

# GUIDE FOR THE DESIGN OF ROADWAY LIGHTING

## LIGHTING WARRANT SPREADSHEET

This spreadsheet is to be used in conjunction with *Guide for the Design of Roadway Lighting*, Transportation Association of Canada, 2006 Edition.

Please enter information in the cells with yellow background

### INTERSECTION CHARACTERISTICS

Twp Rd 653	Main Road
Radman Drive	Minor Road
Athabasca County	City/Town

Date March 18, 2025

Other

### GEOMETRIC FACTORS

	Value	Rating	Weight	Comments	Check	Score
Channelization Rating	Descriptive	0		Refer to Table 1(A) to determine rating value	OK	
Presence of raised channelization? ( Y / N )	n				OK	
Highest operating speed on raised, channelized approach (km/h)			5		OK	
Channelization Factor					OK	0
Approach Sight Distance on most constrained approach (%)	100	0	10	Relative to the recommended minimum sight distance	OK	0
Posted Speed limit (in 10's of km/h)	80				OK	
Radius of Horizontal Curve (m)	0			Enter "T" for tangent (no horizontal curve at the intersection)	OK	
	Posted Speed Category =	0				
	Posted Speed Category =	0				
	Posted Speed Category =	C	4			
	Posted Speed Category =	0				
Horizontal Curvature Factor		4	5		OK	20
Angle of Intersection (10's of Degrees)	90	0	5		OK	0
Downhill Approach Grade (x.x%)	0.0	0	3	Rounded to nearest tenth of a percent	OK	0
Number of Intersection Legs	3	1	3	Number of legs = 3 or more	OK	3
<b>Geometric Factors Subtotal</b>						<b>23</b>

### OPERATIONAL FACTORS

Is the intersection signalized ? ( Y / N )	N			Calculate the Signalization Warrant Factor		
AADT on Major Road (2-way)	265	0	10		OK	0
AADT on Minor Road (2-way)	250	0	20	Either Use the two AADT inputs <b>OR</b> the Descriptive Signalization Warrant (Unused values should be set to Zero) Refer to Table 1(B) for description and rating values for signalization warrant.	OK	0
Signalization Warrant	Descriptive	0	30		OK	0
					OK	
Night-Time Hourly Pedestrian Volume	0	0	10	Refer to Table 1(B), note #2, to account for children and seniors	OK	0
Intersecting Roadway Classification	Descriptive	0	5	Refer to Table 1(B) for ratings.	OK	0
Operating Speed or Posted Speed on Major Road (km/h)	80	3	5	Refer to Table 1(B), note #3	OK	15
Operating Speed on Minor Road (km/h)	80	3	5	Refer to Table 1(B), note #3	OK	15
<b>Operational Factors Subtotal</b>						<b>30</b>

### ENVIRONMENTAL FACTOR

Lighted Developments within 150 m radius of intersection	0	0	5	Maximum of 4 quadrants	OK	0
<b>Environmental Factor Subtotal</b>						<b>0</b>

### COLLISION HISTORY

Average Annual night-time collision frequency due to inadequate lighting (collisions/yr, rounded to nearest whole # )	0.0	0	0	Enter <b>either</b> the annual frequency (See Table 1(C), note #4) <b>OR</b> the number of collisions / MEV	OK	0
Collision Rate over last 3 years, due to inadequate lighting (/MEV)	0	0	0	(Unused values should be set to Zero)	OK	0
Is the average ratio of all night to day collisions >= 1.5 (Y/N)	N	0			OK	
<b>Collision History Subtotal</b>						<b>0</b>

Check Intersection Signalization:  
Intersection is not Signalized

LIGHTING IS NOT WARRANTED

### SUMMARY

Geometric Factors Subtotal	23
Operational Factor Subtotal	30
Environmental Factor Subtotal	0
Collision History Subtotal	0

**TOTAL POINTS**

**53**

# GUIDE FOR THE DESIGN OF ROADWAY LIGHTING

## LIGHTING WARRANT SPREADSHEET

This spreadsheet is to be used in conjunction with *Guide for the Design of Roadway Lighting*, Transportation Association of Canada, 2006 Edition.

Please enter information in the cells with yellow background

### INTERSECTION CHARACTERISTICS

Rge Rd 192	Main Road
Twp Rd 653	Minor Road
Athabasca County	City/Town

Date March 18, 2025

Other

### GEOMETRIC FACTORS

	Value	Rating	Weight	Comments	Check	Score
Channelization Rating	Descriptive	0		Refer to Table 1(A) to determine rating value	OK	
Presence of raised channelization? ( Y / N )	n				OK	
Highest operating speed on raised, channelized approach (km/h)			5		OK	
Channelization Factor					OK	0
Approach Sight Distance on most constrained approach (%)	100	0	10	Relative to the recommended minimum sight distance	OK	0
Posted Speed limit (in 10's of km/h)	80				OK	
Radius of Horizontal Curve (m)	0			Enter "T" for tangent (no horizontal curve at the intersection)	OK	
	Posted Speed Category =	0				
	Posted Speed Category =	0				
	Posted Speed Category =	C	4			
	Posted Speed Category =	0				
Horizontal Curvature Factor		4	5		OK	20
Angle of Intersection (10's of Degrees)	90	0	5		OK	0
Downhill Approach Grade (x.x%)	0.0	0	3	Rounded to nearest tenth of a percent	OK	0
Number of Intersection Legs	3	1	3	Number of legs = 3 or more	OK	3
<b>Geometric Factors Subtotal</b>						<b>23</b>

### OPERATIONAL FACTORS

Is the intersection signalized ? ( Y / N )	N			Calculate the Signalization Warrant Factor		
AADT on Major Road (2-way)	260	0	10		OK	0
AADT on Minor Road (2-way)	265	0	20	Either Use the two AADT inputs <b>OR</b> the Descriptive Signalization Warrant (Unused values should be set to Zero) Refer to Table 1(B) for description and rating values for signalization warrant.	OK	0
Signalization Warrant	Descriptive	0	30		OK	0
					OK	
Night-Time Hourly Pedestrian Volume	0	0	10	Refer to Table 1(B), note #2, to account for children and seniors	OK	0
Intersecting Roadway Classification	Descriptive	0	5	Refer to Table 1(B) for ratings.	OK	0
Operating Speed or Posted Speed on Major Road (km/h)	80	3	5	Refer to Table 1(B), note #3	OK	15
Operating Speed on Minor Road (km/h)	80	3	5	Refer to Table 1(B), note #3	OK	15
<b>Operational Factors Subtotal</b>						<b>30</b>

### ENVIRONMENTAL FACTOR

Lighted Developments within 150 m radius of intersection	0	0	5	Maximum of 4 quadrants	OK	0
<b>Environmental Factor Subtotal</b>						<b>0</b>

### COLLISION HISTORY

Average Annual night-time collision frequency due to inadequate lighting (collisions/yr, rounded to nearest whole # )	0.0	0	0	Enter <b>either</b> the annual frequency (See Table 1(C), note #4) <b>OR</b> the number of collisions / MEV	OK	0
Collision Rate over last 3 years, due to inadequate lighting (/MEV)	0	0	0	(Unused values should be set to Zero)	OK	0
Is the average ratio of all night to day collisions >= 1.5 (Y/N)	N	0			OK	
<b>Collision History Subtotal</b>						<b>0</b>

Check Intersection Signalization:  
Intersection is not Signalized

LIGHTING IS NOT WARRANTED

### SUMMARY

Geometric Factors Subtotal	23
Operational Factor Subtotal	30
Environmental Factor Subtotal	0
Collision History Subtotal	0

**TOTAL POINTS**      **53**