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ENVIRONMENTAL NOISE REPORT

PROPOSED TOWNHOUSE DEVELOPMENT
40, 50 AND 60 EMMA STREET
TOWN OF GRAND VALLEY

JADE
ACOUSTICS

Prepared for
Sheldon Creek Developments Inc.

September 13, 2023
File: 22-212

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SUMMARY

The proposed townhouse development is located in the Town of Grand Valley and is generally positioned on the west side of Emma Street and Water Street and south of Mill Street. The proposed development includes two three (3) storey townhouse blocks. The site is affected by road traffic noise and existing commercial operations.

The environmental noise guidelines NPC-300 for transportation and stationary noise sources of the Ministry of the Environment, Conservation and Parks (MOE), set out sound level limits for both the indoor and outdoor spaces.

Using road traffic data obtained from the Transportation Master Plan located through the Town of Grand Valley website, the sound levels at the worst case location in the development were determined using ORNAMENT, the noise prediction model of the MOE.

Based on the preliminary analysis, no upgraded construction, no central air conditioning and no sound barriers will be required for the residential blocks (units) within this development to address the road traffic noise. See Figure 2 for the analyzed worst case location.

Existing pumping station and carwash facility located over 100 and 200 m south of the proposed site, respectively. Due to setback distances and existing residential receptors located in a closer proximity to these uses when compared to the proposed residential dwellings, required sound level limit compliance at the existing sensitive receptors will ensure sound level limit compliance at the subject site. These sources were not analyzed further in the report.

Existing hydro station and institutional facility are located north and northeast of the proposed site, respectively. Based on observations at the time of the site visit completed by Jade Acoustics Inc. staff, the noise sources associated with these uses were determined to be acoustically insignificant. Future occupants will be advised through the use of a warning clause that the proposed development is in proximity to existing hydro station and/or existing institutional facility whose activities may be at times audible. See Table 3, notes to Table 3, and Figure 2 for details.

Barclay Trim and Mouldings located immediately south of the proposed development has been investigated. Mitigation measures are not required to address the mechanical equipment and operations associated with the facility. Due to the proximity to Barclay Trim and Mouldings, future occupants should be provided with a proximity warning clause notifying the purchasers/tenants that the proposed development is in proximity to existing commercial/industrial operation whose activities may at times be audible. See Table 3, notes to Table 3, and Figure 2 for details.

1.0 INTRODUCTION

Jade Acoustics Inc. was retained to prepare an Environmental Noise Report to investigate the potential noise impact on the proposed townhouse development to the satisfaction of the Town of Grand Valley and the County of Dufferin.

The proposed site is identified as:

40, 50 and 60 Emma Street
Town of Grand Valley
County of Dufferin

The site is bound by hydro station and existing residential to the north, Emma Street, existing residential and institutional to the east, existing commercial/industrial to the south, and existing residential to the west.

The analysis was based on:

- Concept Site Plan prepared by Elevate Home Design dated August 16, 2023;
- Elevation and cross section drawings prepared by Elevate Home Design dated September 11, 2023;
- Preliminary Grading Plan prepared by Moorefield excavating dated June 1, 2023;
- Transportation Master Plan prepared by RJ Burnside for the Town of Grand Valley, dated March 2017, obtained through the Town of Grand Valley website; and
- Site visit conducted by Jade Acoustics Inc. staff on June 5, 2023.

A Key Plan is attached as Figure 1. Figure 2 shows the proposed development and the minimum noise abatement measures required to meet the noise guidelines. See Appendix G for the Concept Site Plan and Elevation Drawings.

The proposed development is comprised of two three (3) storey townhouses.

2.0 NOISE SOURCES

2.1 Transportation Sources

The proposed townhouse development is subject to road traffic noise from Water Street. The traffic volumes for Emma Street and Mill Street were determined to be low and are considered to be acoustically insignificant; therefore, Emma Street and Mill Street were not considered further.

The ultimate road traffic information for Water Street was calculated using the information obtained from the Transportation Master Plan noted in Section 1.0. The Future Total 2031 traffic volumes obtained were forecasted to 2033 with an estimated growth rate of 1%, with the greater of the AM or PM peak volumes considered to represent 10% of the overall daily volume. The growth rate of 1% was used in the Transportation Master Plan by RJ Burnside and therefore, the same growth rate was determined to be applicable for the noise analysis. Additionally, the Transportation Master Plan indicated that the Town's Official Plan identifies two potential routes for trucks to by-pass the Town which would result in decreasing the truck volumes going through Water Street. The truck percentage has been estimated based on this information. A day/night traffic split of 90/10 has been assumed. The posted speed limit for Water Street was confirmed based on the site visit.

The site is not affected by aircraft or rail traffic.

2.2 Stationary Sources

Existing pumping station and carwash facility located over 100 and 200 m south of the proposed site, respectively. There are existing residential developments located in closer proximity to these uses when compared to the proposed residential dwellings on the subject site. The existing pumping station and carwash facility are required to be achieving the applicable noise guidelines at the existing noise sensitive receptors that are in close proximity to their properties; therefore, achieved sound level limit compliance at the proposed residential dwellings within the subject site.

Existing hydro station and institutional facility located north and northeast of the subject site, respectively. Existing residential developments are situated in close proximity, with comparable separation distances to the existing hydro station when compared to the proposed residential dwellings on the subject site. Based on observations at the time of the site visit by Jade Acoustics Inc. staff, there were no major noise sources of concern at these uses. The existing hydro station and institutional facility are expected to be achieving the applicable noise guidelines at the existing noise sensitive receptors that are in close proximity to their properties. In summary, the noise sources associated with the hydro station and institutional facility are expected to be acoustically insignificant at the subject site; therefore, they were not assessed further in this report.

Barclay Trim and Mouldings is an existing commercial/industrial facility, located immediately south of the subject site. A questionnaire was provided to the facility owner to gain a better understanding of the operations and potential acoustic impact. However, despite numerous attempts by Jade Acoustics Inc. and the proponent of the proposed development to contact the facility owner, no response or information was received from the facility.

Based on information available on the MOE website, the facility does not have an Environmental Compliance Approval (ECA). With the absence of information about the facility operations, information obtained from the site visit conducted on June 5, 2023 by Jade Acoustics Inc. staff and information from Jade Acoustics Inc. files for similar facilities have been used in the preparation of the acoustic model.

See Section 4.2 for details of the noise assessment.

3.0 ENVIRONMENTAL NOISE CRITERIA

The MOE document "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning, Publication NPC-300", dated August 2013, released October 21, 2013, (updated final version # 22) was used for the analysis.

A brief summary of the NPC-300 guidelines is given in Appendix B. The guidelines are also summarized below.

3.1 Transportation Sources

3.1.1 Indoors

If the nighttime (11:00 p.m. to 7:00 a.m.) sound level in terms of Leq at the exterior face of a bedroom or living/dining room window/exterior door is greater than 60 dBA and/or if the daytime (7:00 a.m. to 11:00 p.m.) sound level in terms of Leq at the exterior face of a living/dining room or bedroom window/exterior door is greater than 65 dBA, means must be provided so that windows can be kept closed for noise control purposes and central air conditioning is required. A warning clause advising the occupant of the potential interference with some activities is also required and must be included in all offers of purchase and sale, lease agreements and included in the development agreements.

For nighttime sound levels (LeqNight) greater than 50 dBA to less than or equal to 60 dBA on the exterior face of a bedroom or living/dining room window/exterior door or daytime sound levels (LeqDay) greater than 55 dBA to less than or equal to 65 dBA on the exterior face of a bedroom or living/dining room window/exterior door, there need only be the provision for adding central air conditioning by the occupant at a later date. This typically involves a ducted heating system sized to accommodate the addition of central air conditioning by the occupant at a later date. A warning clause advising the occupant of the potential interference with some activities is also required.

In all cases, air cooled condenser units must not exceed an AHRI sound rating of 7.6 bels. As noted in MOE document NPC-300, the location and installation of the outdoor air conditioning device should comply with the sound level limits of Publication NPC-216 or should comply with other criteria specified by the municipality. The air cooled condenser units must be sited in accordance with the zoning by-laws with respect to setbacks as well as location.

As required by the MOE to determine the building component requirements, the indoor noise criteria for road traffic noise is 40 dBA (Leq8hour) for the bedrooms during nighttime hours, 45 dBA (Leq8hour) for the living/dining rooms during nighttime hours and 45 dBA (Leq16hour) for the living/dining rooms and bedrooms during daytime hours. These criteria are used to determine the architectural requirements.

3.1.2 Outdoors

For the outdoor amenity areas, a design goal of 55 dBA daytime (7:00 a.m. to 11:00 p.m.) sound level is used for road traffic. In some cases an excess not exceeding 5 dBA is considered acceptable. Where the unmitigated sound levels during the day exceed 55 dBA (Leq16hour, daytime) but are less than 60 dBA (Leq16hour, daytime), a warning clause is required and mitigation should be considered. Where the unmitigated sound levels during the daytime hours exceed 60 dBA, mitigation measures and a warning clause are required.

The definition of outdoor amenity area as defined by the MOE is given below.

"Outdoor Living Area (OLA)

> (applies to impact assessments of transportation sources) means that part of a noise sensitive land use that is:
>
> - intended and designed for the quiet enjoyment of the outdoor environment; and
> - readily accessible from the building.

The OLA includes:

- backyards, front yards, gardens, terraces or patios;
- balconies and elevated terraces (e.g. rooftops), with a minimum depth of 4 metres, that are not enclosed, provided they are the only outdoor living area (OLA) for the occupant; or
- common outdoor living areas (OLAs) associated with high-rise multi-unit buildings."

For the proposed development, it is expected that any proposed balconies and/or elevated terraces associated with the townhouse dwellings will be less than 4.0 m deep and as such are not considered to be noise sensitive receptors. The rear yards associated with the residential dwellings have been investigated. See Section 4.1 for further discussion.

For both the indoor and outdoor conditions where the acoustical criteria are exceeded, warning clauses must be placed in the appropriate documents.

3.1.3 Town of Grand Valley Noise By-Law

The Town of Grand Valley has a by-law to prohibit or regulate noise likely to disturb the inhabitants of the Town, By-law No. 2021-72, dated November 9, 2021. The by-law does not provide specific sound level limits but rather provides qualitative information with respect to sources of noise and prohibitions by time and place.

3.2 Stationary Sources

The guidelines of the Ontario Ministry of the Environment, Conservation and Parks (MOE) for stationary sources are to be used for the commercial/industrial facilities.

The MOE has published the document NPC-300 titled “Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning”.

The MOE also has vibration guidelines with respect to stationary sources, NPC-207. These guidelines require that the peak vibration velocities not exceed 0.3 mm/s at the point of reception during the day or night.

The MOE recognizes the need for back-up beepers/alarms as safety devices and as such does not have any guidelines or criteria to address these sources.

It should be noted that the MOE guidelines do not require that the source be inaudible, but rather that specific sound level limits be achieved.

With respect to stationary sources of noise in urban areas, the MOE guidelines require that the sound level due to the stationary source at the building façade and outdoor amenity spaces not exceed the sound level due to road traffic and in certain situations due to rail traffic in any hour of source operation, subject to specific exclusions. Tables C-5, C-6, C-7 and C-8 of NPC-300, included in Appendix B, provide the exclusion limit values of one-hour equivalent sound level (Leq,dBA) and impulsive sound level (L_{lm},dBAI).

The sound level limits for noise produced by emergency equipment operating in non-emergency situations, are 5 dB greater with respect to the sound level limits generally used for stationary sources. Therefore, for Class 1 area, exclusion sound level limits of 55 dBA (daytime) and 50 dBA (nighttime) apply. Sound level limits do not apply to emergency equipment operating in emergency situations.

In addition, the MOE guidelines require that most industries have a valid Environmental Compliance Approval (ECA) or its precursor, a Certificate of Approval (C of A) to operate.

In general, if the criteria for a stationary source of noise are exceeded, the MOE recommends that control be implemented at the source rather than at the receiver. Alternatively, if the receiver is set back from the source or if a physical barrier is constructed so that the criteria can be met at the receiver, no additional mitigative measures are required. In addition, a warning clause in offers of purchase and sale and/or lease agreements noting the proximity of dwellings to such a source should be considered. Treatment of the receptor building by the use of suitable exterior wall and window construction and central air conditioning to keep windows closed is not an acceptable solution to the MOE in Class 1 and 2 areas (urban). In addition, a

warning clause in offers of purchase and sale and/or lease agreements noting the proximity of dwellings to such a source should be considered.

4.0 NOISE IMPACT ASSESSMENT

4.1 Road Traffic

For road traffic noise, the sound levels in terms of Leq, the energy equivalent continuous sound level for both day (Leq16) and night (Leq8), were determined using the MOE Traffic Noise Prediction Model, ORNAMENT.

Table 2 provides a summary of predicted sound levels outdoors due to road traffic at specific locations without any mitigative measures. Appendix C includes sample calculations. The topography between the source and the receiver has been taken into account. The façade receiver location and height were based on the elevation drawings noted in Section 1.0. The analysis accounts for screening from the proposed dwellings themselves within the subject site as well as existing building structures (as applicable).

The Preliminary Grading Plan prepared by Moorefield excavating dated June 1, 2023, was used in the analysis. The highest sound levels are predicted for the residential units at the top floor bedroom of Block 1 (south unit) with a window on the east façade exposed to Water Street. The unmitigated sound levels at the east façade are predicted to be up to 46 dBA for daytime hours and up to 40 dBA for nighttime hours.

All rear yards associated with the proposed townhouse units are shielded from exposure to Water Street by the proposed townhouse units themselves. Therefore, no acoustic barriers are required in the proposed development.

4.2 Stationary Sources

As discussed in Section 2.2, Barclay Trim and Mouldings was included in this noise assessment. Figures 1 and 3 show the location of the facility.

Barclay Trim and Mouldings is a facility located at 30 William Street in Grand Valley. Based on available information online, this company manufactures a variety of products, including but not limited to moulding, doors, flooring, etc. As noted in Section 2.2, the facility did not respond or provide any information despite numerous attempts by Jade Acoustics Inc. and the proponent of the proposed development to contact the facility. With the absence of information, information obtained from the site visit conducted on June 5, 2023, by Jade Acoustics Inc. staff and information from Jade Acoustics Inc. files for similar facilities have been used in the preparation of the acoustic model. See Appendix D for the Questionnaire sent to Barclay Trim and Mouldings.

Based on observations during the site visit noted above and the nature of the business, the noise source with potential to impact the proposed development is the dust collector located at the north side of the facility. Any other noise sources were considered to be acoustically insignificant with respect to the proposed development and were not investigated further.

Sound power level information for the dust collector taken from information in Jade's files on other comparable projects was considered applicable for this noise assessment. The location and height of the dust collector were based on observation during the site visit and/or information available online. The dust collector was assumed to have duty cycles of 100% for daytime, evening and nighttime. See Appendix E

Additionally, there are no proposed windows on the side facades (both north and south) for both blocks (units) based on the elevation and cross section drawings noted in Section 1.0. Based on NPC-300, the façade without a window would not be considered as points of reception and would not be subject to sound level limits. Therefore, the side façades (both north and south) for both blocks (units) were not included in the analysis. See Appendix G for the Concept Site Plan and Elevation Drawings.

TABLE A

SUMMARY OF NOISE SOURCE – BARCLAY TRIM AND MOULDINGS

Source ID	Description	Sound Power Level (dBA re10^{-12}W)
SDC	Dust Collector	84

Using the above data, the sound pressure levels, in terms of Leq1hour, were determined at the closest proposed receptor locations for daytime hours (7:00 a.m. to 7:00 p.m.), evening hours (7:00 p.m. to 11:00 p.m.) and nighttime hours (11:00 p.m. to 7:00 a.m.).

The stationary noise source assessment was conducted using the CadnaA 2022MR2 computer program which uses International Standard Analytical Code ISO 9613-2. Table B below shows the results of the analysis and comparison with the applicable MOE Class 1 sound level limits of 50 dBA for daytime hours, 50 dBA for evening hours, and 45 dBA for nighttime hours considered applicable for the proposed development. Appendix F includes sample calculations.

TABLE B

SUMMARY OF PREDICTED SOUND LEVELS DUE TO CONTINUOUS NOISE SOURCES WITHOUT MITIGATION MEASURES – CLASS 1 EXCLUSION LIMITS

Receptor	Location**	Predicted Sound Levels, Leq One Hour, dBA re. $2x10^{-5}$ Pa								
		Daytime (7:00 a.m. to 7:00 p.m.)			Evening (7:00 p.m. to 11:00 p.m.)			Nighttime (11:00 p.m. to 7:00 a.m.)		
		Predicted	Limit	Exceedance	Predicted	Limit	Exceedance	Predicted	Limit	Exceedance
Block 1 (South unit)	Outdoor Living Area (R1)	50	50	No	50	50	No	--	--	--
Block 1	East Facade	42	50	No	42	50	No	42	45	No
	West Façade	44	50	No	44	50	No	44	45	No
Block 2	East Facade	27	50	No	27	50	No	27	45	No
	West Façade	28	50	No	28	50	No	28	45	No

As can be seen in Table B, the predicted unmitigated sound levels due to the sources of continuous noise do not exceed the applicable MOE sound level limits; therefore, noise mitigation measures are not required.

5.0 NOISE ABATEMENT MEASURES

5.1 Transportation Sources

5.1.1 Indoors

Architectural Component Requirements

Indoor sound level criteria for road traffic can be achieved in all cases by using appropriate architectural elements for external wall, roof, window and exterior door construction. The indoor sound level limits for road traffic are provided in Section 3.1.1. The characteristic spectrum for road traffic has been accounted for in the determination of the architectural components. Appendix F contains a sample calculation of architectural component selection.

In determining the architectural requirements, for the blocks (units) exposed to Water Street, the east facing bedroom located on the upper floors is considered to be the worst-case location. The outdoor daytime sound level prediction is 5 dBA higher than the nighttime sound level prediction. This noted difference is more than the difference between the MOE indoor criteria for road traffic for daytime and nighttime hours; therefore, a bedroom with calculated daytime sound level was used in the analysis. For the dwellings that are exposed to Water Street, the exterior walls would be 55% of the associated floor area for the wall parallel and the wall perpendicular to the noise source. The windows/exterior doors would be 25% of the associated floor area and located on the wall parallel and perpendicular to the noise source.

Using the ratios mentioned above, standard window, exterior door and exterior wall construction is acoustically acceptable for all proposed residential dwellings.

For all dwellings, taking into account the ratios mentioned above, window, exterior door and exterior wall construction which complies with the minimum structural and safety requirements of standard construction would be satisfactory. These requirements will need to be reviewed once the final architectural plans are available.

An STC 54 rating for the roof, normally met by most residential roof construction with ventilated attic space, would be acoustically acceptable.

Ventilation Requirements

Where the sound level is exceeded by 1 dB to 10 dB (i.e. LeqNight greater than 50 dBA to less than or equal to 60 dBA and LeqDay greater than 55 dBA to less than or equal to 65 dBA), provision for adding central air conditioning by the occupant and a warning clause is required.

Based on the analysis, no blocks (units) require mandatory or provision for adding central air conditioning.

See Table 3 and Notes to Table 3 for details of minimum noise abatement measures required. Warning clause requirements are listed in Table 3 and specific wording is included in the Notes to Table 3.

5.1.2 Outdoors

As mentioned in Section 4.1, all rear yards associated with the proposed townhouse units are shielded from exposure to Water Street by the proposed townhouse units themselves. Therefore, no acoustic barriers are required in the proposed development.

5.2 Stationary Sources

As discussed in Section 4.2, the assumed noise sources associated with the operations of the Barclay Trim and Mouldings are not predicted to exceed the Class 1 noise guidelines at the proposed development. Therefore, mitigation measures are not required.

Due to their proximity to the Barclay Trim and Mouldings, existing hydro station and/or institutional facility, some blocks (units) should be provided with a proximity warning clause notifying the purchasers/tenants that the activities and/or equipment associated with Barclay Trim and Mouldings, existing hydro station and/or existing institutional facility may at times be audible. See Table 3, Notes to Table 3 and Figure 2 for details.

6.0 CONCLUSIONS

Based on the acoustical analysis, with the incorporation of the items discussed (see Table 3, Notes to Table 3 and Figure 2), the sound levels will be within the appropriate environmental noise criteria. In accordance with Town and Ministry implementation guidelines, if mitigation is required, future purchasers will be advised through the use of warning clauses.

Respectfully submitted,

JADE ACOUSTICS INC.

Per: _____
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Per: _____
Chris B. Kellar, P.Eng.

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7.0 REFERENCES

1. "Model Municipal Noise Control By-Law", Final Report, Ontario Ministry of the Environment, August, 1978.

2. ORNAMENT – "Ontario Road Noise Analysis Method for Environment and Transportation", Ontario Ministry of the Environment, October, 1989.

3. "Building Practice Note No. 56: Controlling Sound Transmission into Buildings'", J.D. Quirt, Division of Building Research, National Research Council of Canada, September, 1985.

4. "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning", Ontario Ministry of the Environment and Climate Change, Publication NPC-300, August, 2013, released October 21, 2013 (updated final version #22).

5. "Environmental Noise Guidelines for Installation of Residential Air Conditioning Devices", Ontario Ministry of the Environment, Publication NPC-216, September, 1994.

6. Town of Grand Valley Noise By-law No. 2021-72, November 9, 2021.

TABLE 1

PROPOSED TOWNHOUSE DEVELOPMENT

40, 50 AND 60 EMMA STREET

TOWN OF GRAND VALLEY

SUMMARY OF ROAD TRAFFIC INFORMATION

ROAD	Water Street	Mill Street
AADT* (ultimate)	13,833	1,969
No. of Lanes	2	2
Speed (km/hr)	40	40
Medium Trucks (%)	1**	1**
Heavy Trucks (%)	1**	1**
Gradient (%)	1***	1***
Day/Night Split (%)	90/10***	90/10***

* AADT: Ultimate Annual Average Daily Traffic.

** Assumed based on information noted in the Transportation Master Plan. See Section 2.1.

*** Assumed.

TABLE 2

PROPOSED TOWNHOUSE DEVELOPMENT

40, 50 AND 60 EMMA STREET

TOWN OF GRAND VALLEY

PREDICTED UNMITIGATED SOUND LEVELS OUTDOORS DUE TO ROAD TRAFFIC

Blocks (units)	Location*	Source	Distance (m)	Leq (dBA)			
				Day		Night	
				Separate	Combined	Separate	Combined
1	East Facade	Water Street	109.0	46	--	40	--

* The façade receiver location and height were based on the elevation drawings noted in Section 1.0.

TABLE 3

PROPOSED TOWNHOUSE DEVELOPMENT

40, 50 AND 60 EMMA STREET

TOWN OF GRAND VALLEY

SUMMARY OF MINIMUM NOISE ABATEMENT MEASURES
DUE TO TRANSPORTATION SOURCES

Lots*	Air Conditioning(1)	Exterior Wall STC Rating(2)**	Window STC Rating(2)**	Sound Barrier	Warning Clause(3)
Block 1 (south unit) and Block 2 (all units)	NR	Standard	Standard	No	A
Block 1 (all units except south unit)	No Special requirements				

* See Figure 2.

** Based on preliminary calculations. See Section 5.1.1 for details.

See Notes to Table 3 on following pages.

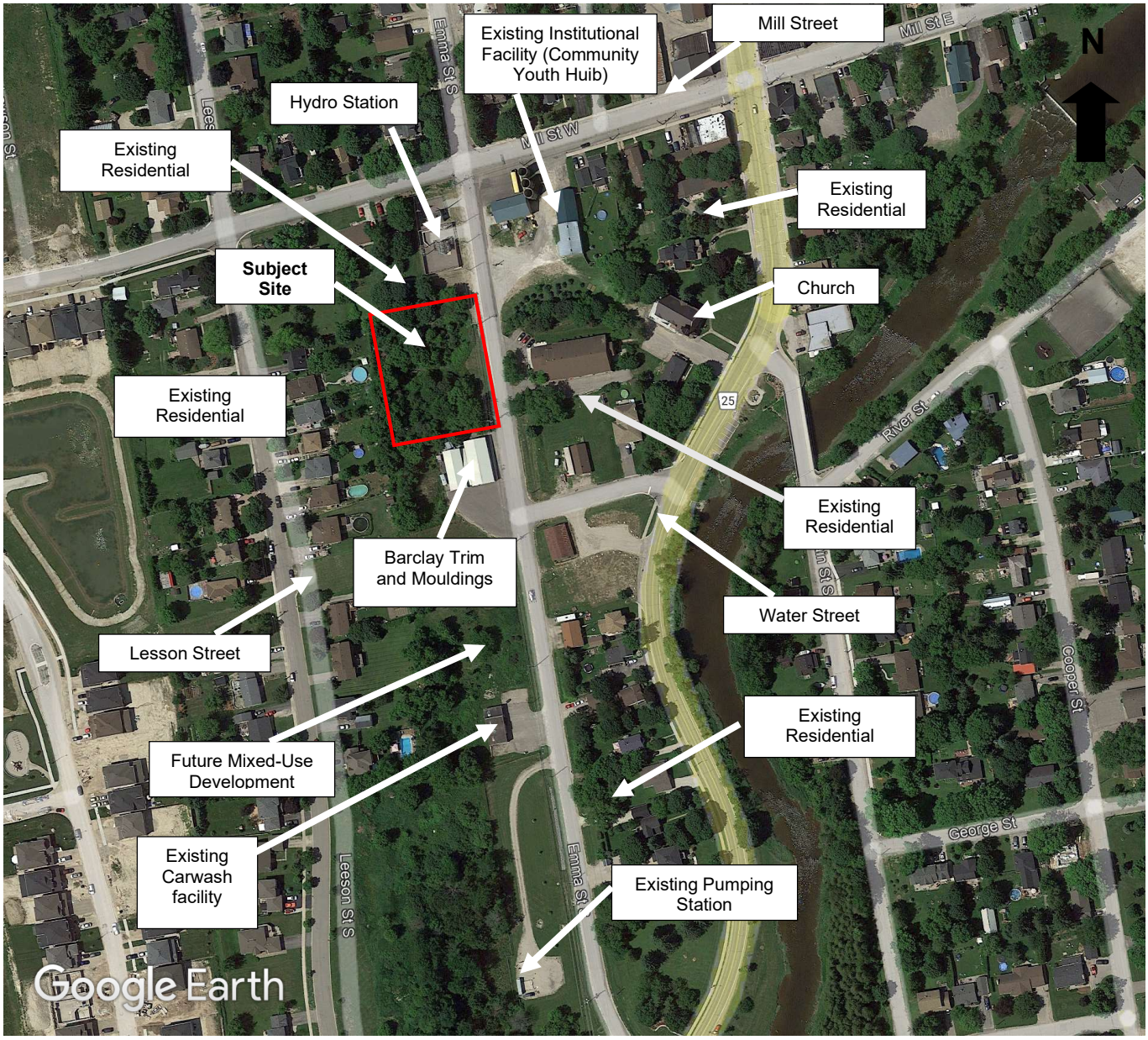
NOTES TO TABLE 3

1. STC – Sound Transmission Class Rating (Reference ASTM-E413). See Section 5.1.1 for details.

2. STC – Sound Transmission Class Rating (Reference ASTM-E413). A sliding glass walkout door should be considered as a window and be included in the percentage of glazing. See Section 5.1.1 for details.

3. Suggested Warning Clauses to be placed in the development agreement and to be included in offers of purchase and sale and/or lease agreements on designated units:

   A. "Purchasers are advised that the dwelling unit is in proximity to hydro station, commercial/industrial operations, and/or institutional uses whose activities may be audible at times."



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Proposed Townhouse Development
40, 50 and 60 Emma Street
Town of Grand Valley

KEY PLAN

FIGURE 1

Date: September 2023 **File: 22-212**

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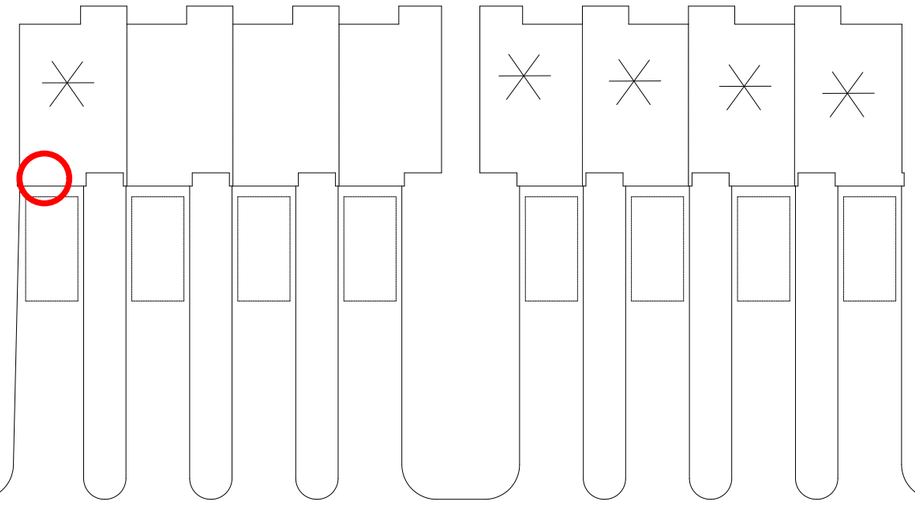
EXISTING RESIDENTIAL

BLOCK 1
[4 TOWNHOMES]

BLOCK 2
[4 TOWNHOMES]



EXISTING RESIDENTIAL

BARCLAY TRIM
AND MOULDINGS

HYDRO STATION

EMMA STREET

EXISTING INSTITUTIONAL

EXISTING RESIDENTIAL

LEGEND:

- Block (unit) Analyzed
- Proximity Warning Clause (See text, Table 3 and Notes to Table 3 for details)

N.T.S.

Proposed Townhouse Development
40, 50 and 60 Emma Street
Town of Grand Valley

Date: September 2023 Our File: 22-212

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PLAN OF DEVELOPMENT SHOWING MINIMUM NOISE ABATEMENT MEASURE

FIGURE 2

Block 2

Block 1

R1 - OLA
LeqDay: 50 dBA
LeqEvening: 50 dBA

dust collector

Barclay Trim and Mouldings

Emma Street

William St

Google Earth

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Date: September 2023 | Jade File: 22-212

Proposed Townhouse Development
40, 50 and 60 Emma Street
Town of Grand Valley

PLAN SHOWING ANALYZED SOURCES OF CONTINUOUS NOISE AND PREDICTED SOUND LEVELS WITHOUT MITIGATION MEASURES

FIGURE 1

APPENDIX A

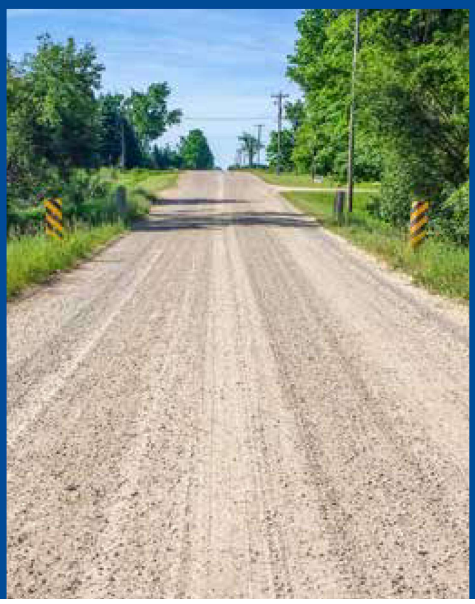
CORRESPONDENCE REGARDING ROAD TRAFFIC DATA

BURNSIDE

Town of Grand Valley Transportation Master Plan

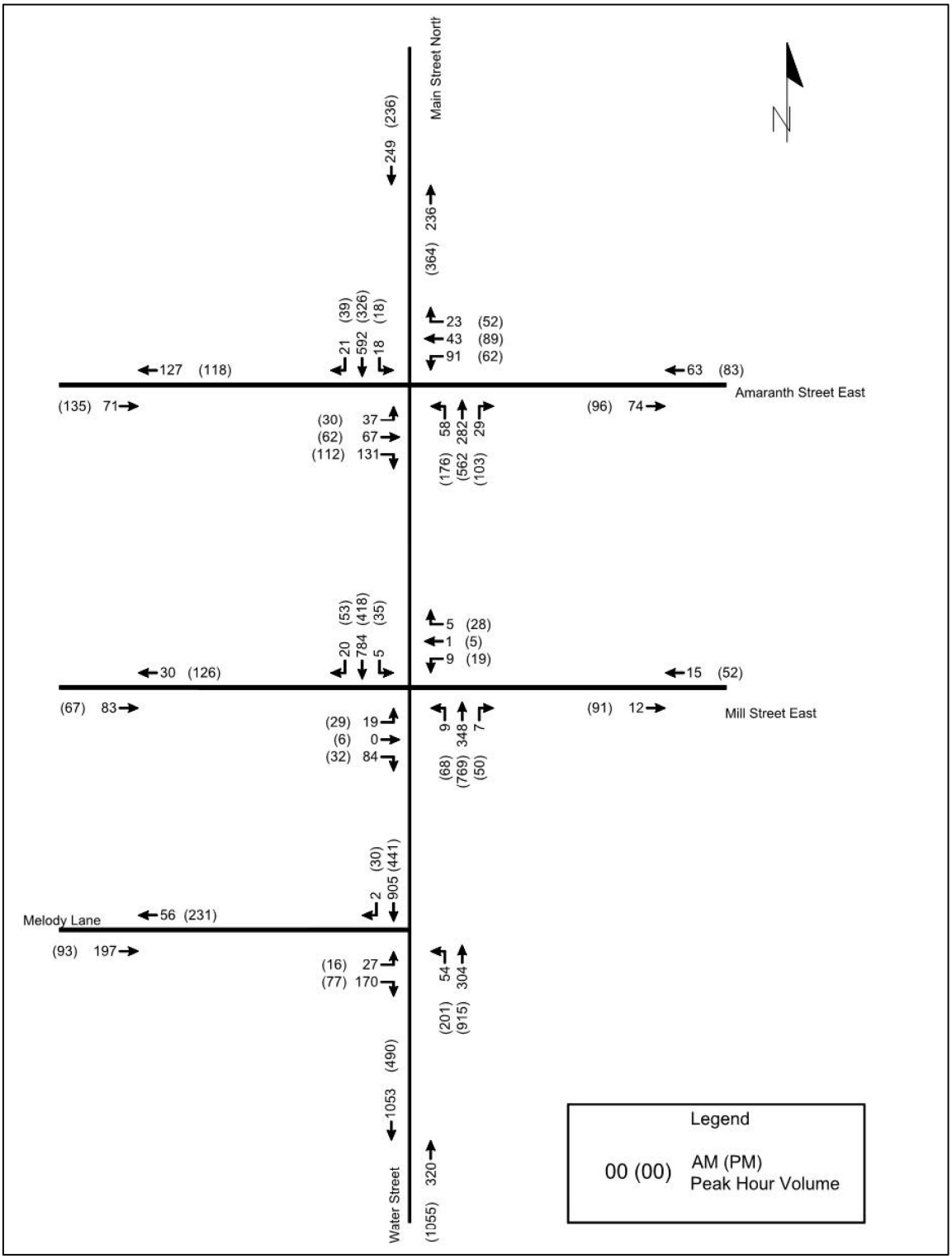
Town of Grand Valley

Final Report



March 2017

Figure 19: Total 2031 Traffic Volumes



APPENDIX B

ENVIRONMENTAL NOISE CRITERIA

MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS (MOE)

Reference: "Environmental Noise Guidelines Stationary and Transportation Sources – Approval and Planning", Publication NPC-300, August, 2013, released October 21, 2013 (updated final version # 22).

SOUND LEVEL CRITERIA FOR ROAD AND RAIL NOISE

TABLE C-1

Sound Level Limit for Outdoor Living Areas

Road and Rail

Time Period	Leq (16) (dBA)
16 hr., 07:00 - 23:00	55

TABLE C-2

Indoor Sound Level Limits
Road and Rail

Type of Space	Time Period	Leq (dBA)	
		Road	Rail
Living/dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.	07:00 – 23:00	45	40
Living/dining, den areas of residences, hospitals, nursing homes, etc. (except schools or daycare centres)	23:00 – 07:00	45	40
Sleeping quarters	07:00 – 23:00	45	40
	23:00 – 07:00	40	35

SOUND LEVEL CRITERIA FOR AIRCRAFT NOISE

TABLE C-3

Outdoor Aircraft Noise Limit

Time Period	NEF/NEP
24-hour	30

TABLE C-4

Indoor Aircraft Noise Limit
(Applicable over 24-hour period)

Type of Space	Indoor NEF/NEP*
Living/dining/den areas of residences, hospitals, nursing/retirement homes, schools, daycare centres, etc.	5
Sleeping Quarters	0

* The indoor NEF/NEP values in Table C-4 are used to determine acoustical insulation requirements based on the NEF/NEP contour maps.

SOUND LEVEL CRITERIA FOR STATIONARY SOURCES

TABLE C-5

Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq, dBA)
Outdoor Points of Reception

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 19:00	50	50	45	55
19:00 – 23:00	50	45	40	55

TABLE C-6

Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq, dBA)
Plane of Window of Noise Sensitive Spaces

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 19:00	50	50	45	60
19:00 – 23:00	50	50	40	60
23:00 – 07:00	45	45	40	55

TABLE C-7

Exclusion Limit Values for Impulsive Sound Level (L_{LM}, dBAI)
Outdoor Points of Reception

Time of Day	Actual Number of Impulses in Period of One-Hour	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 23:00	9 or more	50	50	45	55
	7 to 8	55	55	50	60
	5 to 6	60	60	55	65
	4	65	65	60	70
	3	70	70	65	75
	2	75	75	70	80
	1	80	80	75	85

TABLE C-8

Exclusion Limit Values of Impulsive Sound Level (L_{LM}, dBAI)
Plane of Window - Noise Sensitive Spaces (Day/Night)

Actual Number of Impulses in Period of One-Hour	Class 1 Area (07:00-23:00)/ (23:00-07:00)	Class 2 Area (07:00-23:00)/ (23:00-07:00)	Class 3 Area (07:00-19:00)/ (19:00-07:00)	Class 4 Area (07:00-23:00)/ (23:00-07:00)
9 or more	50/45	50/45	45/40	60/55
7 to 8	55/50	55/50	50/45	65/60
5 to 6	60/55	60/55	55/50	70/65
4	65/60	65/60	60/55	75/70
3	70/65	70/65	65/60	80/75
2	75/70	75/70	70/65	85/80
1	80/75	80/75	75/70	90/85

SUPPLEMENTARY SOUND LEVEL LIMITS

Indoor limits for transportation sources applicable to noise sensitive land uses are specified in Table C-2 and Table C-4. Table C-9 and Table C-10 are expanded versions of Table C-2 and Table C-4, and present guidelines for acceptable indoor sound levels that are extended to land uses and developments which are not normally considered noise sensitive. The specified values are maximum sound levels and apply to the indicated indoor spaces with the windows and doors closed. The sound level limits in Table C-9 and Table C-10 are presented as information, for good-practice design objectives.

TABLE C-9

Supplementary Indoor Sound Level Limits
Road and Rail

Type of Space	Time Period	Leq (Time Period) (dBA)	
		Road	Rail
General offices, reception areas, retail stores, etc.	16 hours between 07:00 – 23:00	50	45
Living/dining areas of residences, hospitals, schools, nursing/retirement homes, daycare centres, theatres, places of worship, libraries, individual or semi-private offices, conference rooms, reading rooms, etc.	16 hours between 07:00 – 23:00	45	40
Sleeping quarters of hotels/motels	8 hours between 23:00 – 07:00	45	40
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	8 hours between 23:00 – 07:00	40	35

TABLE C-10

Supplementary Indoor Aircraft Noise Limit
(Applicable over 24-hour period)

Type of Space	Indoor NEF/NEP*
General offices, reception areas, retail stores, etc.	15
Individual or semi-private offices, conference rooms, etc.	10
Living/dining areas of residences, sleeping quarters of hotels/motels, theatres, libraries, schools, daycare centres, places of worship, etc.	5
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	0

* The indoor NEF/NEP values in Table C-10 are not obtained from NEF/NEP contour maps. The values are representative of the indoor sound levels and are used as assessment criteria for the evaluation of acoustical insulation requirements.

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APPENDIX C

SAMPLE CALCULATION OF PREDICTED SOUND LEVELS DUE TO ROAD TRAFFIC

APPENDIX C-1
SAMPLE CALCULATION OF SOUND LEVEL

FILE: 22-212
NAME: 40, 50 and 60 Emma Street
REFERENCE DRAWINGS: Concept Site Plan
LOCATION: Block 1 (south unit), front wall, top floor bedroom

Noise Source:	Water Street
Segment Angle:	-38 to 90
Time Period:	16 hr. (day)
Distance (m):	109.22

CALCULATION OF PREDICTED SOUND LEVELS*

Reference Leq (dBA)*:	61.26
Height and/or Distance Correction (dBA):	-12.89
Finite Element Correction (dBA):	-2.32
Allowance for Future Growth (dBA):	incl.
LeqDay (dBA):	46.05

* Leq determined using the computerized model of the Ministry of the Environment Noise Assessment Guidelines, STAMSON Version 5.04 (ORNAMENT). See attached printouts.

APPENDIX C-2
SAMPLE CALCULATION OF PREDICTED SOUND LEVELS

FILE: 22-212
NAME: 40, 50 and 60 Emma Street
REFERENCE DRAWINGS: Concept Site Plan
LOCATION: Block 1 (south unit), front wall, top floor bedroom

Noise Source:	Water Street
Segment Angle:	-38 to 90
Time Period:	8 hr. (night)
Distance (m):	109.22

CALCULATION OF PREDICTED SOUND LEVELS*

Reference Leq (dBA)*:	54.77
Height and/or Distance Correction (dBA):	-12.87
Finite Element Correction (dBA):	-2.32
Allowance for Future Growth (dBA):	incl.
LeqNight (dBA):	39.55

* Leq determined using the computerized model of the Ministry of the Environment Noise Assessment Guidelines, STAMSON Version 5.04 (ORNAMENT). See attached printouts.

```
STAMSON 5.0        NORMAL REPORT        Date: 28-08-2023 13:47:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: block1.te            Time Period: Day/Night 16/8 hours
Description: Block 1 east facade building requirement


Road data, segment # 1: Water Street (day/night)
-----------------------------------------------
Car traffic volume  : 12201/1356  veh/TimePeriod  *
Medium truck volume :   124/14    veh/TimePeriod  *
Heavy truck volume  :   124/14    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  13833
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Water Street (day/night)
----------------------------------------------
Angle1   Angle2           : -38.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 109.22 / 109.22 m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Water Street (day)
---------------------------------------

Source height = 1.00 m

ROAD (0.00 + 46.05 + 0.00) = 46.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -38     90   0.50  61.26   0.00 -12.89  -2.32   0.00   0.00   0.00  46.05
-------------------------------------------------------------------------------

Segment Leq : 46.05 dBA

Total Leq All Segments: 46.05 dBA

Results segment # 1: Water Street (night)
-----------------------------------------

Source height = 1.00 m

ROAD (0.00 + 39.55 + 0.00) = 39.55 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -38     90   0.49  54.77   0.00 -12.89  -2.32   0.00   0.00   0.00  39.55
-------------------------------------------------------------------------------

Segment Leq : 39.55 dBA

Total Leq All Segments: 39.55 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 46.05
                           (NIGHT): 39.55
```

APPENDIX D

QUESTIONNAIRE SENT TO NEIGHBOURING BUSINESS

Jade Acoustics Inc. | Consulting Engineers | 411 Confederation Parkway, Unit 19, Concord, Ontario, L4K 0A8 | Tel: (905) 660-2444 | Fax: (905) 660-4110

June 9, 2023

Barclay Trim & Mouldings Ltd.
30 William Street, P.O Box 5
Grand Valley, Ontario
L9W 5S5

E-MAIL
dean@barclaytrim.com

JADE ACOUSTICS

Re: Information Request
Proposed Residential Development
50 Emma Street
Town of Grand Valley
Our File: 22-183

As requested by the municipality, we are conducting a noise study for the proposed residential development located north of the Barclay Trim & Mouldings Ltd facility, at the west side of Emma Street and south side of Mill Street in the Town of Grand Valley. As part of the noise study, we are required by the Ministry of the Environment, Conservation and Parks (MOE) and the municipality to identify and quantify all potential noise sources. In order to do this adequately, we have summarized the information we kindly request regarding your operations. Please complete and return this form by email. Following our review of the responses, a site visit to your facility may be requested, with the potential to conduct sound measurements on site. We will contact you regarding a time and date to complete the site visit and sound measurements, if required.

1. What is the primary function of your company? _____
_____
_____
_____
_____

2. What are your hours of operation? _____
How many days per week? _____

3. Is your operation seasonal? If so, describe the operations associated with different seasons. _____
_____
_____
_____

4. Are you currently operating at full capacity? If so, will you be operating at this level for the next several weeks? _____
_____
_____

5. If not, when do you anticipate being at full operating capacity? _____

6. What noise producing equipment do you have located: _____
   (a) internally? _____

   (b) internally but exhausting/intaking to the exterior? _____

   (c) externally? _____

JADE ACOUSTICS

7. Does your company have any outside storage? If so, are there any activities such as forklifts or transport trucks which access the storage area? _____

8. How many trucks use the shipping area during the day and at night? _____

9. What is the hourly distribution? _____

10. Are shipping doors left open at night during the summer? Where are they located?

11. Are there any other facilities/operations on the property? If so, please provide the primary function and details about the facility. _____

12. Are there any planned modifications/expansions to your facility? _____

13. Does your company have a valid Certificate of Approval (C of A) or Environmental Compliance Approval (ECA) from the MOE which includes a noise assessment and noise mitigation measures, if required? If yes, please provide us with a copy of the Certificate and copy of the noise assessment report. _____

14. Other information _____

_____

_____

_____

_____

15. Contact Information

Name: _____

Position: _____

Telephone No.: _____

Fax No.: _____

E-mail: _____

If you have any questions, please contact the undersigned. Thank you in advance for your assistance.

Yours truly,

JADE ACOUSTICS INC.

Per: _____

Wai Lung (Jake) Chong, B.Eng., E.I.T.
jake@jadeacoustics.com

Per: _____

Chris B. Kellar, P.Eng.
chris@jadeacoustics.com

JC/CK/jg
L:\Memos\2022\22-183 Jun 9-23 50 Emma Street (Information Request-Questionnaire).doc

APPENDIX E

SAMPLE CALCULATIONS OF SOUND LEVELS DUE TO STATIONARY NOISE SOURCES – CADNAA

Sound Power Levels of Analyzed Noise Source

Name	ID	Type	1/3 Oktave Spectrum (dB)													Source
			Weight.		31.5	63	125	250	500	1000	2000	4000	8000	A	lin	
Dust Collector	SDC	Lw			96.8	85.9	88.5	90.3	75.3	75.1	67.2	51.2	55.6	83.5	98.5	based on JAI 11-066 measurements

Name	ID	Result. PWL			Lw / Li			Correction			Sound Reduction		Attenuatio	Operating Time			K0	Freq.	Direct.	Height		Coordinates	
		Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night						X	Y
		(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		(m)		(m)	(m)
dust collector		83.5	83.5	83.5	Lw	SDC		0	0	0							0		(none)	7	r	554876	4860548

Receiver

Name	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
		Day	Night	Evening	Day	Night	Evening	Type	Auto	Noise Type			X	Y	Z
		(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
R1 - OLA		50.2	0	50.2	0	0	0		x	Total	1.5	r	554865	4860559	460.97

Buildings

Name	ID	RB	Residents	Absorption	Height
					Begin
					(m)
Barclay Trim and Mouldings		x	0	0.37	6
Block 1		x	0	0.37	8.34
Block 2		x	0	0.37	8.34

APPENDIX F

SAMPLE CALCULATION OF ARCHITECTURAL COMPONENT SELECTION

APPENDIX F-1
SAMPLE CALCULATION OF ARCHITECTURAL COMPONENT SELECTION*

FILE: 22-212
NAME: 40, 50 and 60 Emma Street
REFERENCE DRAWINGS: Concept Site Plan
LOCATION: Block 1 (south unit), front wall, top floor bedroom

ROAD

Exterior wall area as a percentage of floor area:		Front:55% Side: 55%
Window/exterior door area as a percentage of floor area:		Front:25% Side:25%
Number of components:	3	
Outdoor Leq:	Front: 46 (+3 for reflections) = 49 dBA Side: 43 (+3 for reflections) = 46 dBA	
Indoor Leq:	45	
Noise Reduction (dBA):	Front: 4 Side: 1	
Noise Spectrum:	Mixed Road Traffic	Angle Correction: 0
Absorption:	Medium	

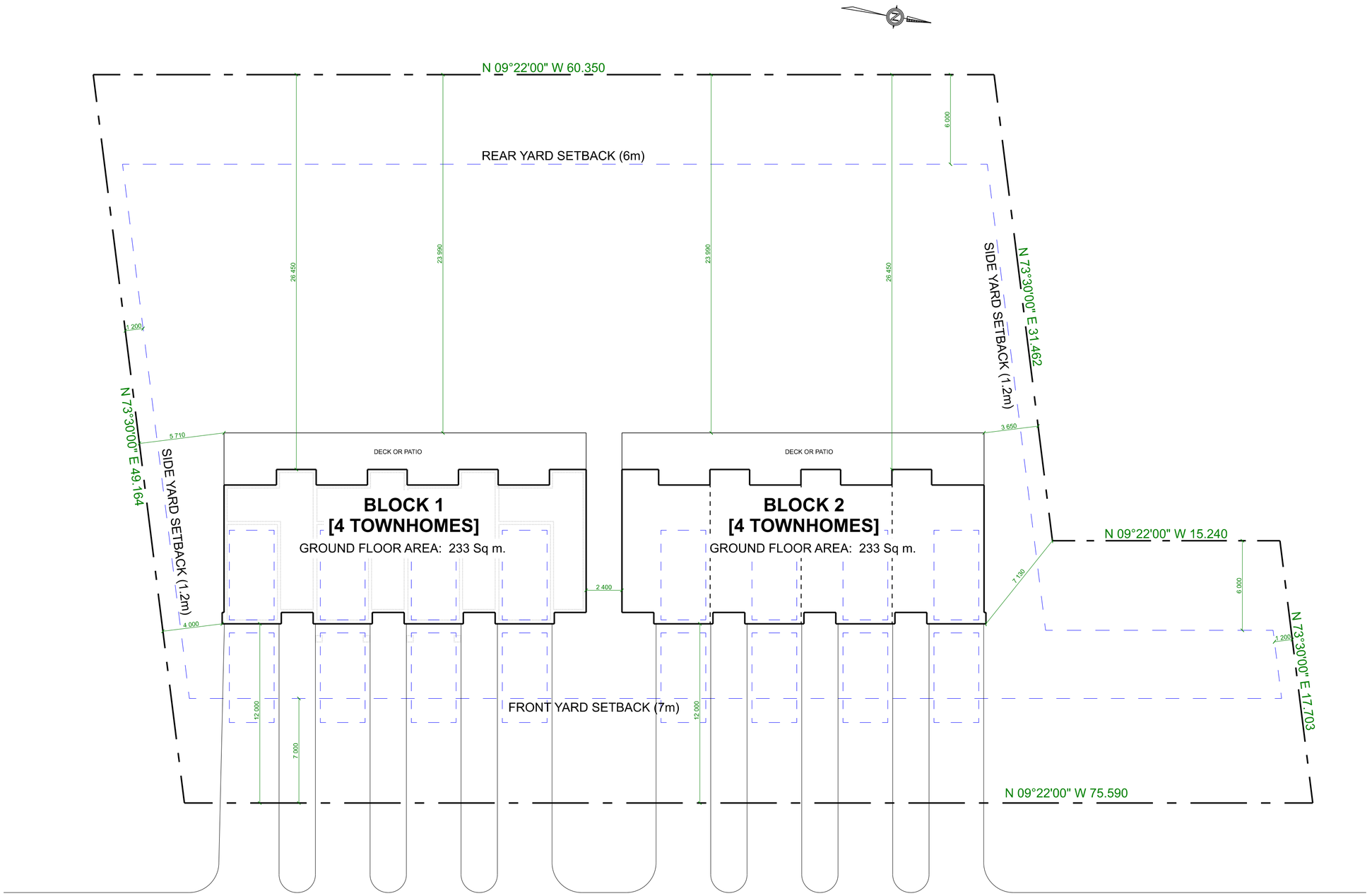
APPROPRIATE ELEMENTS

		Configuration	STC Rating
Exterior wall	Front	Standard	STC 14
	Side	Standard	STC 11
Window/exterior door	Front	Standard	STC 6

* Based upon "Controlling Sound Transmission into Buildings", Building Practice Note 56 by National Research Council of Canada, September, 1985.

APPENDIX G

CONCEPT SITE PLAN AND ELEVATION DRAWINGS



EMMA STREET

SITE PLAN
SCALE: 1:200

AREA SCHEDULE (PER BLOCK)
LEVEL ONE AREA: 231 Sq m.
LEVEL TWO AREA: 233 Sq m.
LEVEL THREE AREA: 301 Sq m.
TOTAL AREA: 764 Sq m.

TOTAL USABLE FLOOR AREA (BOTH BLOCKS): 1528 Sq m.
TOTAL LOT AREA: 3212 Sq m.
FLOOR SPACE INDEX: 0.48

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ROB@ELEVATEHOMEDESIGN.CA ○ 519-731-4246

TOWNHOME
SHELDON CREEK DEVELOPMENTS
50 EMMA STREET
GRAND VALLEY

SITE PLAN

PROJECT NO: 22-102
STARTING DATE: Aug 16, 2022
LAST REVISION DATE: Aug 16, 2023
DRAWN BY: RV

SCALE: As Noted

A1

ELEVATE
HOME DESIGN
BEATTY LINE N ○ FERGUS ○ ON
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TOWNHOME

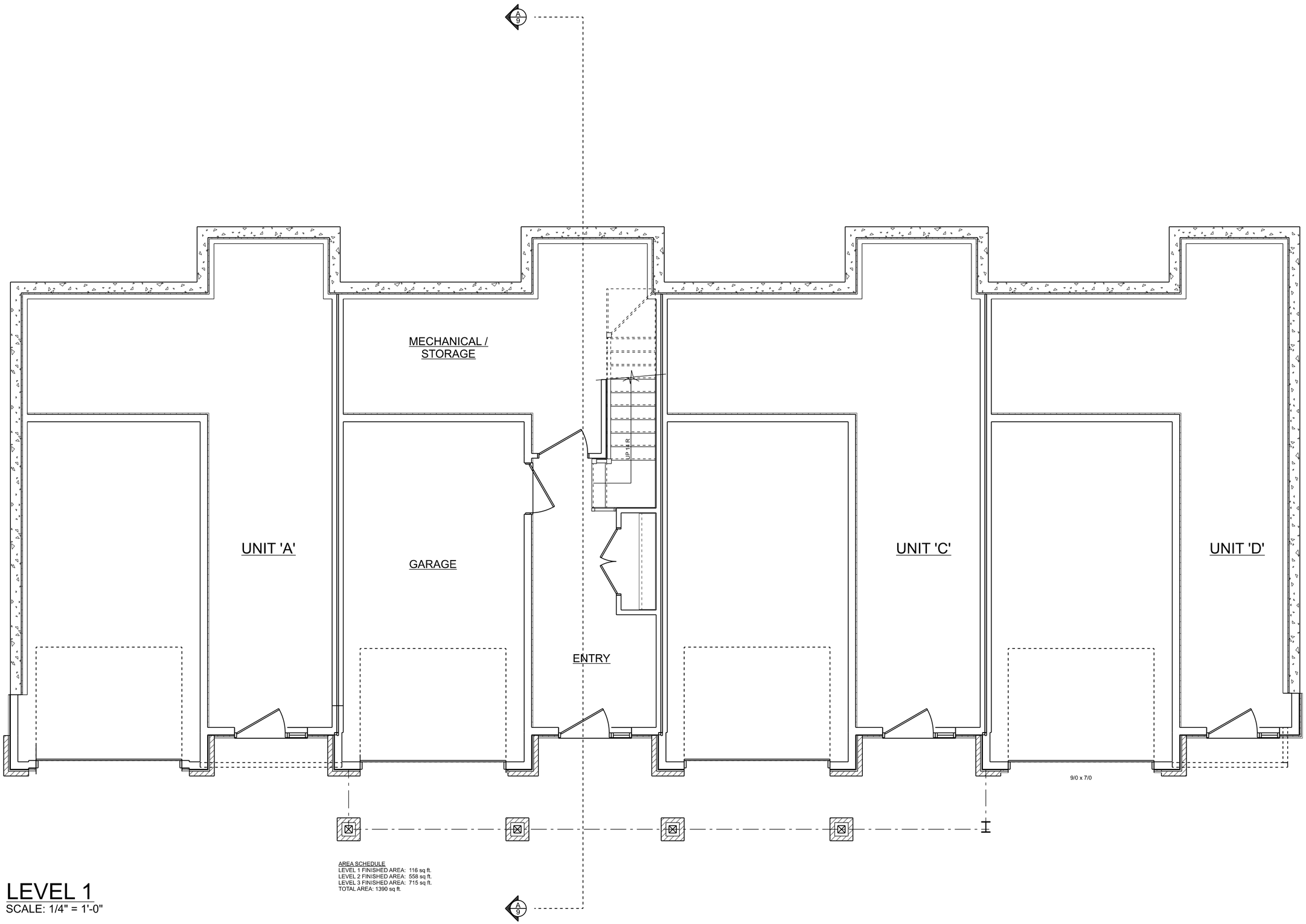
SHELDON CREEK DEVELOPMENTS
50 EMMA STREET
GRAND VALLEY

CONCEPT

PROJECT NO: 22-102
STARTING DATE: Aug 16, 2022
LAST REVISION DATE: Sep 11, 2023
DRAWN BY: JF

SCALE: NOT TO SCALE

A1



AREA SCHEDULE
LEVEL 1 FINISHED AREA: 116 sq ft.
LEVEL 2 FINISHED AREA: 558 sq ft.
LEVEL 3 FINISHED AREA: 715 sq ft.
TOTAL AREA: 1390 sq ft.

LEVEL 1
SCALE: 1/4" = 1'-0"

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LEVEL 1

PROJECT NO: 22-102
STARTING DATE: Aug 16, 2022
LAST REVISION DATE: Sep 11, 2023
DRAWN BY: JF

SCALE: 1/4" = 1'-0"

A2

AREA SCHEDULE
LEVEL 1 FINISHED AREA: 116 sq ft.
LEVEL 2 FINISHED AREA: 558 sq ft.
LEVEL 3 FINISHED AREA: 715 sq ft.
TOTAL AREA: 1390 sq ft.

LEVEL 2
SCALE: 1/4" = 1'-0"

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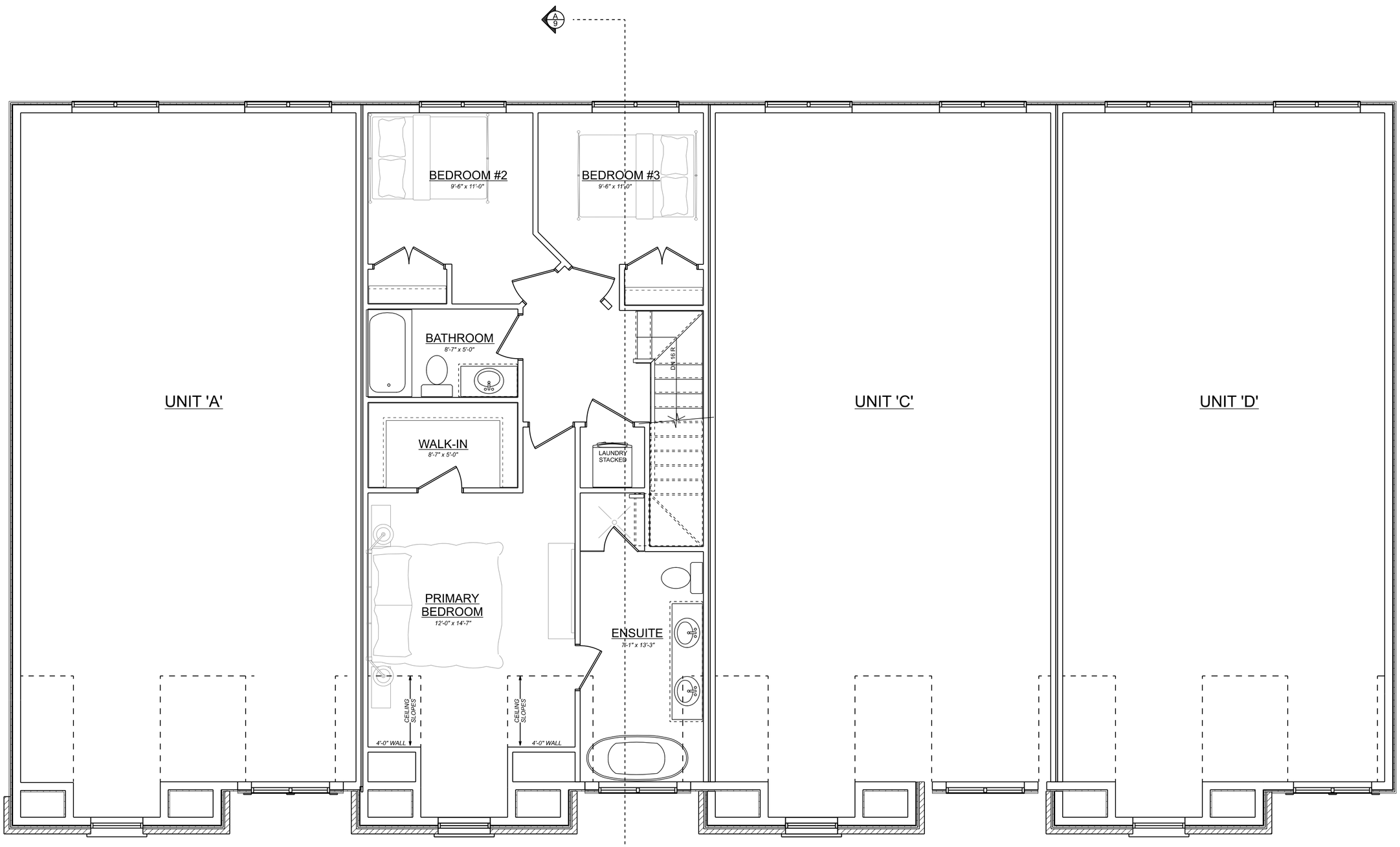
LEVEL 2

PROJECT NO: 22-102
STARTING DATE: Aug 16, 2022
LAST REVISION DATE: Sep 11, 2023
DRAWN BY: JF

SCALE: 1/4" = 1'-0"

A3



LEVEL 3
SCALE: 1/4" = 1'-0"

AREA SCHEDULE
LEVEL 1 FINISHED AREA: 116 sq ft.
LEVEL 2 FINISHED AREA: 558 sq ft.
LEVEL 3 FINISHED AREA: 715 sq ft.
TOTAL AREA: 1390 sq ft.

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LEVEL 3

PROJECT NO: 22-102
STARTING DATE: Aug 16, 2022
LAST REVISION DATE: Sep 11, 2023
DRAWN BY: JF

SCALE: 1/4" = 1'-0"

A4

FRONT ELEVATION

SCALE: 1/4" = 1'-0"

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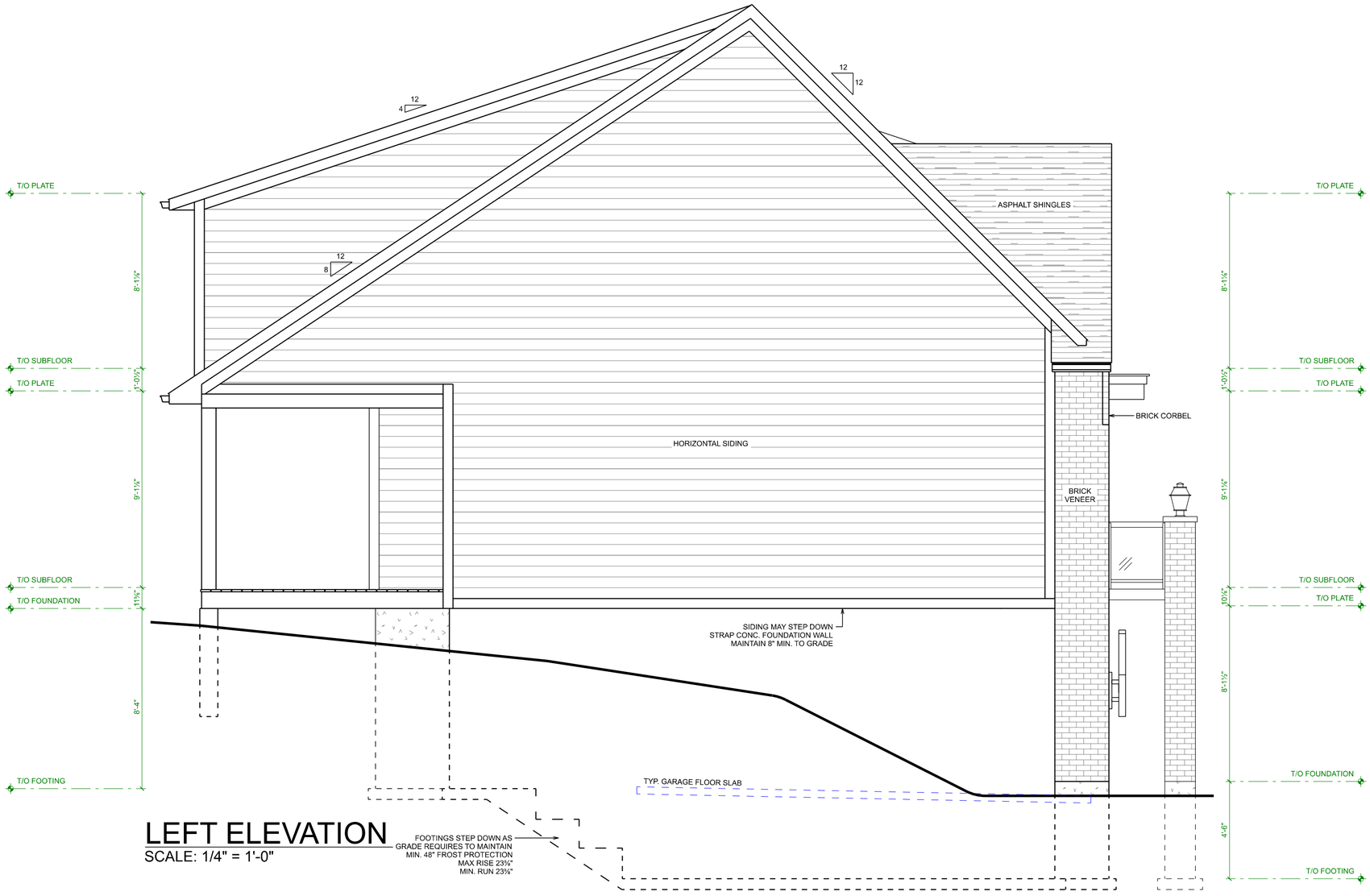
FRONT ELEVATION

PROJECT NO: 22-102
STARTING DATE: Aug 16, 2022
LAST REVISION DATE: Sep 11, 2023
DRAWN BY: JF

SCALE: 1/4" = 1'-0"

A5



LEFT ELEVATION

SCALE: 1/4" = 1'-0"

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GRAND VALLEY

LEFT ELEVATION

PROJECT NO: 22-102
STARTING DATE: Aug 16, 2022
LAST REVISION DATE: Sep 11, 2023
DRAWN BY: JF

SCALE: 1/4" = 1'-0"

A6

REAR ELEVATION

SCALE: 1/4" = 1'-0"

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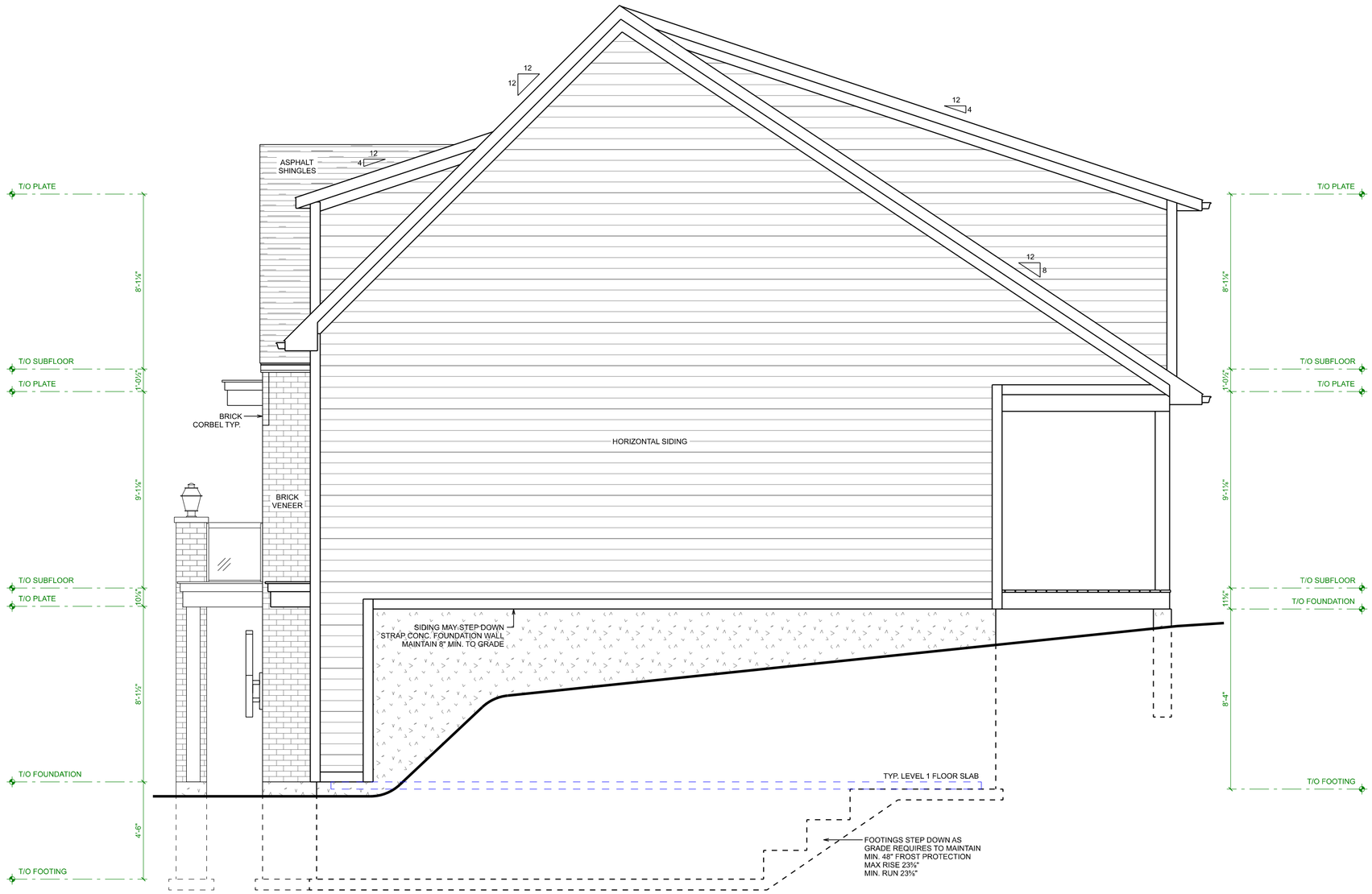
GRAND VALLEY

REAR ELEVATION

PROJECT NO: 22-102
STARTING DATE: Aug 16, 2022
LAST REVISION DATE: Sep 11, 2023
DRAWN BY: JF

SCALE: 1/4" = 1'-0"

A7



RIGHT ELEVATION

SCALE: 1/4" = 1'-0"

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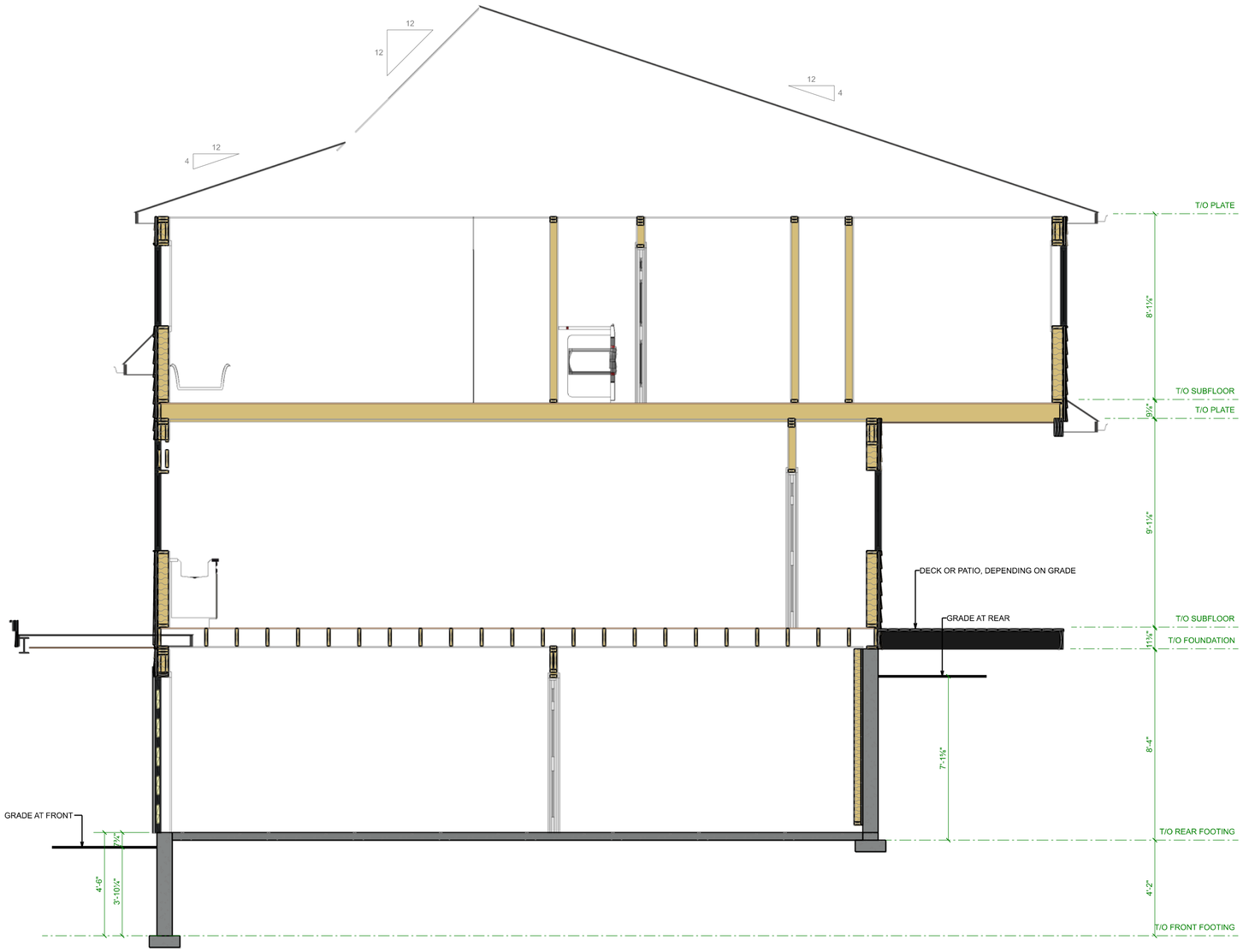
SHELDON CREEK DEVELOPMENTS
50 EMMA STREET
GRAND VALLEY

RIGHT ELEVATION

PROJECT NO: 22-102
STARTING DATE: Aug 16, 2022
LAST REVISION DATE: Sep 11, 2023
DRAWN BY: JF

SCALE: 1/4" = 1'-0"

A8



A/2 CROSS SECTION A
SCALE: 1/4" = 1'-0"

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TOWNHOME
SHELDON CREEK DEVELOPMENTS
50 EMMA STREET
GRAND VALLEY

CROSS SECTION A

PROJECT NO: 22-102
STARTING DATE: Aug 16, 2022
LAST REVISION DATE: Sep 11, 2023
DRAWN BY: JF

SCALE: 1/4" = 1'-0"

A9