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# Technical Memorandum

<b>To/Attention</b>	Josiane Gervais City of Ottawa Transportation Project Manager	<b>Date</b>	December 9, 2022
<b>From</b>	David Hook	<b>Project No</b>	137404
<b>cc</b>	Roger Tuttle, Urbandale Christa Jones, Urbandale Marcel Denomme, RSDC		
<b>Subject</b>	1515 Earl Armstrong - Transportation Overview - Site Plan Control		

IBI Group was retained by Urbandale Corporation to prepare a Transportation Overview in support of a Complex Site Plan Control application for a proposed commercial and office development to be located at 1515 Earl Armstrong Road in Ottawa.

This application is being pursued in parallel with a Draft Plan of Subdivision application which is still pending approval. A TIA Step 4 report was prepared in support of the Draft Plan of Subdivision application and submitted to the City of Ottawa in May 2022. This Transportation Overview will be updated once the Draft Plan of Subdivision application is approved.

As the TIA Step 4 report addressed the majority of the broader traffic impacts of the proposed development, this Transportation Overview focuses on providing an assessment of the design of the three individual blocks within the planned subdivision and ensuring the development design is functional while also ensuring conformity with relevant by-law requirements and policy documents. The following items are discussed as part of this Transportation Overview:

1. Summary of the Proposed Development
2. Trip Generation
3. Transportation Demand Management
4. Parking
5. Loading and Circulation
6. Site Access Design

## Proposed Development

The proposed development is located at 1515 Earl Armstrong Road in the Riverside South community and is part of the Riverside South Town Centre. The site is bound by Earl Armstrong Road to the south, Limebank Road to the east, and both a stormwater management pond and existing low-rise residential subdivision to the north and west.

The proposed development is divided into four distinct *parts* which include the following land uses:

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**Table 1 - Land Uses**

Site	Buildings	Land Use <sup>1</sup>	Size (m <sup>2</sup> )
Part 1	A to G (7)	821: Shopping Plaza	4,860
		934: Fast Food with Drive Through	452
Part 2	H, I and K (3)	821: Shopping Plaza	1,683
		934: Fast Food with Drive Through	234
		710: General Office	2,541
Part 3	J and L (2)	Grocery Store <sup>2</sup>	2,337
		821: Shopping Plaza	804
Part 4	N/A	Public Road	18m ROW

*Notes:*

<sup>1</sup> – Land uses are from the ITE Trip Generation Manual, 11<sup>th</sup> Edition

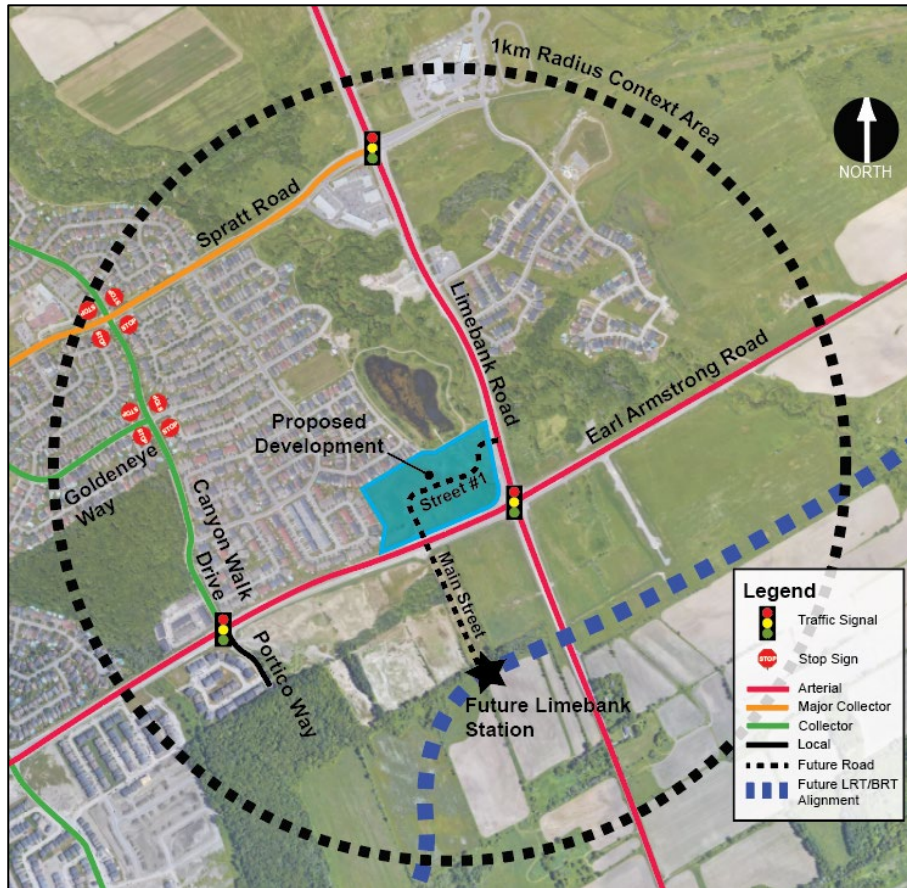
<sup>2</sup> – ITE land use 821: Shopping Plaza has a subcategory for shopping plazas with grocery stores and therefore accounts for the trip generation associated with the grocery store.

Each Part will have two private approaches on Street #1 (Part 4) and Part 3 will have an exit only private approach on Earl Armstrong Road. Street #1 will be established as a public local road with an 18m right-of-way, connecting with Earl Armstrong Road and Limebank Road, thereby providing direct access to the arterial road network.

The site plan for the proposed development has been provided in **Appendix A**. The location of the proposed development with respect to the surrounding road network is illustrated in **Figure 1**.

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Figure 1 - Site Location



### Trip Generation

The trip generation for each of the three Parts was calculated using the methodology outlined in Section 4.2 of the TIA. **Table 1** above identifies the ITE land use codes referenced to estimate the baseline vehicle-trip generation of the proposed development. These baseline vehicle-trips were calculated for each Part and then subsequently converted into person-trips using a 1.28 vehicle-to-person-trip conversion factor, as specified in the TIA Guidelines.

Given the potential synergies between the different land uses contained within the proposed development, the NCHRP 8-51 Internal Trip Capture Estimation Tool was used to estimate the number of internal person-trips that would occur between complimentary land uses.

The remaining person-trips were then subsequently subdivided by travel mode based on the mode share targets established in the TIA which are summarized below in **Table 2**.

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**Table 2 - Mode Share Targets**

Travel Mode	Mode Share Targets	
	Employment	Commercial
Auto Driver	69%	53%
Auto Passenger	5%	13%
Transit	22%	22%
Cycling	2%	0%
Walking	2%	12%

Auto driver trips were further subdivided between pass-by trips (i.e., vehicles already travelling to another destination that decide to make a detour into the site) and new trips (i.e., vehicles making a trip for the explicit purpose of visiting the proposed development). Based on ITE Trip Generation Manual (11<sup>th</sup> Edition), the following number of site-generated vehicle trips are anticipated to be pass-by trips:

**Table 3 - Pass-By Trip Percentages**

Land Use	Percentage of Vehicle-Trips That Are Pass-By Trips		
	AM Peak Hour	PM Peak Hour	SAT Peak Hour
821: Shopping Plaza	0%	40%	31%
934: Fast Food with Drive Through	50%	55%	55%

The proposed office is not anticipated to generate any pass-by trips.

Using the methodology outlined in Section 4.2 of the TIA and summarized above, the trip generation of each of the three Parts has been estimated and summarized in **Table 4**, **Table 5** and **Table 6**.

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**Table 4 - Trip Generation - Part 1**

MODE	AM			PM			SAT		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Auto Driver	109	91	200	138	137	275	193	178	371
<i>New Trips</i>	74	56	130	76	75	151	117	102	219
<i>Pass-By</i>	35	35	70	62	62	124	76	76	152
Auto Passenger	27	22	49	34	34	68	47	44	91
Transit	45	38	83	57	57	114	80	74	154
Cycling	0	0	0	0	0	0	0	0	0
Walking	25	21	46	31	31	62	44	40	84
Internal	8	8	16	17	17	34	38	43	81
<b>Total</b>	<b>214</b>	<b>180</b>	<b>394</b>	<b>277</b>	<b>276</b>	<b>553</b>	<b>402</b>	<b>379</b>	<b>781</b>

**Table 5 - Trip Generation - Part 2**

MODE	AM			PM			SAT		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Auto Driver	89	48	137	63	92	155	87	80	167
<i>New Trips</i>	71	30	101	37	66	103	54	47	101
<i>Pass-By</i>	18	18	36	26	26	52	33	33	66
Auto Passenger	15	11	26	14	16	30	20	19	39
Transit	33	19	52	26	35	61	36	33	69
Cycling	1	0	1	0	1	1	0	0	0
Walking	13	10	23	13	14	27	19	17	36
Internal	8	6	14	11	14	25	18	19	37
<b>Total</b>	<b>159</b>	<b>94</b>	<b>253</b>	<b>127</b>	<b>172</b>	<b>299</b>	<b>180</b>	<b>168</b>	<b>348</b>

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**Table 6 - Trip Generation - Part 3**

MODE	AM			PM			SAT		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Auto Driver	102	62	164	168	191	359	144	147	291
<i>New Trips</i>	<i>102</i>	<i>62</i>	<i>164</i>	<i>96</i>	<i>119</i>	<i>215</i>	<i>100</i>	<i>103</i>	<i>203</i>
<i>Pass-By</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>72</i>	<i>72</i>	<i>144</i>	<i>44</i>	<i>44</i>	<i>88</i>
Auto Passenger	25	15	40	41	47	88	35	36	71
Transit	42	26	68	70	79	149	60	61	121
Cycling	0	0	0	0	0	0	0	0	0
Walking	23	14	37	38	43	81	33	33	66
Internal	3	3	6	19	13	32	23	17	40
<b>Total</b>	<b>195</b>	<b>120</b>	<b>315</b>	<b>336</b>	<b>373</b>	<b>709</b>	<b>295</b>	<b>294</b>	<b>589</b>

Parts 1 and 2 of the proposed development are anticipated to be built out first and fully occupied by the end of 2025, whereas Part 3 is expected to be built out later some time after 2025. **Table 9** provides a comparison of the vehicle-trip generation estimates outlined above versus the trip generation estimates from the TIA.

**Table 7 - Trip Generation Update**

Vehicle-Trip Generation Estimate	AM			PM			SAT		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
<b>Part 1 &amp; 2 Only</b>									
TIA Estimate (March 2022)	361	288	649	230	259	489	385	362	747
Updated Estimate	198	139	337	201	229	430	280	258	538
Net Change	-163	-149	-312	-29	-30	-59	-105	-104	-209
<b>All Parts</b>									
TIA Estimate (March 2022)	434	326	760	322	367	689	416	393	809
Updated Estimate	300	201	501	369	420	789	424	405	829
Net Change	-134	-125	-259	+47	+53	+100	+8	+12	+20

As illustrated above, the updated person-trip estimates result in a higher vehicle-trip generation during the weekday afternoon peak hour as a result of refinements to the allocation of retail floor area between the various commercial land uses as compared with the more generalized

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assumptions made in the TIA. With consideration that these vehicle-trips will be distributed between two different access points and further distributed to the four cardinal directions, the impact to the surrounding intersections is expected to be nominal. The impacts on the surrounding transportation network will be revised through a subsequent submission of the TIA in support of the Draft Plan of Subdivision application process.

## Transportation Demand Management

### Design for Sustainable Modes

Concrete sidewalks exist along both sides of Earl Armstrong Road and Limebank Road. As indicated in **Appendix A**, concrete sidewalks will be provided on both sides of Street #1 as well. Numerous internal pedestrian connections are proposed within each Part to connect the various buildings to each other and to the adjacent pedestrian network. This includes a continuous pedestrian linkage from Earl Armstrong Road (between Building C and D) to the stormwater management pond north of the site. The layout of each of the three sites has been designed to promote sustainable transportation, as summarized below:

- **Part 1** – Direct pedestrian connections have been provided from each building to sidewalks on Earl Armstrong Road, Limebank Road and Street #1, including a wide sidewalk connection at the northwest corner of the Earl Armstrong & Limebank intersection which will function as a major pedestrian entrance to the site. Additionally, an extensive network of sidewalks and crosswalks provide direct and convenient pedestrian connections between the seven buildings that make up this site. To the extent possible, all parking has been located behind the buildings, ensuring that pedestrians do not need to cross a parking lot to access the buildings. A Pedestrian Crossover (PXO) is proposed on Street #1 between Building A and G that provides direct access to the pick-up/drop-off area on Street #1 as well as Part 2 of the proposed development.
- **Part 2** – All three buildings will have direct connections to Street #1, particularly Building I (office) which will feature a large pedestrian plaza directly adjacent to the on-street pick-up/drop-off zone. All parking has been placed behind the buildings to minimize pedestrian walking distances from the public roadway. A direct connection has been provided between the site and the pedestrian facilities adjacent to the stormwater pond to the north. The proposed PXO on Street #1 provides a direct connection to the commercial establishments in Part 1, thereby encouraging pedestrian synergy between the various land uses proposed. Shower and change facilities are proposed within Building I (office) to promote the use of active transportation.
- **Part 3** – Both buildings that make up this portion of the development have sidewalk connections to Street #1 while parking areas are located to the side of the buildings rather than in front. Given the constraints of the site, it is not possible to locate parking at the rear of the buildings. Pedestrians will be able to access Part 1 and 2 of the proposed development via the sidewalks on Earl Armstrong Road and Street #1.

In addition to the pedestrian facilities identified above, bicycle parking will be provided adjacent to the majority of buildings, meeting the minimum by-law requirements, and a bike repair station is under consideration for the Office component in Part 2 of the site. Through the Draft Plan of Subdivision application, it has been recommended that OC Transpo provide transit stops at the Earl Armstrong & Street #1 intersection and the Limebank & Street #1 intersection which will

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ensure that all buildings are within 400m walking distance of transit. All three Parts will also be within 600m of the future Limebank LRT Station which will facilitate trips to/from the site, particularly for employees.

The design of all buildings within the proposed development will include articulated facades with building doors and windows facing the street to ensure that pedestrians are visible from the building for their security and comfort. Furthermore, outdoor patio spaces are proposed along the public roadways which will enhance the public realm and encourage active transportation.

With consideration of the above, the configuration of the proposed development will promote the use of sustainable modes of transportation in a balanced manner while accommodating those that travel by private automobile. The TDM-Supportive Development Design and Infrastructure Checklist was completed and is provided in **Appendix B**.

### **TDM Program**

The TDM Measures Checklist was completed and is provided in **Appendix B**. The following TDM measures will be implemented within the office building (Building I):

- Designate an internal coordinator, or contract with an external coordinator
- Offer preloaded PRESTO cards to office employees to encourage commuters to use transit (one time only)
- Provide a multimodal travel information package to new/relocating employees
- Include multimodal travel information in invitations or advertising that attract visitors or customers
- Deliver promotions and incentives to maintain awareness, build understanding, and encourage trial of sustainable modes
- Encourage flexible work hours and compressed workweeks

Furthermore, the proposed office building will be located within a commercial development with multiple amenities and services within close walking distance, thereby minimizing mid-day or mid-commute errands. As noted previously, full pathway connectivity between Parts 1, 2 and 3 will facilitate the internal movement of pedestrians between buildings.

With consideration that the remaining buildings within the three Parts will be leased to a variety of small-scale third-party tenants, it is not possible to identify any specific items in the TDM Measures Checklist for the individual commercial land uses at this time.

### **Parking**

The proposed development is located within Area 'C' of Schedule 1A of the Zoning By-law and is also located within 600m of a the future Limebank Station. As such, the site is subject to minimum and maximum parking rates, as summarized in **Table 10**.



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**Table 8 - Minimum and Maximum Parking Limits**

Land Use	Minimum Spaces Required per 100m <sup>2</sup> GFA <sup>1</sup>	Maximum Spaces Permitted per 100m <sup>2</sup> GFA
Retail <sup>2</sup>	3.4	4.0
Restaurant <sup>2</sup>	10	N/A
Restaurant with Drive Through	8	N/A
Office	2.4	2.7
Daycare <sup>2</sup>	2	N/A

Notes:

<sup>1</sup> – Based on recent comments from the City of Ottawa, it is understood that the Draft Riverside South Community Design Plan (CDP) contemplates changing all lands within the Riverside South Town Centre (including the subject site) to Area 'Z', thus eliminating the minimum parking requirements.

<sup>2</sup> – For the purposes of trip generation, these land uses were combined, and their trip generation was estimated using the trip generation rates for land use 821: Shopping Plaza. For the purposes of establishing minimum and maximum parking limits, however, each of these land uses must be assessed separately due to the different parking requirements for each.

In addition to the above minimum and maximum limits, the City of Ottawa Accessibility Design Standards indicate that for a given number of parking spaces, a certain number must be accessible parking spaces. The percentage of parking spaces that must be accessible varies depending on how many parking spaces provided.

**Table 11** below compares the minimum and maximum parking limits to the proposed parking supply and also provides a comparison of the number of accessible parking spaces proposed versus the minimum number required.

**Table 9 – Parking Requirements**

Site	Minimum Parking Required	Maximum Parking Permitted	Proposed Parking Supply	Accessible Parking Required	Accessible Parking Provided
Part 1	271	294	293	8	14
Part 2	130	177	175	8	8
Part 3	124	154	154	6	6

As shown above, the three Parts will meet the parking requirements outlined in the Zoning By-law and Accessibility Design Standards.

All drive aisles within the three Parts will meet the minimum width requirement of 6.7 metres, as stipulated by the Zoning By-law and all regular parking spaces will also meet the minimum parking space dimensions of 2.6m by 5.2m. The proposed accessible parking space dimensions were also reviewed and they meet the minimum width and access aisle requirements outlined in the Accessibility Design Standards.

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The Zoning By-law also requires a minimum of one bicycle parking space per 250 m<sup>2</sup> of gross floor area within each site. As such, a total of 22, 18 and 12 bicycle parking spaces are required for Part 1, 2 and 3, respectively. As a total of 30, 30 and 18 spaces will be provided for each Part, respectively, the Zoning By-law requirement has been met. As indicated in the Trip Generation section of this memorandum, the peak hour cyclist trips are minimal but could be higher at other times of the day. The proposed bicycle parking supply is expected to exceed the demand, therefore provisions for a future increase in active modal share.

## Loading and Circulation

Designated Fire Routes are provided throughout the site, as required, and comply with the minimum requirements (i.e., clear width of 6.0 metres and centreline radius of 12.0 metres). Swept path analyses were undertaken to confirm the functionality of the site using a front-loading waste collection vehicle, a WB-20 tractor trailer. The results of this analysis are provided in **Appendix C**.

Part 4 of the Zoning By-law indicates that based on the size of the proposed office and grocery store buildings, a minimum of one (1) loading space is required for each. As shown in **Appendix A**, one loading space will be provided for the grocery store, thereby meeting the Zoning By-law requirements. No loading space has been provided for the office building.

## Site Access Design

### Geometric Review

The proposed development will provide six new full-movement accesses on Street #1 within the development limits, two for each Part. Part 3 will also include an exit-only private approach on Earl Armstrong Road to permit delivery trucks related to the grocery store to exit the site. These new access points will be designed per City Standard Drawing SC 7.1, prioritizing active transportation facilities, and are in conformance with Section 25 of the City of Ottawa Private Approach By-law 2003-447, with particular confirmation of the following items:

- **Width:** No private approach intended for two-way vehicular traffic shall exceed 9 metres in width at the street line, and at the curb line or roadway edge.
  - With the exception of Part 3, all private approaches within the development have a throat width of 7.5 metres projected to the street lines and sufficient curb radii to accommodate the functional needs of the access. Private approaches on Street #1 leading to Part 3 have been designed with widths of 8.5-9 metres to accommodate larger (WB-20) tractor trailers associated with the proposed grocery store. ✓
- **Quantity of Private Approaches:** For sites with frontages between 46 and 150 metres, one (1) two-way private approach or two (2) one-way private approaches are permitted. For each additional 90 metres of frontage in excess of 150 metres, one (1) two-way or two (2) one-way private approaches are permitted. On lots that abut more than one roadway, these provisions apply to each frontage separately.
  - The frontage of each of the three Parts onto Street #1 is between 160 and 330 metres, therefore, the two (2) two-way private approaches proposed per Part are permitted. ✓

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- The frontage of Part 3 onto Earl Armstrong Road is approximately 76 metres, therefore, the single (1) one-way private approach proposed is permitted. ✓
- Grade of Private Approach: No person shall construct a private approach serving a parking area with more than 50 parking spaces, with a grade exceeding 2% within the private property for a distance of 9 metres from the highway line or future highway line.
  - All private approaches within the proposed development will not exceed 2% within 9 metres from the highway line. ✓
- Distance from Property Line: No person shall construct a private approach within 3 metres of any property line measured at the highway line and at the curb or edge of roadway. Despite this, a private approach may be constructed in such manner that it is less than 3 metres from an adjoining property measured at the highway line and at the curb line or edge of the roadway if it is approved through Site Plan Control in accordance with the provision of the Planning Act and the City's Site Plan Control By-law.
  - All private approaches within the development are located more than 3 metres from the property line. ✓
- Distance between Private Approaches: Where a property abuts on or is within 46 metres of an arterial or major collector highway and has a parking area with 100 to 199 parking spaces, the minimum distance between a two-way private approach and any other private approach or an intersecting street is 45 metres, for lots containing 200 to 299 spaces, the minimum separation distance is 60 metres.
  - **Part 1**: This site includes 293 parking spaces and the shortest distance between the private approaches and any other private approach/intersection is 60 metres. ✓
  - **Part 2**: This site includes 175 parking spaces and the shortest distance between the private approaches and any other private approach/intersection is approximately 75 metres. ✓
  - **Part 3**: This site includes 154 parking spaces and the shortest distance between the private approaches within Part 3 and any other private approach/intersection is 58 metres. ✓

The Transportation Association of Canada's (TAC) Geometric Design Guide for Canadian Roads (June 2017) does not suggest a minimum clear throat length for a site access driveway proposed on a local road. The clear throat length is provided to ensure that any queues that form due to on-site circulation blockages do not spillback onto collector or higher-order roads. Based on a review of the site access configurations, there are no areas of concern that have been identified.

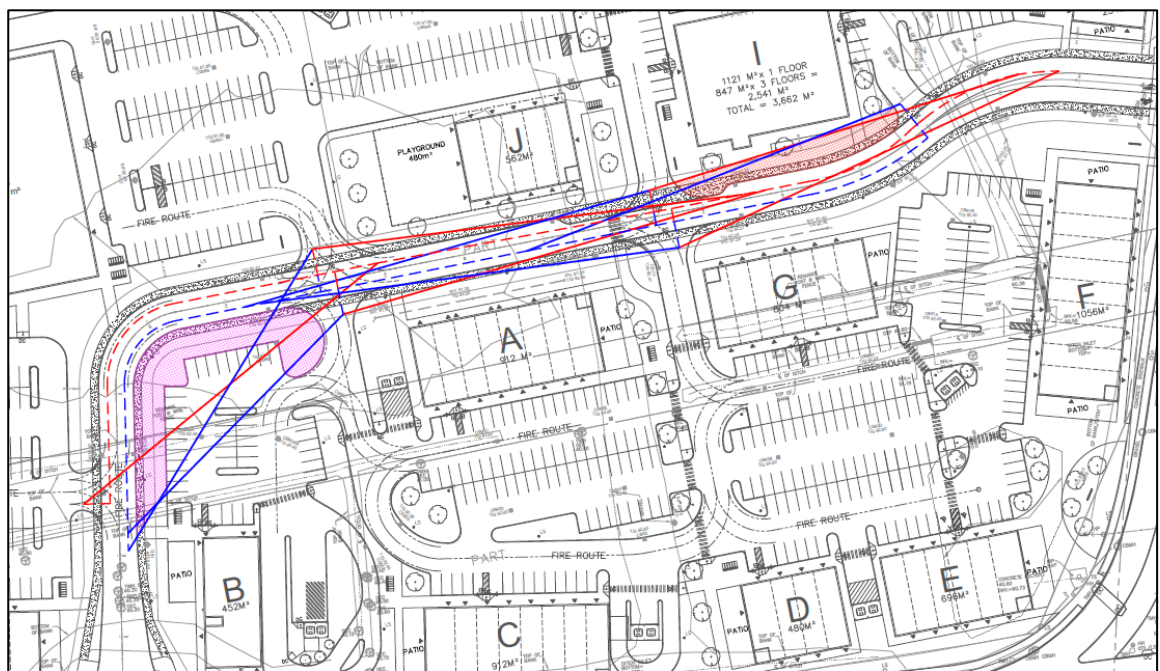
### Sightline Review

Sightlines at each access driveway were reviewed. As a local road, the posted speed is targeted for 30km/h (design speed 40km/h) which results in a recommended intersection sight distance of 105m for a single unit truck, 85m for a typical automobile, and a minimum stopping sight distance of 50m. All site access driveways meet the required stopping sight distance, and the intersection sight distance can be achieved provided sightline obstructions are not introduced in the areas highlighted in **Figure 2**. Any landscaping within these areas should be limited to either ground cover planting and low shrubs (i.e., less than 0.6m tall) or trees with high canopies in order to minimize sightline obstructions to the greatest extent possible.

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For the three site access driveways nearest to the 90-degree bend in Street #1, the intersection sight distance for single unit trucks may be limited by parked vehicles on the inner corner of the 90-degree bend. Vehicles travelling around the 90-degree bend are expected to be travelling at a lower speed thus these Intersection Sight Distance requirements for trucks can be considered conservative. Furthermore, as sufficient Stopping Sight Distance is achievable, the proposed access locations are of no significant concern from a road safety perspective.

**Figure 2 - Sightline Protection Areas**



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## Conclusion

In total, the site as a whole is expected to generate approximately 962, 1,561 and 1,718 two-way person-trips during the weekday morning, afternoon and Saturday peak hours, respectively. Compared with the analysis undertaken as part of the Transportation Impact Assessment (IBI Group, May 2022), this represents an increase in site-generated traffic during the weekday afternoon peak hour, attributable to refinements in commercial land use floor area (i.e., drive-through restaurant vs general plaza retail) within the development. The impact to the surrounding intersection is expected to be nominal, however, given that they will be distributed between two access points and then the four cardinal directions. The impact of this increase in site-generated traffic on nearby intersections will be addressed through a subsequent update and submission of the TIA in support of the Draft Plan of Subdivision application process.

The geometric layouts of the three Parts were reviewed, confirming that they have been designed in such a way as to encourage the use of sustainable modes of transportation. In addition to the planned infrastructure, a suite of post-occupancy Transportation Demand Management measures have also been proposed for the office building in Part 2 which will further support the use of sustainable travel modes for the site.

A review of the proposed site access location indicates that no safety issues are anticipated with respect to sightlines, provided landscaping within the identified areas consists of only ground cover planting and low shrubs or trees with tall canopies. All private approaches, parking facilities and drive aisles are in general conformance with applicable by-law requirements. Swept path analysis has also been completed which confirms the functionality of the site for waste collection vehicles, fire trucks and single-unit trucks, along with WB-20 tractor trailers that will access the loading dock for the grocery store.

**It is the overall opinion of IBI Group that the proposed development can be safely accommodated by the adjacent transportation network.**

Prepared by:



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Transportation Engineer

## Appendix A – Site Plan

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EXISTING RESIDENTIAL

PARK/OPEN SPACE

EXISTING RESIDENTIAL

LIMEBANK RD

EARL ARMSTRONG RD.

PART 3  
parking total : 154

PART 2  
parking total : 173

PART 4

PART 1  
parking total : 293

## Appendix B – TDM Measures

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## TDM-Supportive Development Design and Infrastructure Checklist: *Non-Residential Developments (office, institutional, retail or industrial)*

<b>Legend</b>	
<b>REQUIRED</b>	The Official Plan or Zoning By-law provides related guidance that must be followed
<b>BASIC</b>	The measure is generally feasible and effective, and in most cases would benefit the development and its users
<b>BETTER</b>	The measure could maximize support for users of sustainable modes, and optimize development performance

TDM-supportive design & infrastructure measures: <i>Non-residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>1. WALKING &amp; CYCLING: ROUTES</b>		
<b>1.1 Building location &amp; access points</b>		
BASIC	1.1.1 Locate building close to the street, and do not locate parking areas between the street and building entrances	☑ All buildings located nearest the adjacent street
BASIC	1.1.2 Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☑
BASIC	1.1.3 Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	☑ Streetside-facades will be active.
<b>1.2 Facilities for walking &amp; cycling</b>		
REQUIRED	1.2.1 Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations ( <i>see Official Plan policy 4.3.3</i> )	☑
REQUIRED	1.2.2 Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible ( <i>see Official Plan policy 4.3.12</i> )	☑

TDM-supportive design & infrastructure measures: <i>Non-residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
REQUIRED	1.2.3 Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks (see <i>Official Plan policy 4.3.10</i> )	<input checked="" type="checkbox"/> Pedestrian crossings will be marked by paint.
REQUIRED	1.2.4 Make sidewalks and open space areas easily accessible through features such as gradual grade transition, depressed curbs at street corners and convenient access to extra-wide parking spaces and ramps (see <i>Official Plan policy 4.3.10</i> )	<input checked="" type="checkbox"/>
REQUIRED	1.2.5 Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation. Provide links to the existing or planned network of public sidewalks, multi-use pathways and on-road cycle routes. Where public sidewalks and multi-use pathways intersect with roads, consider providing traffic control devices to give priority to cyclists and pedestrians (see <i>Official Plan policy 4.3.11</i> )	<input checked="" type="checkbox"/>
BASIC	1.2.6 Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	<input checked="" type="checkbox"/>
BASIC	1.2.7 Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	<input checked="" type="checkbox"/>
BASIC	1.2.8 Design roads used for access or circulation by cyclists using a target operating speed of no more than 30 km/h, or provide a separated cycling facility	<input checked="" type="checkbox"/>
<b>1.3 Amenities for walking &amp; cycling</b>		
BASIC	1.3.1 Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	<input checked="" type="checkbox"/>
BASIC	1.3.2 Provide wayfinding signage for site access (where required, e.g. when multiple buildings or entrances exist) and egress (where warranted, such as when directions to reach transit stops/stations, trails or other common destinations are not obvious)	<input type="checkbox"/>

TDM-supportive design & infrastructure measures: <i>Non-residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>2. WALKING &amp; CYCLING: END-OF-TRIP FACILITIES</b>		
<b>2.1 Bicycle parking</b>		
REQUIRED	2.1.1 Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible (see <i>Official Plan policy 4.3.6</i> )	<input checked="" type="checkbox"/>
REQUIRED	2.1.2 Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas (see <i>Zoning By-law Section 111</i> )	<input checked="" type="checkbox"/>
REQUIRED	2.1.3 Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored (see <i>Zoning By-law Section 111</i> )	<input checked="" type="checkbox"/>
BASIC	2.1.4 Provide bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met), plus the expected peak number of customer/visitor cyclists	<input checked="" type="checkbox"/>
BETTER	2.1.5 Provide bicycle parking spaces equivalent to the expected number of commuter and customer/visitor cyclists, plus an additional buffer (e.g. 25 percent extra) to encourage other cyclists and ensure adequate capacity in peak cycling season	<input type="checkbox"/>
<b>2.2 Secure bicycle parking</b>		
REQUIRED	2.2.1 Where more than 50 bicycle parking spaces are provided for a single office building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers (see <i>Zoning By-law Section 111</i> )	<input type="checkbox"/> N/A - fewer than 50 bicycle parking spaces required/ provided.
BETTER	2.2.2 Provide secure bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met)	<input type="checkbox"/>
<b>2.3 Shower &amp; change facilities</b>		
BASIC	2.3.1 Provide shower and change facilities for the use of active commuters	<input checked="" type="checkbox"/>
BETTER	2.3.2 In addition to shower and change facilities, provide dedicated lockers, grooming stations, drying racks and laundry facilities for the use of active commuters	<input type="checkbox"/>
<b>2.4 Bicycle repair station</b>		
BETTER	2.4.1 Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	<input type="checkbox"/> TBD

TDM-supportive design & infrastructure measures: <i>Non-residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>3. TRANSIT</b>		
<b>3.1 Customer amenities</b>		
BASIC	3.1.1 Provide shelters, lighting and benches at any on-site transit stops	<input type="checkbox"/> Not Applicable
BASIC	3.1.2 Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	<input type="checkbox"/> Not Applicable Sufficient space in public ROW
BETTER	3.1.3 Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	<input type="checkbox"/> Not Applicable
<b>4. RIDESHARING</b>		
<b>4.1 Pick-up &amp; drop-off facilities</b>		
BASIC	4.1.1 Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	<input checked="" type="checkbox"/> Lay-by proposed on Street #1 for Office land use
<b>4.2 Carpool parking</b>		
BASIC	4.2.1 Provide signed parking spaces for carpools in a priority location close to a major building entrance, sufficient in number to accommodate the mode share target for carpools	<input type="checkbox"/>
BETTER	4.2.2 At large developments, provide spaces for carpools in a separate, access-controlled parking area to simplify enforcement	<input type="checkbox"/>
<b>5. CARSHARING &amp; BIKESHARING</b>		
<b>5.1 Carshare parking spaces</b>		
BETTER	5.1.1 Provide carshare parking spaces in permitted non-residential zones, occupying either required or provided parking spaces ( <i>see Zoning By-law Section 94</i> )	<input type="checkbox"/>
<b>5.2 Bikeshare station location</b>		
BETTER	5.2.1 Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	<input type="checkbox"/> Not at this time.

TDM-supportive design & infrastructure measures: <i>Non-residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>6. PARKING</b>		
<b>6.1 Number of parking spaces</b>		
<b>REQUIRED</b>	6.1.1 Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	<input checked="" type="checkbox"/>
<b>BASIC</b>	6.1.2 Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking	<input type="checkbox"/>
<b>BASIC</b>	6.1.3 Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly ( <i>see Zoning By-law Section 104</i> )	<input type="checkbox"/> Provisions for shared parking within each individual Block not possible based on proposed land uses
<b>BETTER</b>	6.1.4 Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking ( <i>see Zoning By-law Section 111</i> )	<input type="checkbox"/>
<b>6.2 Separate long-term &amp; short-term parking areas</b>		
<b>BETTER</b>	6.2.1 Separate short-term and long-term parking areas using signage or physical barriers, to permit access controls and simplify enforcement (i.e. to discourage employees from parking in visitor spaces, and vice versa)	<input checked="" type="checkbox"/>
<b>7. OTHER</b>		
<b>7.1 On-site amenities to minimize off-site trips</b>		
<b>BETTER</b>	7.1.1 Provide on-site amenities to minimize mid-day or mid-commute errands	<input checked="" type="checkbox"/> Some mid-day (non -vehicular) synergy between office and retail land uses is expected

**TDM Measures Checklist:**  
*Non-Residential Developments* (office, institutional, retail or industrial)

<b>Legend</b>	
<b>BASIC</b>	The measure is generally feasible and effective, and in most cases would benefit the development and its users
<b>BETTER</b>	The measure could maximize support for users of sustainable modes, and optimize development performance
<b>★</b>	The measure is one of the most dependably effective tools to encourage the use of sustainable modes

<b>TDM measures: <i>Non-residential developments</i></b>		<b>Check if proposed &amp; add descriptions</b>
<b>1. TDM PROGRAM MANAGEMENT</b>		
<b>1.1 Program coordinator</b>		
<b>BASIC</b> ★	1.1.1 Designate an internal coordinator, or contract with an external coordinator	<input checked="" type="checkbox"/>
<b>1.2 Travel surveys</b>		
<b>BETTER</b>	1.2.1 Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	<input type="checkbox"/>
<b>2. WALKING AND CYCLING</b>		
<b>2.1 Information on walking/cycling routes &amp; destinations</b>		
<b>BASIC</b>	2.1.1 Display local area maps with walking/cycling access routes and key destinations at major entrances	<input type="checkbox"/> Landscape signage design
<b>2.2 Bicycle skills training</b>		
<i>Commuter travel</i>		
<b>BETTER</b> ★	2.2.1 Offer on-site cycling courses for commuters, or subsidize off-site courses	<input type="checkbox"/>
<b>2.3 Valet bike parking</b>		
<i>Visitor travel</i>		
<b>BETTER</b>	2.3.1 Offer secure valet bike parking during public events when demand exceeds fixed supply (e.g. for festivals, concerts, games)	<input type="checkbox"/>

TDM measures: <i>Non-residential developments</i>		Check if proposed & add descriptions
<b>3. TRANSIT</b>		
<b>3.1 Transit information</b>		
BASIC	3.1.1 Display relevant transit schedules and route maps at entrances	<input type="checkbox"/> Only if provisioned by OC Transpo.
BASIC	3.1.2 Provide online links to OC Transpo and STO information	<input type="checkbox"/>
BETTER	3.1.3 Provide real-time arrival information display at entrances	<input type="checkbox"/> No transpo on site.
<b>3.2 Transit fare incentives</b>		
<i>Commuter travel</i>		
BETTER	3.2.1 Offer preloaded PRESTO cards to encourage commuters to use transit	<input checked="" type="checkbox"/> One time event
BETTER ★	3.2.2 Subsidize or reimburse monthly transit pass purchases by employees	<input type="checkbox"/>
<i>Visitor travel</i>		
BETTER	3.2.3 Arrange inclusion of same-day transit fare in price of tickets (e.g. for festivals, concerts, games)	<input type="checkbox"/>
<b>3.3 Enhanced public transit service</b>		
<i>Commuter travel</i>		
BETTER	3.3.1 Contract with OC Transpo to provide enhanced transit services (e.g. for shift changes, weekends)	<input type="checkbox"/>
<i>Visitor travel</i>		
BETTER	3.3.2 Contract with OC Transpo to provide enhanced transit services (e.g. for festivals, concerts, games)	<input type="checkbox"/>
<b>3.4 Private transit service</b>		
<i>Commuter travel</i>		
BETTER	3.4.1 Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for shift changes, weekends)	<input type="checkbox"/>
<i>Visitor travel</i>		
BETTER	3.4.2 Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for festivals, concerts, games)	<input type="checkbox"/>

TDM measures: <i>Non-residential developments</i>		Check if proposed & add descriptions
<b>4. RIDESHARING</b>		
<b>4.1 Ridematching service</b>		
<i>Commuter travel</i>		
BASIC	★ 4.1.1 Provide a dedicated ridematching portal at OttawaRideMatch.com	<input type="checkbox"/>
<b>4.2 Carpool parking price incentives</b>		
<i>Commuter travel</i>		
BETTER	4.2.1 Provide discounts on parking costs for registered carpools	<input type="checkbox"/>
<b>4.3 Vanpool service</b>		
<i>Commuter travel</i>		
BETTER	4.3.1 Provide a vanpooling service for long-distance commuters	<input type="checkbox"/>
<b>5. CARSHARING &amp; BIKESHARING</b>		
<b>5.1 Bikeshare stations &amp; memberships</b>		
BETTER	5.1.1 Contract with provider to install on-site bikeshare station for use by commuters and visitors	<input type="checkbox"/>
<i>Commuter travel</i>		
BETTER	5.1.2 Provide employees with bikeshare memberships for local business travel	<input type="checkbox"/>
<b>5.2 Carshare vehicles &amp; memberships</b>		
<i>Commuter travel</i>		
BETTER	5.2.1 Contract with provider to install on-site carshare vehicles and promote their use by tenants	<input type="checkbox"/>
BETTER	5.2.2 Provide employees with carshare memberships for local business travel	<input type="checkbox"/>
<b>6. PARKING</b>		
<b>6.1 Priced parking</b>		
<i>Commuter travel</i>		
BASIC	★ 6.1.1 Charge for long-term parking (daily, weekly, monthly)	<input type="checkbox"/>
BASIC	6.1.2 Unbundle parking cost from lease rates at multi-tenant sites	<input type="checkbox"/>
<i>Visitor travel</i>		
BETTER	6.1.3 Charge for short-term parking (hourly)	<input type="checkbox"/>



TDM measures: <i>Non-residential developments</i>		Check if proposed & add descriptions
<b>7. TDM MARKETING &amp; COMMUNICATIONS</b>		
<b>7.1 Multimodal travel information</b>		
<i>Commuter travel</i>		
BASIC ★	7.1.1 Provide a multimodal travel option information package to new/relocating employees and students	<input checked="" type="checkbox"/>
<i>Visitor travel</i>		
BETTER ★	7.1.2 Include multimodal travel option information in invitations or advertising that attract visitors or customers (e.g. for festivals, concerts, games)	<input checked="" type="checkbox"/>
<b>7.2 Personalized trip planning</b>		
<i>Commuter travel</i>		
BETTER ★	7.2.1 Offer personalized trip planning to new/relocating employees	<input type="checkbox"/>
<b>7.3 Promotions</b>		
<i>Commuter travel</i>		
BETTER	7.3.1 Deliver promotions and incentives to maintain awareness, build understanding, and encourage trial of sustainable modes	<input checked="" type="checkbox"/>
<b>8. OTHER INCENTIVES &amp; AMENITIES</b>		
<b>8.1 Emergency ride home</b>		
<i>Commuter travel</i>		
BETTER ★	8.1.1 Provide emergency ride home service to non-driving commuters	<input type="checkbox"/>
<b>8.2 Alternative work arrangements</b>		
<i>Commuter travel</i>		
BASIC ★	8.2.1 Encourage flexible work hours	<input checked="" type="checkbox"/>
BETTER	8.2.2 Encourage compressed workweeks	<input checked="" type="checkbox"/>
BETTER ★	8.2.3 Encourage telework	<input type="checkbox"/>
<b>8.3 Local business travel options</b>		
<i>Commuter travel</i>		
BASIC ★	8.3.1 Provide local business travel options that minimize the need for employees to bring a personal car to work	<input type="checkbox"/>
<b>8.4 Commuter incentives</b>		
<i>Commuter travel</i>		
BETTER	8.4.1 Offer employees a taxable, mode-neutral commuting allowance	<input type="checkbox"/>
<b>8.5 On-site amenities</b>		
<i>Commuter travel</i>		
BETTER	8.5.1 Provide on-site amenities/services to minimize mid-day or mid-commute errands	<input checked="" type="checkbox"/> Synergy between office and retail is expected

## Appendix C – Swept Path Analysis



**PART 3**  
parking total : 154

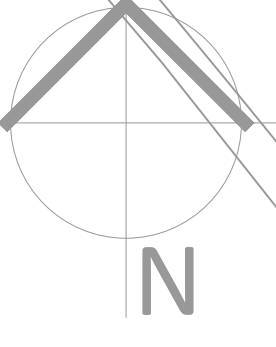
**PART 2**  
parking total : 173

**PART 4**

**PART 1**  
parking total : 293

**EARL ARMSTRONG RD.**

**LIMEBANK RD.**



MI-ST  
TVG=91.94

MI-ST  
TVG=92.03

MI-ST  
TVG=92.62

MI-ST  
TVG=92.59

SITE BENCHMARK No. 27  
Cut Cross in Sidewalk  
Elevation=92.92

SITE BENCHMARK No. 28  
Cut Cross in Median  
Elevation=92.85

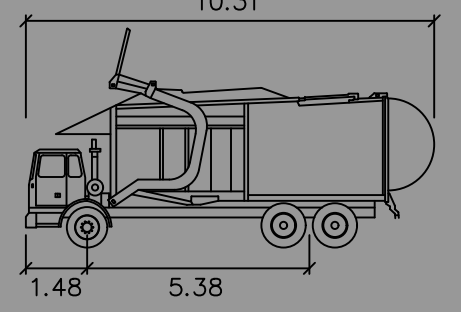
MI-ST  
TVG=92.77

MI-S  
TVG=92.75

MI-S  
TVG=92.68



**GARBAGE TRUCK ENTERING**



Wayne Titan  
Width : 2.58 meters  
Track : 2.44  
Lock to Lock Time : 6.0  
Steering Angle : 45.0

**PART 3**  
parking total : 154

**PART 4**

**PART 2**  
parking total : 173

**PART 1**  
parking total : 293

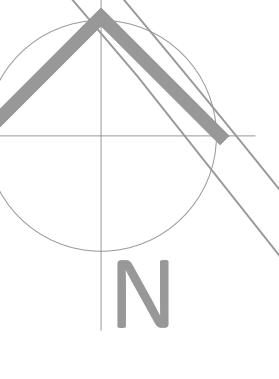
PLAYGROUND  
480m<sup>2</sup>

**EARL ARMSTRONG RD.**

**LIMEBANK RD.**

EXISTING RESIDENTIAL

PARK/OPEN SPACE



MH-ST  
T/G=91.94  
MH-ST  
T/G=92.03

SITE BENCHMARK No. 27  
Cut Cross in Sidewalk  
Elevation=92.92

SITE BENCHMARK No. 1  
Cut Cross in Median  
Elevation=92.85

MH-S  
T/G=92.71  
MH-S  
T/G=92.75  
MH-T  
T/G=92.68

MH-T  
T/G=92.66  
MH-T  
T/G=92.73

MH-ST  
T/G=92.75  
MH-T  
T/G=92.60

MH-T  
T/G=93.40  
MH-T  
T/G=93.40

MH-T  
T/G=93.60  
MH-T  
T/G=93.43

MH-ST  
T/G=93.36  
MH-S  
T/G=93.43

MH-S  
T/G=93.08  
MH-S  
T/G=93.39

MH-S  
T/G=92.87  
MH-S  
T/G=92.87

MH-S  
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MH-S  
T/G=92.59

MH-S  
T/G=92.03  
MH-S  
T/G=91.94

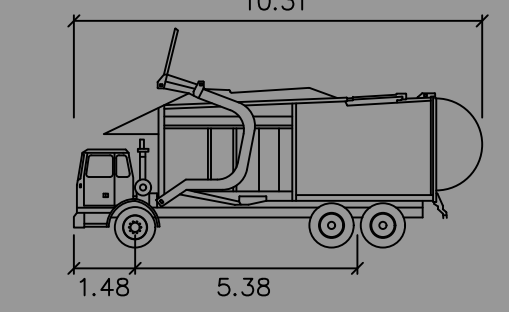
MH-S  
T/G=92.03  
MH-S  
T/G=91.94

MH-S  
T/G=92.03  
MH-S  
T/G=91.94

EXISTING RESIDENTIAL

PARK/OPEN SPACE

GARBAGE TRUCK EXITING



Wayne Titan  
Width : 2.58 meters  
Track : 2.44  
Lock to Lock Time : 6.0  
Steering Angle : 45.0

PART 3  
parking total : 154

PART 2  
parking total : 173

PART 4

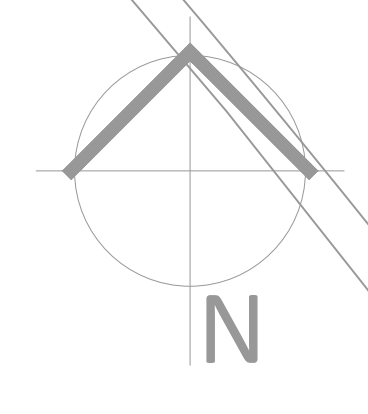
PART 1  
parking total : 293

Ref. ICivil13

Ref. CIVIL13

EARL ARMSTRONG RD.

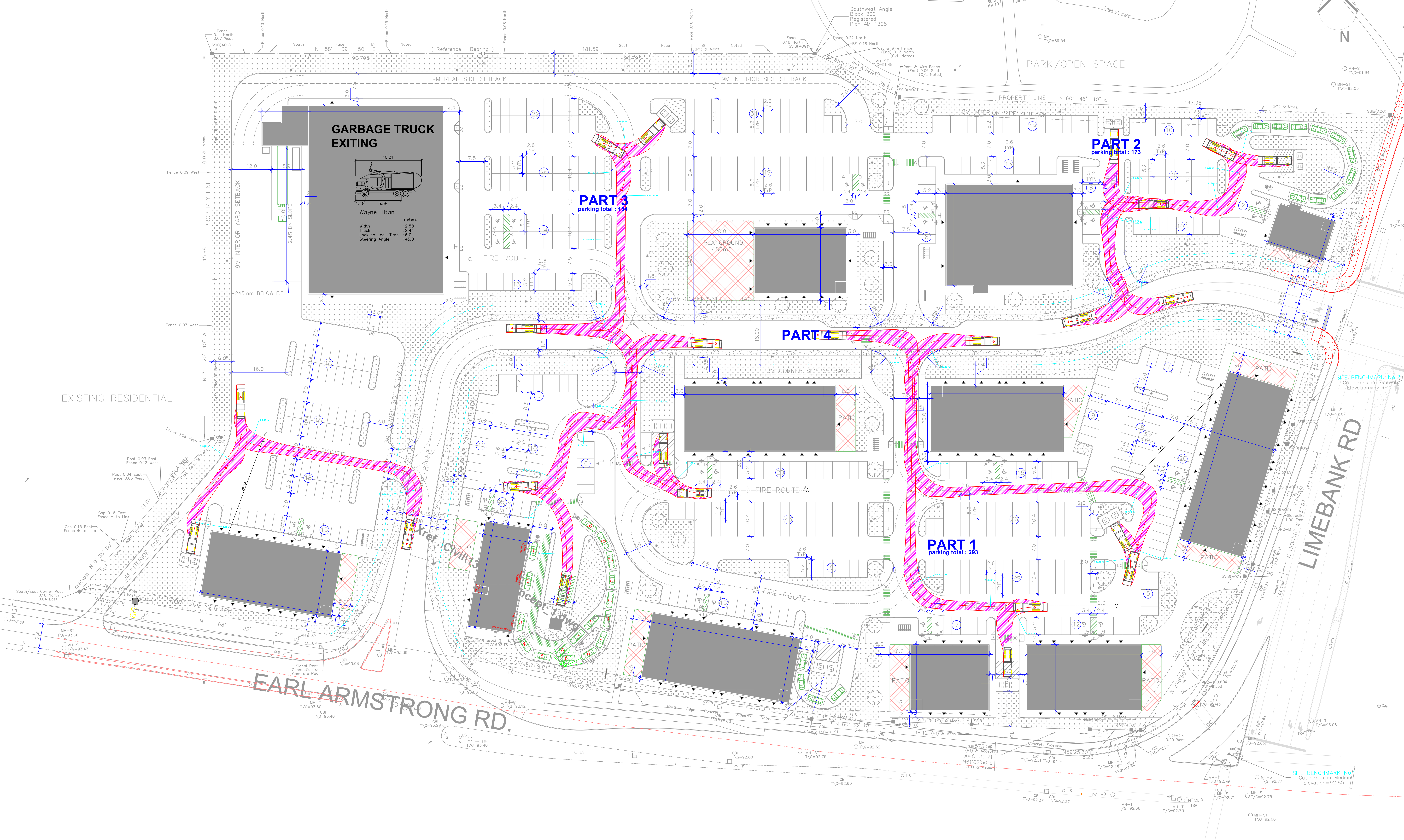
LIMEBANK RD.



EXISTING RESIDENTIAL

SITE BENCHMARK No. 27  
Cut Cross in Sidewalk  
Elevation=92.09

SITE BENCHMARK No. 1  
Cut Cross in Median  
Elevation=92.85





**WB-20  
ENTERING**

Tractor Width	2.60	Lock to Lock Time	6.0
Trailer Width	2.60	Steering Angle	28.2
Tractor Track	2.60	Articulating Angle	170.0
Trailer Track	2.60		

**PART 3**  
parking total : 154

**PART 2**  
parking total : 173

**PART 4**

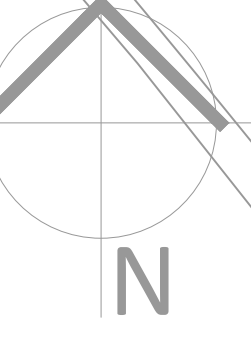
**PART 1**  
parking total : 293

**EARL ARMSTRONG RD.**

**LIMEBANK RD**

EXISTING RESIDENTIAL

PARK/OPEN SPACE



SITE BENCHMARK No. 27  
Cut Cross in Sidewalk  
Elevation=92.92

SITE BENCHMARK No. 1  
Cut Cross in Median  
Elevation=92.85



**WB-20  
EXITING**

WB-20  
Tractor Width : 2.60  
Tractor Length : 17.00  
Tractor Wheelbase : 12.40  
Tractor Track : 2.60

Lock to Lock Time : 16.0  
Steering Angle : 28.2  
Articulating Angle : 17.0

**PART 3**  
parking total : 154

**PART 2**  
parking total : 173

**PART 4**

**PART 1**  
parking total : 293

**EARL ARMSTRONG RD.**

**LIMEBANK RD.**

EXISTING RESIDENTIAL

PARK/OPEN SPACE

EXISTING RESIDENTIAL



N

SITE BENCHMARK No. 27  
Cut Cross in Sidewalk  
Elevation=92.92

SITE BENCHMARK No. 28  
Cut Cross in Median  
Elevation=92.85