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November 3, 2023

Att: Amir Toulay
CAST Investments Inc.

RE: Traffic Impact Statement - Proposed residential development on Novawood Drive

1.0 INTRODUCTION

1.1 – Overview

At the request of *CAST Investments Inc. (CAST)*, the GRIFFIN transportation group inc. has carried out a qualitative Stage 1 - Traffic Impact Assessment in support of a planning application for a proposed new residential development at civics #23-#28 Novawood Drive, in the Woodside neighbourhood, community of Dartmouth, Halifax Regional Municipality (HRM). The location of these lands is contained in *Figure 1*.

The subject lands are located at the terminus of Novawood Drive and are currently vacant. The proposed development will occur on an assembly of properties that include PID #00259820 (civic #23), #00227629 (civic #24), #00259812 (civic #25) and #00227611 (civic # 29). This group of properties has an area of about 0.8 acres and appears to have a R-2 (Two Family Residential) land use zone designation with the *Dartmouth Land Use By-Law area*.

It is understood the proponent is submitting a planning application to HRM for approval to build two multi-unit residential buildings – one building on the north side of the street, the other on the south side. A total of up to 110 apartment-style units are proposed to be built within both buildings. These buildings are expected to have five floors above ground, as well as underground vehicle parking. Vehicle access will be provided by separate driveways for each building. Residents will travel in/out of this neighbourhood via two connection options that include Everette Street and Irving Street.

Figure 1: Location of Subject Lands



Source: HRM GIS Maps

1.2 – Terms of Reference

The proposed residential development is located within an established urban/suburban neighbourhood in Dartmouth, and GRIFFIN expects this area of HRM to have a similar level of density in the short to medium term time frame. Due to the general low-density nature of this neighbourhood GRIFFIN has approached this Stage 1 traffic impact assessment following HRM’s traditional traffic impact study guidelines for suburban developments. GRIFFIN has also followed industry best practices and guiding principles published by the Institute of Transportation Engineers (ITE) and the Transportation Association of Canada (TAC).

2.0 STUDY AREA AND SITE CONTEXT

2.1 – Street Layout Overview

Novawood Drive is a residential street that is generally aligned in an east-west direction. It appears to function as an urban local residential street that provides access to individual detached homes and a low-rise multi-unit residential building. This street has a relatively short length of only 190

m between Everette Street and the industrial lands of the former refinery. HRM has classified Novawood Drive as a Local street.

Everette Street serves as the main access point for this neighbourhood. It is generally aligned in a north-south direction. HRM has classified this corridor as a Minor Collector. It intersects with Pleasant Street as a three-leg signalized intersection. A secondary access to/from this neighbourhood is provided via Irving Street – a parallel corridor to Everette Street.

Pleasant Street is considered to be one of the main commuter corridors between the Eastern Shore community and the Dartmouth/Halifax area. The corridor is an important commuter route serving cars, transit bus routes as well as the large truck traffic moving to/from the industrial businesses to the east. Pleasant Street predominantly has a four-lane cross-section with two vehicle lanes in each direction, plus sidewalks for active transportation. This infrastructure provides a substantial amount of capacity for person-trips during the weekday peak travel times traveling via transit buses and other vehicles. During off-peak and shoulder peak times there appears to be a substantial amount of residual capacity in this corridor.

2.2 – Existing Traffic Volume Review

GRIFFIN gathered two sets of existing traffic volume data in the study area including:

- *Automatic Traffic Recording (ATR) unit*: GRIFFIN installed this unit on Everette Street, immediately south of Provost Street, to gather hourly two-way traffic volumes and measure vehicle operating speeds. This unit recorded data for about 48 hours from Thursday October 12th to Saturday October 14th, 2023.
- *Intersection Turning Movement Count (TMC)*: GRIFFIN recorded turning movement volumes at the Pleasant Street / Everette Street signalized intersection during the morning AM peak period on Thursday October 12th, 2023. During this time, observations were made regarding the vehicle activity associated with the adjacent elementary school and this signalized intersection.

A summary of the observed October 2023 weekday peak hour volumes is contained in *Table 1*.

Table 1: Peak Hour Traffic Volumes on Everette Street Near Provost Street – October 2023

| | Eastbound (toward Novawood) | Westbound (toward Pleasant) | Two-way Peak Hour Volumes |
|-----------------------------|---------------------------------------|---------------------------------------|--|
| Weekday AM Peak Hour | 38 | 119 | 157 vph |
| Weekday PM Peak Hour | 116 | 80 | 196 vph |

vph – vehicles per hour

The highest hour of traffic flow on Everett Street occurred during the weekday afternoon commuter peak. At this time of day, the two-way peak hour volumes traveling along Everett Street, in the vicinity of Provost Street, was observed to be about 196 vehicles/hour (vph). This equates to an average daily volume of approximately 1,800-2,000 vehicles/day (vpd). The daily volume recorded by our ATR unit was 2,192 – which is expected to be slightly higher as our ATR volume only recorded volumes on a weekday. Our estimated average daily volume of 1,800 – 2,000 vpd considers all weekdays – including Saturdays and Sundays – which is typically lower than a weekday count.

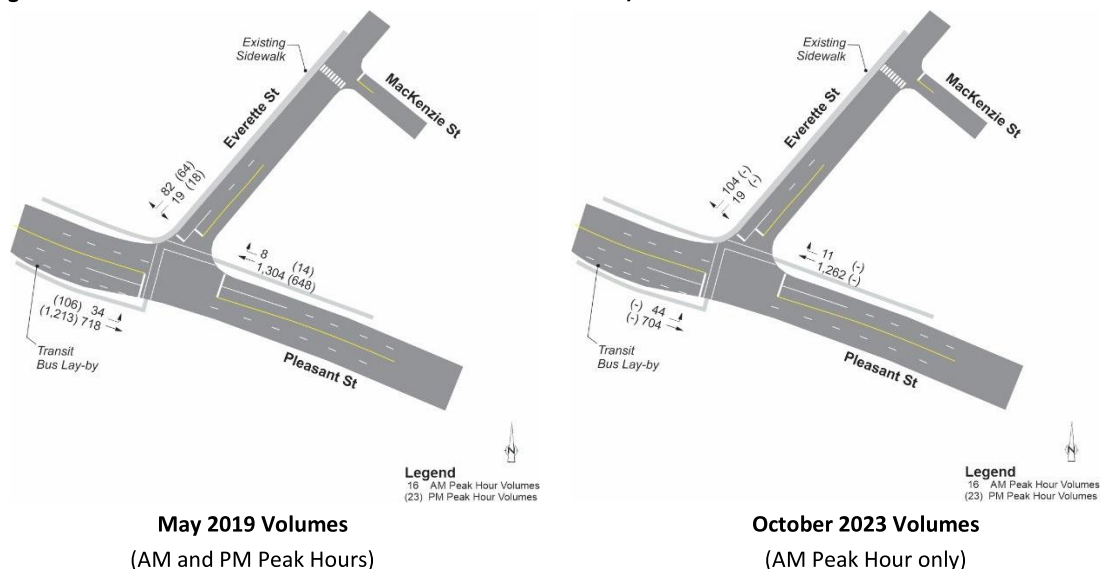
The measured peak hour vehicle demand along Everett Street appears to be typical for a Minor Collector street classification. This is likely due in part to the fact that Everett Street is a key corridor for drivers moving in/out of the neighborhood as they travel to/from the Pleasant Street arterial corridor and the large employment areas in Dartmouth and Halifax, to the north and west.

GRIFFIN reviewed the Transportation Association of Canada (TAC) Geometric Design Guidelines to help put the observed vehicle demand on Everett Street into perspective. Although TAC does not provide guidance with respect to the absolute maximum capacity of streets, they provide typical volumes expected for several roadway classification types. The latest TAC geometric design guidelines suggest that collector streets typically accommodate up to 8,000 vpd. Again, these are guidelines for typical volumes and the expected maximum capacity values would be higher.

In conclusion, the observed weekday demand of about 2,000 vpd is well below the expected capacity of a collector street. This suggests there is some amount of residual capacity in the Everett Street corridor to accommodate future traffic growth.

GRIFFIN also compared changes in peak hour traffic volumes between May 2019 and October 2023. These peak hour volumes are provided in *Figure 2* below.

Figure 2: Observed Peak Hour Traffic Volumes – Pleasant Street / Everett Street



Our review of historical 2019 and current 2023 peak hour volumes at the Pleasant Street / Everett Street intersection indicates the vehicle demand is relatively similar, and peak weekday travel demand has generally returned to pre-COVID levels.

2.3 – Vehicle Operating Speeds

As noted above, the installed ATR unit also gathered vehicle operating speeds on Everett Street in the vicinity of Provost Street. The 85th percentile vehicle operating speed recorded by the ATR unit was calculated to be 61 km/h in the southbound direction, and 57 km/h in the northbound direction. As such, 60 km/h was chosen as the design speed for the sight distance assessment discussed later in this letter.

2.4 – Driver Visibility at the Novawood / Everett Intersection

Typically, a driver sight distance review is completed as part of the traffic impact assessment process to identify any driver sight distance or visibility limitations up and downstream of a new site access. Since the proposed new accesses are located at the terminus of Novawood Drive – which has a generally flat and straight alignment – GRIFFIN carried out the visibility review process at the existing intersection of Everett Street / Novawood Drive due to the fact all new site-generated traffic will move through this intersection. GRIFFIN followed guidelines contained in the latest Transportation Association of Canada’s (TAC) *Geometric Design Guide for Canadian Roads* document (2017) as well as the Nova Scotia Department of Public Work’s field measurement best practices.

At this early planning stage, GRIFFIN only assessed the minimum requirement for vehicles approaching the new access which is referred to as stopping sight distance (SSD). The provision of adequate SSD for vehicles traveling on the main roadway (i.e. Everett Street) ensures drivers have sufficient forward visibility to identify a hazard in the roadway, and if needed, bring their vehicle to a stop. GRIFFIN completed the field measurements using a hazard object height of 0.6m and a driver eye height of 1.05m. A summary of the SSD assessment is provided in *Table 2*.

Table 2: Summary of Stopping Sight Distance Measurements – at Novawood / Everett (60 km/h)

| Measurement Location | Travel Direction On Everett | Available SSD | TAC Required SSD | | Does Available Exceed Required? |
|------------------------------|-------------------------------|---------------------|-------------------|-------------------------|---------------------------------|
| | | | Base ^A | Slope Adjusted | |
| 1. Novawood / Everett | Northbound (toward Trenholme) | >250 m ^C | 85 m | 77 m (+6%) ^B | YES |
| | Southbound (toward Pleasant) | 79.3 m | 85 m | 92 m (-6%) ^B | NO |

A – 2017 TAC Chapter 2, Table 2.5.2

B – An estimate of the actual slope along Everett Street on the approaches to Novawood intersection.

C – Clear sight lines to/from the Pleasant Street intersection.

GRIFFIN concluded that the available driver visibility for southbound drivers on Everett Street is limited by the crest vertical curve. This is a pre-existing roadway design issue that will need to be addressed by HRM. Mitigating measures could include the introduction of speed management features along the corridor to reduce operating speeds to 50 km/h.

2.5 – Existing Active Transportation and Public Transit

Public Transit: Two public transit stops are provided on Pleasant Street, at the Everett Street signalized intersection. One stop for inbound buses, the other for outbound buses. Pedestrians can access these transit stops by using the signalized crossing to navigate the busy multi-lane Pleasant Street corridor. GRIFFIN observed the bus headways to be about every 10 to 20 minutes during the weekday AM peak period. In summary, the future residents of the proposed new units will have good pedestrian connectivity and good access to public transit service.

Cycling: During our field observations, there were several cyclists observed traveling through the Pleasant Street / Everett Street intersection. The majority of cyclists – all but two – were observed to be traveling along the sidewalk. All cyclists were adults that appeared to be confident and skilled. GRIFFIN concluded these cyclists were using the pedestrian sidewalk facilities as it was deemed to be more comfortable and carried much less risk relative to traveling along the high-volume, high-speed Pleasant Street corridor. HRM should review this area for opportunities to install some form of multi-use active transportation facilities or cycling facilities.

2.6 – A Word on the Elementary School

The South Woodside elementary school is located in the northeast quadrant of the Pleasant Street / Everett Street intersection. The main access to the school connects directly to Everett Street; however, students have the ability to enter/exit the school property from both Everett Street and Osborne Avenue. As with any school operating environment, peak traffic and pedestrian activity occurs for only a brief 10-15 minute time period in the morning and mid-afternoon. The peak operating time periods for this school were generally observed to occur between 8:30-9:00am and 2:30-3:00pm. These peak school times may overlap with a portion of the weekday morning commuter peak, but do not coincide with the weekday afternoon commuter peak.

During the weekday morning peak period, school staff generally arrive by vehicle between 8:00 and 8:30 AM. Students begin to arrive after 8:30 AM and the peak of parent drop-offs occurred between 8:40 and 8:50 AM. Parents are not permitted to enter/exit the school driveway thus parents stop briefly along the north side of the street – along the school property – to drop students along the sidewalk. In conclusion, the peak of school traffic is brief and only lasts about 10 minutes.

It should be noted that the weekday AM peak hour of the Pleasant Street / Everett Street intersection occurs from 7:15 to 8:15 AM. It was concluded that the peak school traffic and peak commuter traffic is somewhat off set in this area, minimizing the potential for traffic congestion and operational concerns. GRIFFIN also gathered vehicle, cyclist, and pedestrian counts at the

signalized intersection during the school's morning peak time. No students or children were observed using the signalized pedestrian crossings and no student cyclists were observed. This suggests that students either travel to/from the school by bus, parent drop-off/pick-up, or walk within the adjacent residential neighbourhood.

School traffic operational evaluations are complex and require detailed quantitative analysis to identify root causal factors to traffic operational issues – should they exist. Therefore, this traffic impact statement letter has only focused on the impacts that new traffic generated by the proposed Novawood Drive development could potentially have on the pre-existing traffic operating environment along Everette Street. The HRM and the Halifax Regional Centre for Education (HRCE) have the ability to commission further detailed assessments should any pre-existing traffic issues or concerns exist.

3.0 THE PROPOSED DEVELOPMENT

3.1 – The Proposed New Buildings

CAST is proposing to build two new multi-unit buildings that will contain up to 110 apartment-style residential units. Both buildings are expected to have 5 floors and contain up to 55 units. Building A will be located on the north (uphill) side of the street, while Building B will be situated on the south (downhill) side of the street. Each building will have separate vehicle accesses connecting to Novawood Drive. The proposed site layout is contained in *Figure 3*.

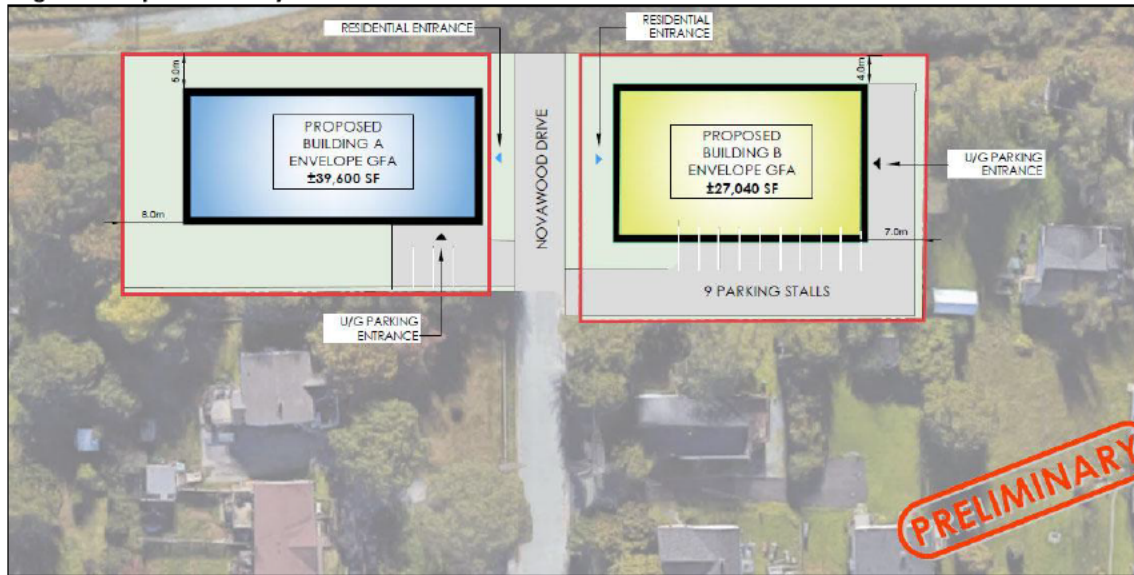
3.2 – New Vehicle Trip Generation

To assess the change in traffic volumes on the study area streets under future conditions, there was a need to determine the expected number of new vehicles that would be added to the study area roads and intersections, explicitly associated with the proposed development. This is referred to as the trip generation calculation process. Typically, traffic engineers use trip generation rates published by the Institute of Transportation Engineers (ITE) to forecast site-generated volumes for specific land use types, if deemed appropriate.

GRIFFIN reviewed the ITE's latest *Trip Generation Manual, 11th Edition* document to identify the most applicable land use type for the proposed future development discussed earlier in this letter. It was concluded that the proposed development best matched ITE's description for *Multifamily Housing (Mid-Rise), Not close to Rail Transit - ITE LUC 221*. As noted earlier, the two proposed multi-unit buildings will have 5 or 6 floors each which fits ITE's description for a mid-rise building.

GRIFFIN applied the ITE regression formula rate method to estimate the expected number of new vehicle trips moving in/out of the proposed development. The detailed trip generation calculations are provided in *Table 3*.

Figure 3: Proposed Site Layout



Source: ZZAP



Table 3: Vehicle Trip Generation for the Proposed Development

| | Size | Trip Rate | New Vehicle Trips / Hour | | |
|---|-----------|------------------------|--------------------------|-----------|-----------|
| | | | In | Out | Total |
| AM Peak Hour | | | | | |
| Multifamily Housing (Mid-rise) Not Close to Rail Transit (ITE Code 221) | 110 units | 0.34/unit ^A | 9 (23%) | 28 (77%) | 37 |
| AM Peak Total Trips | | | 9 | 28 | 37 |
| PM Peak Hour | | | | | |
| Multifamily Housing (Mid-rise) Not Close to Rail Transit (ITE Code 221) | 110 units | 0.39/unit ^A | 26 (61%) | 17 (39%) | 43 |
| PM Peak Total Trips | | | 26 | 17 | 43 |

A – ITE’s regression formula used to determine the per unit trip rate.

Based on the results contained in *Table 3*, the proposed development is expected to generate the following peak hour trips:

- *Weekday AM Peak Hour*: 37 new vehicle trips/hour (9 inbound and 28 outbound)
- *Weekday PM Peak Hour*: 43 new vehicle trips/hour (26 inbound and 17 outbound)

This generally equates to adding one new vehicle trip every one to two minutes to the study area streets and intersections. We previously concluded Everette Street has a considerable amount of residual capacity that can accommodate an expected increase of one trip every one to two minutes during peak times of the day. During off-peak times the frequency of new trips will be diminished and is expected to have no operational impact. Given the relatively low traffic demand generated by the proposed development, there is not expected to be any measurable change in operations on the study area streets and intersections.

3.3 – Travel Via Other Modes

The proposed development is situated within HRM's 500 m walking distance threshold to existing transit service along Pleasant Street. There is also a pedestrian sidewalk provided along the west side of Everette Street between Novawood Drive and Pleasant Street. Therefore, there is good connectivity for active users moving between the proposed development and transit service along Pleasant Street.

Our assessment has assumed a higher-than-expected amount of new vehicle traffic generated by the proposed development to provide a worst-case assessment. Should HRM achieve their goals stated in the Integrated Mobility Plan (IMP) policy, then HRM's investment in improved transit service and active transportation facilities in this area is expected to reduce the amount of vehicle trip-making to/from this development. If the goals of the IMP are achieved we can expect a reduced impact on the study area streets and intersections.

4.0 QUALITATIVE IMPACTS

4.1 – Expected Distribution of New Trips

The highest concentration of new vehicle trips generated by the proposed development will occur on Novawood Drive and along Everette Street. However, as stated above, the addition of one new vehicle trip every one to two minutes is expected to have little to no measurable impact on operations. As drivers move further away from the proposed development, they are offered multiple route choices – which will further diminish the expected traffic impact.

GRIFFIN also carried out a qualitative assessment of the expected new vehicle trip routes in/out of the neighbourhood. It was concluded most drivers will turn to/from the west along Pleasant Street as they travel to/from the employment areas and shopping in Dartmouth and Halifax. Only

a small percentage will turn to/from Eastern Passage. The current travel trends corroborate this conclusion.

The operations of the signalized intersection are not expected to notably change with the addition of new site-generated traffic. Our field observations indicate there were minimal vehicle queue lengths on Everett Street during peak times. This suggests there is sufficient residual capacity to accommodate new traffic.

4.2 – Traffic Operations in the Vicinity of the School

As discussed earlier in this letter, the morning peak hour of commuter traffic (7:15-8:15 AM) occurs prior to the peak of the school traffic (8:30-9:00). Therefore, any additional site-generated traffic traveling along Everett Street is not expected to exacerbate current traffic operations in the vicinity of the school.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 - Conclusions

The following conclusions were gleaned from the qualitative traffic impact assessment of the proposed development:

- *Proposed Land Use Changes:* The subject lands are located at the terminus of Novawood Drive and are currently vacant. This group of properties has an area of about 0.8 acres and appears to have a R-2 (Two Family Residential) land use zone designation with the *Dartmouth Land Use By-Law area*. It is understood the proponent is submitting a planning application to HRM for approval to build two multi-unit residential buildings – one building on the north side of the street, the other on the south side. A total of up to 110 apartment-style units are proposed to be built within both buildings.
- *New Vehicle Traffic:* The trip generation calculations were carried out using the latest ITE trip generation rates contained in the *Trip Generation Manual, 11th Edition – Volume 3*. A 110-unit development is expected to generate up to **37 trips/hour** (9 inbound and 28 outbound) during the weekday morning peak period, and **43 trips/hour** (26 inbound and 17 outbound) during the weekday afternoon peak period.
- *Traffic Operational Impacts:* GRIFFIN expects there will be an acceptable traffic operational impact on the study area streets and intersections associated with the completion of the proposed development. This conclusion is based on the fact there is a considerable amount of residual capacity in the Everett Street corridor, and the proposed development will only generate a very small number of new vehicle trips during peak travel periods. There is also residual capacity at the signalized intersection with Pleasant Street that can accommodate increases in volume during weekday peak periods.

- *Visibility at the Everette / Novawood intersection:* The available stopping sight distance (SSD) measured along Everette Street, at Novawood Drive, appears to be limited by a crest vertical curve. Our field measurements indicate there appears to be insufficient stopping sight distance for southbound drivers traveling at 60 km/h. The regulatory speed limit on Everette Street is 50 km/h.

In summary, the traffic generated by a new 110-unit medium density residential development is expected to have an acceptable level of impact on the traffic operations along the Novawood Drive, Everette Street, and Pleasant Street corridors.

5.2 – Recommendations

Based on the findings of this qualitative review the following steps are recommended:

- *Access Design:* That the geometric design of the proposed vehicle access connections to Novawood Drive follow the latest Transportation Association of Canada (TAC) and HRM design guidelines contained in the most recent edition of their Municipal Design Guidelines document. This includes the accommodation of an appropriate truck design vehicle (i.e. garbage truck or emergency vehicle). Each building will require separate driveways. These driveways can be designed with one inbound and one outbound lane which will provide sufficient capacity to accommodate the proposed number of residential units. No auxiliary turn lanes will be required on Novawood Drive or Everette Street.
- *By-Law Requirements:* That the municipal By-laws/Policy requirements for corner clearance, sight triangles, and driver visibility are met to ensure acceptable traffic operations are maintained throughout the planning, design, and construction phases of the project.
- *Signs and Pavement Markings:* Should any new or changed signs and/or pavement markings be installed, that they follow the latest guidelines contained in TAC's Manual of Uniform Traffic Control Devices for Canada (MUTCDC) document.
- *Speed Management on Everette Street:* As noted earlier in this letter there is foreshortened driver visibility on the southbound approach to the Novawood Drive intersection due to a crest vertical curve. This is a pre-existing design issue. It is recommended that HRM identify measures to reduce the vehicle operating speeds in this area so they are consistent with the regulatory posted speed limit. Speed management measures could include the installation of speed humps along Everette Street, for example.

6.0 CLOSING

The findings flowing from this Stage 1 qualitative traffic impact statement suggest the new vehicle trips generated by a new 110-unit medium density residential development on Novawood Drive is expected to have a minor and acceptable impact on the traffic operational performance of the study area streets and intersections. I would be happy to provide you with additional information

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