February 11, 2022

The Owners, Strata Plan Plan VR 739
c/o WRM Strata Management & Real Estate Services Ltd.
202 – 1410 Alpha Lake Road
Whistler, BC V8E 0J3

Attn: Derek Pasenow, Strata Property Agent Email: derek@wrm.ca

Re: Tantalus Resort Lodge – 4200 Whistler Way, Whistler
Garage, Roof, and Siding Evaluation - DRAFT

Sense's Project No. 22vR006A

Dear Derek,

We are pleased to provide our garage, roof, and siding evaluation report for Tantalus Resort Lodge.

1.0 BACKGROUND

Tantalus Resort Lodge is a wood-framed four storey building with a separate two storey parking structure. The parking structure is pre-cast concrete. There is a combination of sloped and flat roofs. The building is clad with wood siding. Construction was completed circa 1979.

Photo 1: General Photo of Tantalus Resort Lodge

2.0 SENSE ENGINEERING'S SCOPE OF REVIEW

We completed the following, as per our proposal, dated November 9, 2021:

- Reviewed documents made available to us, including:
  - Architectural and structural plans by The Coal Harbour Architectural Group, dated July 9, 1979
  - Parking Garage – Water Ingress Issues report by McGrath Engineering Ltd, dated May 25, 2012
  - Condition Analysis Report by IRC Building Sciences Group, dated April 15, 2016
- Visually reviewed the exterior siding, roof, and parking garage.
- Removed overburden to review the parking garage roof slab waterproofing at three locations.
- Sounded sample areas of the top surface and underside of the concrete garage slabs to get an indication of the extent of concrete damage.
- Visually reviewed the interior of 10 suites (Suites 122, 214, 202, 307, 313, 316, 318, 423, 513, and 505) including recording the interior humidity conditions, and testing for bulk air exchange.
- With the assistance of a contractor, made 17 investigative openings in the building siding to review concealed framing conditions.
- Recorded moisture content of the exterior walls at 43 locations from moisture probes.
- Tested paint adhesion at 5 locations.
- Conducted sealant test cuts at 5 locations.

We completed our initial site review of the siding and garage on December 8, 2021. We also reviewed accessible areas of the main roofs; however, due to weather our full roof evaluation portion of the scope will need to be updated in the Spring when weather permits.

Our review was completed at representative sample areas that were made available for us to access during our site visit. Conditions may vary at other building areas that were not reviewed.

3.0 KEY FINDINGS

3.1 Roofing

3.1.1 Flat Roof General Construction

Based on *Sense Engineering*'s visual review, past reporting, and the original drawings, the flat roof assembly above the fifth floor generally consists of the following (from exterior to interior):

- Newer 2-ply modified bitumen roofing (applied over older roof)
- 2-ply modified bitumen roofing;
- 4" (100mm) EPS insulation;
- 1-ply modified bitumen roofing;
- Plywood sheathing;
- Tapered sleepers;
- 1x8 shiplap decking
- 2 - 2x12 (38x235) Joists at 24" (600mm) o.c.;

Photo 2: Fifth floor roof.

Based on *Sense Engineering*'s visual review, past reporting, and the original drawings, the flat roof deck and adjacent roof assembly at the 4th floor generally consists of the following (from exterior to interior):

- Washed gravel ballast or wood deck boards;
- EPS insulation;
- 2-ply modified bitumen roofing;
- 4" (100mm) EPS insulation;
- 1-ply modified bitumen roofing;
- Plywood sheathing;
- Tapered strapping;
- 2x12 (38x235) roof joists at 12" (300mm) o.c.;
- 5/8" Type X gypsum wall board;

Photo 3: Roof deck (red arrow) and adjacent flat fourth floor flat roof (blue arrow).

Based on *Sense Engineering*'s visual review, past reporting, and the original drawings, the raised fourth floor roof assembly (on the west side of the 4th floor roofs) generally consists of the following (from exterior to interior):


Photo 4: Fourth floor roof.

- 2-ply modified bitumen roofing;
- 1-2" (25-50mm) XPS insulation;
- Plywood sheathing;
- Tapered strapping;
- 2x12 (38x235) roof joists at 12" (300mm) o.c.;
- 5/8" Type X gypsum wall board;

There are also small flat roofs on the top of the chimneys which have 1-ply of modified bitumen roofing over plywood sheathing.

Based on previous reporting we understand the roofs were replaced circa 1994/1995.

3.1.2 Condition and Performance

3.1.2.1 Roofs have a history of leaks and most fifth floor roofs have been individually replaced

We understand that all of the fifth floor roofs have been replaced, except for the roofs above units 517 and 519. There was no past documentation available on the roof replacements but understand the roof replacement has been an ongoing repair plan to address some leaks at these roof areas. Where reviewed, the roofs appear to have been over-roofed on top of the proceeding roof membrane. The newer roof upturns were installed over the siding and have a layer of modified bitumen roofing loosely laid over the siding to lap over the new roofing.


Photo 5: Gap in loose laid wall waterproofing has left the improper lapped roofing exposed.

There are many gaps in the loose laid roof sheets on the walls, allowing moisture to get behind the roofing. There are also improper roof laps with siding (roofing is lapped over siding rather than under) creating multiple additional paths for water or snow to get behind the newer modified bitumen roofing.

Over-roofing is not a long-term repair strategy for roofs that have leaked previously as it can trap moisture and cause framing deterioration in the system and premature failure (i.e. blistering) of the newer roofing. Additionally, the original, hardened and inflexible modified bitumen roofing system restricts movement of both the new and old roofing, which can lead to ridging and blistering. It was difficult to review all of the horizontal roof areas of the roof due to snow accumulation and we will review these areas more in the Spring. Prior to replacement, any of the loose laid wall modified bitumen should be sealed and areas of gaps covered so that water can not get behind the roofing over the short term.

3.1.2.2 Exposed roof areas have signs of blistering, membrane cracking, and poor scupper and flashing interfaces.

Where reviewed at the visible roof areas at the fourth floor roofs and roof decks, the exposed modified bitumen roofing has cracks and crazing consistent with it being 25 years old. The cracking and crazing are signs that the membrane is losing its elasticity and flexibility and is becoming more susceptible to damage or blistering. As the membrane continues to harden, it is less able to move with thermal expansion of the building and is more prone to mechanical damage. We noted most upturns had cracking and crazing.

Photo 6: Cracking and crazing modified bitumen waterproofing.

The scuppers at the roofs are generally not well sealed and have open joints into the siding and parapet framing, creating opportunities for water ingress. Some of the membrane terminations on the edges of the scupper did not appear to be fully welded and had exposed modified bitumen base sheet, which is not UV stable, and is starting to degrade. At some of the fifth floor roof areas, the scuppers have been blocked off by new waterproofing leaving only a single internal roof drain as a means of drainage. If the primary drain were to get blocked, water could back up under siding or behind the roofing membrane. Providing a secondary means of drainage in case of primary drain blockage is good industry practice.

Photo 7: Open joint behind siding at scupper.

There are also plumbing vents that are not installed correctly. At one of the replaced roofs, the plumbing stack was not installed with the roofing and loosely installed over the vent and leaves the vent penetration susceptible to leakage. At other areas, the existing vent flashings are not properly sized for the vent pipe and have been crudely formed to fit the pipe, and installed without caps in some locations. Any unprotected gaps between the vent pipe and flashing can allow for water to leak into the roofing assembly or framing.

Photo 8: Plumbing vent flashing not secured or lapped with waterproofing.

The Strata should plan to replace the 4th floor roofs in the next three to four years.

3.1.2.3 Chimney roofing is cracked and crazed from UV exposure

The small chimney roofs have exposed modified bitumen base sheet installed as the waterproofing. The base sheet waterproofing is not UV stable and has cracked, crazed, and hardened where reviewed. The cap flashings are starting to rust and sealants at the chimney storm collars are also hardened, crazed, and cracked. These roofs and flashings should be replaced during the upcoming roof replacement project.

Photo 9: Exposed base sheet waterproofing at chimney.

Photo 10: Failing chimney vent sealant.

3.2 Sloped Roofs

3.2.1 General Construction

Based on *Sense Engineering*'s review and the architectural plans, the sloped roof assembly generally consists of the following (from exterior to interior):

- 24"x5/8" (600x16mm) cedar shake roofing;
- Roofing felt;
- Plywood sheathing;
- Roof joists with batt insulation in joist space (insulation over interior space only);
- Polyethylene vapour barrier (assumed over interior space only);
- ½" (13mm) gypsum wall board (assumed over interior space only);

Most of the sloped roofs are over exterior space and framing is exposed on the underside at these locations. We could not confirm venting of the sloped roofs but will review this in more detail in the Spring when roofs are easier to access.

3.2.2 Condition and Performance

3.2.2.1 Condition to be further reviewed in the Spring

We were unable to review much of the sloped cedar roofing and will review further in the Spring when weather permits. We are unaware of any leaks related to the sloped roofing at this time.

3.3 Exterior Walls

3.3.1 General Construction

Based on *Sense Engineering*'s wall openings and the architectural plans, the exterior wall assembly generally consists of the following (from exterior to interior):

- 1"x6" (19x140mm) shiplap cedar siding;
- Building paper;
- Plywood sheathing (assumed 3/8" thick);
- 2"x6" (38x140mm) wood studs, with R20 batt-fibre insulation within the stud cavity (assumed);
- 2 mil polyethylene vapor barrier (assumed);
- ½" (13mm) gypsum wall board.

There are also concrete masonry unit firewalls that separate the units between every second unit that extend the full height of the building.

3.3.2 Condition and Performance

3.3.2.1 Cedar siding is weathered and warped, and is allowing moisture into the wall assembly

The cedar siding is installed in a concealed barrier fashion, with no provision for drainage behind the siding. The walls rely on the caulking and a continuous cedar siding barrier to keep bulk water from penetrating the face of the cladding and accessing the moisture-sensitive materials behind. This type of wall system does provide the same level of protection as drained wall systems that are now the industry standard and a building code requirement. Water that leaks past the face of the siding can damage plywood sheathing, wooden framing, and supporting fasteners.

Photo 11: Weathered siding on the south elevation.

The cedar siding is weathered, warped, and cracked on the south, east, and west elevations at areas with high exposure (e.g., wall ends, and areas not protected by a roof or balcony overhang). For the purposes of this report, we have assumed that the building lobby faces west. The siding is also in poor condition at all elevations at the roof parapets and roof deck walls. The paint at these areas is poorly adhered to the siding, and is flaking off in a number of areas. At other more protected areas (i.e. under roof and balcony overhangs), the siding is still generally in serviceable condition, with paint being well adhered to the siding.

Photo 12: Paint adhesion test showing good paint adhesion, taken at a protected wall area on the balcony at Suite 202.

Photo 13: Paint adhesion test showing poor paint adhesion, taken at an exposed wall area from the balcony at Suite 202.

Photo 14: Damaged paint and weathered siding at exposed rooftop areas.

The siding was generally sealed to the wall and window trims throughout; however, the sealant at trim joints and wall corners was crazed, cracked, hardened, and failed, allowing some water to bypass the wood siding to the building paper and wood sheathing. At 6 of 17 wall openings, we found water staining, typically concentrated at the inside or outside corner.

Photo 15: Moisture staining at inside corner.

Moisture levels of the wall sheathing closer to the trim and wall corners was generally elevated compared to the moisture readings taken at the field of the wall sheathing away from the joints. Although there is water staining on the building paper and wall sheathing behind the siding to trim joints at the wall opening locations, we did not note any areas where wood framing or sheathing rot had occurred. The elevated moisture content found at most of the areas reviewed and signs of water staining can lead to damaged interior finishes and promote mould growth, particularly on interior drywall.

Given its' condition, we recommend that the siding be replaced at all building areas with a drained cavity system, since the sheltered wall areas are small in relation to unsheltered walls. Should the Strata not replace all of the siding, all trim and corner joints should be sealed to better protect against moisture getting into the walls.

3.3.2.2 Siding is deteriorating close to grade level and at roof level

At some locations, the cedar siding extends close to grade level or close to the roof level. The siding at these areas was typically wet, paint was peeling off boards and boards were rotten. This is from snow build up against the walls over prolonged periods of time or rain splashing onto the walls, keeping the siding wet for longer periods of time. When siding is replaced in these areas, the bottom of the siding should be raised to allow a minimum of 12" (300mm) clearance between the bottom of the siding and grade or the roof. Alternative siding material could be considered in these areas, such as metal panels, that would be more durable than wood or fibre cement siding.

Photo 16: Deteriorated siding just above grade.

3.3.2.3 Concrete masonry is in need of local crack repairs

Generally, the concrete masonry walls appear to be in good condition, with some areas of cracked mortar or masonry units, and blistered paint at exposed areas. Although cracking is minor, water can penetrate these cracks and potentially cause further damage to paint and the masonry. During upcoming siding repairs, concrete masonry should be repaired where cracked and blistered paint should be stripped, and new paint applied at these areas. The tops of the concrete masonry walls should also be better protected to direct water away from the masonry units to prevent future paint blistering.

Photo 17: Cracked masonry unit.

Photo 18: Cracked mortar, and blistered paint at a masonry wall.

3.3.2.4 Unpainted window trim should be painted to improve durability

We understand that the windows and sliding doors were recently replaced. The trim and sealant around the windows and doors is generally in good condition; however there are some areas where the trim was left bare at cut edges or paint on boards were applied thin and there are bare, unprotected areas of wood. Trim boards should be repainted where required to improve durability.

There is also an active leak at the bedroom window head of Suite 313. There was moisture staining starting at the window head and pooling at the sill. We suspect that the leakage is from the window perimeter as the wall framing below this window was dry and free of moisture staining. The window trim should be removed and waterproofing reviewed for defects.

Photo 19: Unpainted cut end of trim board.

Photo 20: Damaged trim paint.

3.4 Parking Garage

3.4.1 General Construction

Based on *Sense Engineering*'s investigative openings, the garage roof slab assembly consists of the following at the landscaped areas (from top to bottom):

- 10-12" soil;
- Filter fabric;
- Drainage board;
- Hot rubberized asphalt waterproofing;
- Pre-cast concrete double tee beams supported on precast walls.

At the tennis court, the garage roof assembly appears to consist of the following (from top to bottom):

- Asphalt paving;
- Hot rubberized asphalt waterproofing (assumed);
- Pre-cast concrete double tee beams supported on precast walls.

The garage intermediate suspended slab is comprised of pre-tensioned, precast concrete double tee beams supported on precast beams, columns and walls covered with a concrete topping. The intermediate slabs are not waterproofed.

Exterior walls are precast with sealant joints between panels. As building drawings are not available, we are unable to confirm the type of foundations for the exterior walls. Interior non-load bearing walls are concrete block masonry.

3.4.2 Condition and Performance

3.4.2.1 Tennis court has had past repairs

Photo 21: Cracked asphalt surface at a tennis net post.

The tennis court area has had a layer of modified bitumen waterproofing installed at the perimeter, likely in an effort to reduce leakage into the parking garage. The waterproofing appears to be installed over the concrete perimeter curb and lapped onto the asphalt walking surface; however, it does not lap with the original garage roof slab waterproofing. While this repair may reduce the amount of water that can get into the garage from the perimeter curbs, it does not stop prevent water from travelling underneath the asphalt surface. Water can get underneath the asphalt through penetrations or defects in its surface or at unrepaired perimeters. Once under the asphalt, water can travel horizontally until it finds a defect in waterproofing and leak into the garage. Where reviewed at one tennis net post, the asphalt has cracked and is allowing water into the roof assembly below. Depending on when garage roof slab repairs will be completed, local repairs may be needed to help protect the concrete below and prevent leaks into the garage.

3.4.2.2 Some adjacent suspended slab panels are misaligned

Some adjacent pre-cast roof slab panels on the P2 level are misaligned at abutting flanges, measured between 4” to 6” misalignment at some areas. There were no cracks or displacement of the concrete topping on the P1 level that would suggest that the panels have moved since original construction. The P1 slab should be monitored for cracks at these panel joints.

Photo 22: Misalignment between panels at double tee joint.

3.4.2.3 Various concrete repairs are required

The garage structure has been damaged as a result of exposure to water and likely de-icing salts over the life of the garage. Damage includes:

- Corbels (concrete projections extending out of walls that support the precast double tee beams) are spalled, cracked, or have exposed rebar.

- Efflorescence (white staining that is indicative of past or present water leakage) was found on the underside of the double tee beams.
- Top surface concrete around the perimeter of the suspended slab is spalled and delaminating.
- Concrete over steel pre-cast panel ties at walls is spalling, and ties are rusted.
- There are cracks in the concrete topping over most double tee beam joints, but the extent of top surface damage to the topping below appears to be minimal.
- Concrete walls of the stairwells are damaged and spalling.

Structural damage is mainly concentrated at corbels; however, there are a few isolated areas where concentrated water flow has caused moderate-to-severe concrete damage throughout P1 and P2.

Photo 23: Corbels are spalled, and delaminating.

Photo 24: Exposed rebar in the roof slab soffit.

Photo 25: Large delamination in the staircase wall.

3.4.2.4 Significant volumes of water are entering the garage through failed roof slab waterproofing at double tee joints.

The majority of the water that is causing damage to the parking garage structure is entering through the pre-cast double tee beam joints in the garage roof slab. It appears that the panel joints were pre-stripped with an asphaltic sheet waterproofing before the field garage roof slab waterproofing was applied overtop. Movement at the panel joints has likely created breaches in the waterproofing as it ages and becomes less flexible.

Photo 26: Roof slab membrane has split at a double tee joint.

Of our three inspection pit openings we found two locations where the waterproofing was poorly bonded, although no water was observed under the waterproofing at these locations. These inspection pit areas were not over joints between panels, where there was moisture observed under the waterproofing. There are also areas of the roof slab perimeter waterproofing that has de-bonded and defects that would allow water behind the waterproofing.

The roof slab leaks have been addressed by installing drip trays at most of the panel joints inside the garage, which direct water to the wall panel joints, resulting in steel wall clips are rusting. Scupper drains have also been installed at the roof slab waterproofing wall upturns, likely to reduce the amount of water leaking into the garage. These scupper repairs were poorly installed with exposed UV sensitive modified bitumen that is not watertight around the opening.

Photo 27: debonding and split waterproofing at curb.

Photo 28: Loose base sheet at scupper.

Based on the widespread roof slab leaks, it appears that the garage roof slab waterproofing has generally failed. We recommend that the garage roof slab waterproofing be replaced to prevent further damage to the structure and property inside the garage.

3.4.2.5 The intermediate garage slab is not waterproofed and is deteriorating

Photo 29: The unprotected suspended slab topping has delaminated.

The suspended intermediate slab is not waterproofed to help prevent leaking into garage areas below and reduce concrete damage. Current building code requires that suspended slabs in parking garages be protected from deterioration mechanisms like corrosion of reinforcing steel resulting from exposure to water and salts. Specifically, water entering cracks and joints in the garage structures can cause reinforcing steel in the concrete to corrode. When steel corrodes, it causes concrete to delaminate (i.e. cause pieces of concrete to break off). The additional water ingress concentrated below roof slab drip trays has accelerated the damage to the suspended slab. Even though the intermediate slab topping is not significantly damaged away from walls, waterproofing the top surface of the intermediate slab will reduce future wetting and structural deterioration at these locations.

The parking garage repair project should include waterproofing suspended floors after concrete repairs and roof slab repairs are completed.

In addition to the damage at the suspended slab perimeters, the concentrated water from the drip trays has resulted in spalling of the concrete at the steel wall panel ties at a number of locations.

Photo 30: Drip tray directing water to a wall joint, resulting in spalling of the concrete around a steel tie.

Photo 31: Network of connected drip trays directing water to an area drain.

Where concrete has spalled, ties should be cleaned of rust and epoxy coated, concrete repaired, and drip trays removed. If drip trays are reinstalled at a later date, they should be directed away from wall joints, ideally into area drains.

3.4.2.6 Intermediate suspended slab area drains discharge onto slab-on-grade

Area drains on the intermediate suspended slab are not tied into the plumbing system, and discharge water onto the slab-on-grade. While it does not appear that this has caused significant concrete damage yet, these drains should be properly integrated into the garage's plumbing system as part of the garage repair project.

Photo 32: Area drain discharging onto the slab-on-grade.

3.4.2.7 Electrical and plumbing systems are water damaged and should be repaired

There are several electrical receptacles, junction boxes, and electrical conduits inside the garage that are water damaged. Water around electrical services could disrupt power to the complex and may be a safety hazard. These fixtures should be replaced as part of the garage repair project.

Photo 33: Water damaged electrical box.

3.4.2.8 Slab-on-grade drain cover is broken and is a tripping hazard

One drain grate has broken and is sitting approx. 2" (50mm) below the surrounding slab height. This drain is a tripping hazard and the drain grate should be replaced.

Photo 34: Cracked drain grate.

3.4.2.9 Sealant at pre-cast wall joints is cracked, and no longer providing protection against water ingress

Where reviewed at the exterior pre-cast wall joints, existing sealant is generally stiff and cracked, potentially allowing water into the joint cavity. All wall sealant should be removed and replaced as part of the garage repair project.

Exterior paint is also flaking off at some areas, including at the garage entrance vestibule soffit. Where paint is poorly adhered, it should be removed, and new paint installed.

Photo 35: Sealant at panel joints is split.

3.5 Miscellaneous

3.5.1.1 Birds nests at corbels on the lower garage level

Where reviewed at a few locations on the lower level of the parking garage, there are bird nests on the corbels. The Strata should contact the local animal control authority to coordinate their removal and develop a plan to deter birds from nesting in the garage.

Photo 36: Birds nest at a corbel.

3.5.1.2 Balcony structure is atypical and does not protect moisture sensitive components.

The balconies are a drain-through design supported with pressure treated exterior posts and beams that are tied back to the structure with a ledger board and steel angles. Some of the balcony posts are spliced at various points mid height between floors and connected on two sides with steel plates and through bolts. This type of splice is not typical and creates a weak point in the post.

Photo 37: Balcony post splice mid-height.

Photo 38: Framing starting to deteriorate at base of posts.

The drain-through balcony design does not protect moisture sensitive components of the balconies from related deterioration. Our review did not include the balconies but we did observe rust staining on the hardware and weathering of structural components where exposed to wetting. The Strata should consider a balcony evaluation to check that balcony posts are installed to meet load requirements and review for deterioration of framing members.

4.0 DISCUSSION

There are several building envelope and garage repair and maintenance items that should be considered by the Strata, some items being more urgent than others. Depending on the Strata's tolerance for leaks and desire to carry out larger-scale repairs on envelope components, the phasing of these projects could be adjusted.

Structural repairs to the corbels in the garage will require pre-cast sections to be temporarily shored until the concrete cures enough to support the pre-cast sections. Once these repairs are completed, the roof slab should be re-waterproofed to provide a reasonably dry environment for subsequent interior garage repairs (i.e., concrete topping, electrical, and drainage repairs, suspended slab waterproofing). Painting and sealant work should be completed at the same time to restore the water-tightness of the garage exterior.

We identified localized issues with the cedar cladding that in typical circumstances could be considered for repairs through a targeted repair program. These repairs could include replacement of high exposure damaged siding, trim, and sealant to address the leakage that is causing moisture staining behind the siding. However, based on EcoHazMat's hazardous materials testing report, the siding paint contains leachable lead. This has a large impact on the cost and overall approach to managing siding as leachable lead materials require stringing handling and disposal methods. These handling requirements also limit the ability to locally replace small sections of siding, as workers are unable to generate any airborne particulates via sawing, cutting, etc., during removal of deteriorated, contaminated siding. Based on this, and considering the efficiencies of scale for completing abatement work at one time and relatively small areas of sheltered siding, we recommend that all siding be replaced. This also presents an opportunity to replace the concealed barrier system with a more durable drainage cavity system, modernize the building's appearance, increase the overall airtightness of the enclosure, and potentially add exterior insulation to decrease the heating requirements of the building. We understand that the windows and sliding doors have recently been replaced. We have not included for re-waterproofing of the window and door rough openings in the siding replacement project; however, existing window detailing should be confirmed prior to siding replacement. If the existing window and door openings are not waterproofed or waterproofed incorrectly, we would recommend removing and reinstalling windows to allow for rough opening waterproofing during the siding replacement.

We understand that the roofs have been repaired on an as-needed basis. We have included an option to replace the roofs in conjunction with the siding to reduce overall costs since the roofs will need to be accessed for the siding replacement project. Alternatively, the roofs could continue to be replaced on an as-needed basis to allow for funds to be saved so that the general roof replacement project can occur following the siding replacement. The rooftop decking at upper floor roof decks is also aged, and in need of replacement at a number of locations and should be replaced when the roofs are replaced.

5.0 REPAIR OPTIONS

We have prepared two options for the building envelope repairs, for the Strata's consideration.

Breakdowns for the Opinion of Costs can be found in Appendix A. All budgets are presented in today's dollars.

Over the past few years, construction costs have increased significantly due to the high demand for construction work. While our Opinion of Costs are based on recent pricing received for similar projects, it is very difficult to predict market conditions. Actual pricing may be much higher, depending on when contractor pricing is obtained.

5.1 Option 1 – Phased Envelope Repairs

General Description:

This option is a phased repair program that allows the Strata to concentrate repair efforts at locations where the deterioration is the greatest (i.e. at the garage), while completing additional envelope repairs in subsequent years.

Scope of Repair:

Garage Repairs (2023)

- Remove existing hard and soft landscaping over the garage roof slab.
- Complete concrete repairs to the garage structure.
- Install new waterproofing over the garage roof slab.
- Install new suspended slab waterproofing.
- Add new drains to the suspended slab where slope is required.
- Replace sealant at exterior wall panel joints.
- Install new hard and soft landscaping.

Siding Replacement (2024)

- Remove existing siding to expose framing. Disposal to be completed to abatement requirements.
- Complete framing repairs, where required.
- Install new rainscreen fibre cement siding.
- Replace cap flashings at the top of walls.
- Locally repair CMU walls where cracked.

Roof Replacement (2026)

- Remove existing deck boards and ballast.
- Remove existing 4th and 5th floor modified bitumen roofing and insulation to expose the framing.
- Complete framing repairs, where required.
- Install new vapour barrier, insulation, and modified bitumen roofing
- Install new decking at roof deck areas.
- Replace cedar shake roofs.
- Replace chimney cap flashings.

Advantages/Benefits:

- Gets repairs done where they are most urgently needed while allowing time for the Strata to save funds for future repairs.

Disadvantages/Risks:

- Greater risk of water damage to property, particularly at roofs.
- Increased inconvenience of multiple repair projects.
- Increased overall project costs.

Opinion of Costs:

Year	2023	2024	2025	2026

Costs	$ 1,958,000	$ 6,432,000		$ 3,402,000

5.2 Option 2 – Single Phase Envelope Repairs

General Description:

This option completes all of the recommended roof, and siding repairs at one time to reduce overall costs, inconvenience, and risk of property damage but increases the immediate financial burden on Strata members. The garage repairs are completed prior to the roof and siding repairs in 2023, similar to option 1.

Scope of Repair:

The same as in Option 1 but Phases 2 and 3 are completed as one project in 2025.

Advantages/Benefits:

- Reduced overall repair cost.
- Less inconvenience to Strata.
- Reduced risk of property damage related to leakage.

Disadvantages/Risks:

- Increased immediate financial burden to Strata.

Opinion of Costs:

Year	2023	2024	2025	2017	2018	2019
Costs	$ 1,958,000		$ 9,650,000			

6.0 CLOSING

We expect this report meets your immediate needs. Should you have any questions or concerns regarding our report, please feel free to contact us at the numbers below. Should you require our assistance with implementing the recommended repairs, we would be pleased to assist. As per the Opinion of Costs, we could assist with preparing a detailed scope of work, acquiring contractor pricing, and reviewing the work as it is completed.

Yours truly,
Sense Engineering

[Final Signed]

Jonty Sizer, EIT
Project Associate (604) 655-4186

[Final Signed]

Kieran Bjornson, EIT
Project Manager (604) 319-5661

[Final Signed and Sealed]

Brennan Vollering, M.A.Sc., P.Eng., LEED AP
Project Principal (604) 365-3664

Attachments:
Appendix A – Opinion of Costs
Appendix B – Exterior Openings
Appendix C – Moisture Readings
Appendix D – Moisture Reading and Opening Locations
Appendix E – Limitations

The following are our opinion of costs for the remedial work described in this report. They are calculated using quantities obtained from the building drawings and during our evaluation and information we have obtained from similar projects. As *Sense Engineering* has no control over contractor pricing, actual costs will vary depending upon the time of tender, schedule of work and conditions under which the work must be carried out. Final construction costs may vary as concealed conditions may differ from assumptions made at the time of our evaluation.

Sense Engineering has not investigated the presence of pollutants, contaminants and hazardous materials that may be encountered during the work. Depending on the materials present, additional funds may be required for remediation measures.

As every project has its own peculiarities, actual costs can only be established by obtaining bids, preferably on the basis of competitive tenders, from specialized contractors. The costs provided herein should only be used for comparison of options and general budgeting.

Due to the age of the building, remedial work requiring a building permit may trigger other unrelated building upgrades. Whether these upgrades will be required depends on the authority having jurisdiction and often varies case by case. Budgets for unrelated building upgrades are not included in our opinion of costs.

We have provided our opinion of cost for Engineering Services During Construction, which may include Project Management, Construction Review, and Contract Administration. Unless otherwise indicated, our fees would be charged on a weekly basis. The total budgeted fees are based on an estimated construction duration. The actual total Engineering fees during construction may vary, depending on the contractor's schedule.

All costs have been rounded up to the nearest $1,000, unless otherwise shown.

All costs are in today's dollars.

Option 1 - Phase 1 (2023)

Item No.	Description	Opinion Of Cost
1	**Access and Mobilization**	
1.1	Access and Mobilization	$75,000
1.2	Site Protection	$23,000
2	**Garage Roof Slab Repairs**	
2.1	Demolition and Excavation	$218,000
2.2	Structural Concrete Repairs (Allowance)	$30,000
2.3	Additional Roof Drain Installation	$14,000
2.4	Garage Roof Slab Topping Repairs	$8,000
2.5	Garage Roof Slab Re-Waterproofing	$469,000
2.6	Tennis Court Surface & Fencing	$69,000
2.7	Landscaping Area	$66,000
3	**Garage Repairs**	
3.1	Drip Tray Removal	$3,000
3.2	Concrete Surface Repairs (Allowance)	$30,000
3.3	Corbel Repairs	$38,000
3.4	Shoring (Allowance)	$20,000
3.5	Additional Area Drains	$13,000
3.6	New Drain Plumbing	$16,000
3.7	Suspended Slab Waterproofing	$144,000
3.8	Route and Seal Pre-Cast Slab Joints	$18,000
3.8	Pre-Cast Wall Joint Sealant Replacement	$30,000
3.9	Re-Painting Garage Exterior	$35,000
3.10	Drain Grate Replacement	$1,000
3.11	Electrical Repairs (Allowance)	$20,000
4	**Other**	
4.1	Miscellaneous Repairs (Allowance)	$50,000
4.2	Trade and Street Permits (Allowance	$5,000
4.3	Bonding (May Be Deleted by Owner)	$28,000
	Construction Cost Sub-Total:	$1,423,000
5	**Building Permit**	$12,000
6	**Engineering**	
6.1	Prepare Specifications and Drawings	$12,000
6.2	Consulting Fees to Apply for Building Permit	$2,000
6.3	Tendering	$3,000
6.4	Project Management, Construction Review, and Contract Administration	$135,000
6.5	Structural Repair Design During Construction (Allowance)	$10,000

6.6	Reimbursable Expenses	$6,000
7	**Other Soft Costs**	
7.1	Arborist Services	$5,000
7.2	Land Surveying	$5,000
7.3	Landscape Architect Services	$10,000
8	**Engineering and Construction Contingency (15%)**	$241,000
	Sub-Total Including Soft Costs:	$1,864,000
9	**Taxes**	$94,000
	Option 1 - Phase 1 Total:	$1,958,000

Option 1 - Phase 2 (2024)

Item No.	Description	Opinion Of Cost
1	**Access and Mobilization**	
1.1	Scaffolding - Labour	$317,000
1.2	Scaffolding - Rental	$507,000
1.3	Scaffolding - Debris Netting	$108,000
1.4	Scaffolding - Shrink Wrap	$83,000
1.6	Site Protection	$50,000
2	**Siding Repairs**	
2.1	Demolition & Abatement	$621,000
2.2	Framing Repairs (Allowance)	$50,000
2.3	Siding Renewal	$2,896,000
2.4	Masonry Re-pointing	$5,000
2.5	Masonry Re-painting	$59,000
3	**Other**	
3.1	Miscellaneous Repairs (Allowance)	$75,000
3.2	Trade and Street Permits (Allowance	$5,000
3.3	Bonding (May Be Deleted by Owner)	$96,000
	Construction Cost Sub-Total:	$4,872,000
4	**Building Permit**	$39,000
5	**Engineering**	
5.1	Prepare Specifications and Drawings	$15,000
5.2	Consulting Fees to Apply for Building Permit	$2,000
5.3	Tendering	$3,000
5.4	Project Management, Construction Review, and Contract Administration	$375,000
5.5	Structural Repair Design During Construction (Allowance)	$10,000
5.6	Reimbursable Expenses	$10,000
6	**Engineering and Construction Contingency (15%)**	$799,000
	Sub-Total Including Soft Costs:	$6,125,000
7	**Taxes**	$307,000
	Option 1 - Phase 2 Total:	$6,432,000

Option 2 - Phase 3 (2026)

Item No.	Description	Opinion Of Cost
1	**Access and Mobilization**	
1.1	Access and Mobilization	$70,000
1.6	Site Protection	$21,000
2	**Roof Repairs**	
2.1	Demolition	$350,000
2.2	Modified Bitumen Roofing Replacement	$1,749,000
2.3	Sloped Roofing Replacement	$202,000
2.4	Chimney Cap Flashing Replacement	$84,000
2.5	Wood Decking Replacement	$87,000
2.6	Framing Repairs (Allowance)	$25,000
3	**Other**	
3.1	Miscellaneous Repairs (Allowance)	$25,000
3.2	Trade and Street Permits (Allowance	$5,000
3.3	Bonding (May Be Deleted by Owner)	$53,000
	Construction Cost Sub-Total:	$2,671,000
4	**Building Permit**	$22,000

5	**Engineering**	
5.1	Prepare Specifications and Drawings	$10,000
5.2	Consulting Fees to Apply for Building Permit	$2,000
5.3	Tendering	$3,000
5.4	Project Management, Construction Review, and Contract Administration	$98,000
5.5	Structural Repair Design During Construction (Allowance)	$5,000
5.6	Reimbursable Expenses	$6,000
6	**Engineering and Construction Contingency (15%)**	$423,000
	Sub-Total Including Soft Costs:	$3,240,000
7	**Taxes**	$162,000
	Option 1 - Phase 3 Total:	$3,402,000

Option 2 - Phase 1 (2023)

Item No.	Description	Opinion Of Cost
1	**Access and Mobilization**	
1.1	Access and Mobilization	$75,000
1.2	Site Protection	$23,000
2	**Garage Roof Slab Repairs**	
2.1	Demolition and Excavation	$218,000
2.2	Structural Concrete Repairs (Allowance)	$30,000
2.3	Additional Roof Drain Installation	$14,000
2.4	Garage Roof Slab Topping Repairs	$8,000
2.5	Garage Roof Slab Re-Waterproofing	$469,000
2.6	Tennis Court Surface & Fencing	$69,000
2.7	Landscaping Area	$66,000
3	**Garage Repairs**	
3.1	Drip Tray Removal	$3,000
3.2	Concrete Surface Repairs (Allowance)	$30,000
3.3	Corbel Repairs	$38,000
3.4	Shoring (Allowance)	$20,000
3.5	Additional Area Drains	$13,000
3.6	New Drain Plumbing	$16,000
3.7	Suspended Slab Waterproofing	$144,000
3.8	Route and Seal Pre-Cast Slab Joints	$18,000
3.8	Pre-Cast Wall Joint Sealant Replacement	$30,000
3.9	Re-Painting Garage Exterior	$35,000
3.10	Drain Grate Replacement	$1,000
3.11	Electrical Repairs (Allowance)	$20,000
4	**Other**	
4.1	Miscellaneous Repairs (Allowance)	$50,000
4.2	Trade and Street Permits (Allowance	$5,000
4.3	Bonding (May Be Deleted by Owner)	$28,000
	Construction Cost Sub-Total:	$1,423,000
5	**Building Permit**	$12,000
6	**Engineering**	
6.1	Prepare Specifications and Drawings	$12,000
6.2	Consulting Fees to Apply for Building Permit	$2,000
6.3	Tendering	$3,000
6.4	Project Management, Construction Review, and Contract Administration	$135,000
6.5	Structural Repair Design During Construction (Allowance)	$10,000
6.6	Reimbursable Expenses	$6,000
7	**Other Soft Costs**	
7.1	Arborist Services	$5,000
7.2	Land Surveying	$5,000
7.3	Landscape Architect Services	$10,000
8	**Engineering and Construction Contingency (15%)**	$241,000
	Sub-Total Including Soft Costs:	$1,864,000
9	**Taxes**	$94,000
	Option 1 - Phase 1 Total:	$1,958,000

Option 2 - Phase 2 (2025)

Item No.	Description	Opinion Of Cost
1	**Access and Mobilization**	
1.1	Scaffolding - Labour	$317,000
1.2	Scaffolding - Rental	$507,000
1.3	Scaffolding - Debris Netting	$108,000
1.4	Scaffolding - Shrink Wrap	$83,000
1.6	Site Protection	$75,000
2	**Siding Repairs**	
2.1	Demolition & Abatement	$621,000
2.2	Framing Repairs (Allowance)	$50,000
2.3	Siding Renewal	$2,896,000
2.4	Masonry Re-pointing	$5,000
2.5	Masonry Re-painting	$59,000
3	**Roof Repairs**	
3.1	Demolition	$350,000
3.2	Modified Bitumen Roofing Replacement	$1,749,000
3.3	Sloped Roofing Replacement	$202,000
3.4	Chimney Cap Flashing Replacement	$84,000
3.5	Wood Decking Replacement	$87,000
3.6	Framing Repairs (Allowance)	$25,000
4	**Other**	
4.1	Miscellaneous Repairs (Allowance)	$75,000
4.2	Trade and Street Permits (Allowance	$5,000
4.3	Bonding (May Be Deleted by Owner)	$146,000
	Construction Cost Sub-Total:	$7,444,000
5	**Building Permit**	$59,000
6	**Engineering**	
6.1	Prepare Specifications and Drawings	$16,000
6.2	Consulting Fees to Apply for Building Permit	$2,000
6.3	Tendering	$3,000
6.4	Project Management, Construction Review, and Contract Administration	$447,000
6.5	Structural Repair Design During Construction (Allowance)	$10,000
6.6	Reimbursable Expenses	$10,000
7	**Engineering and Construction Contingency (15%)**	$1,199,000
	Sub-Total Including Soft Costs:	$9,190,000
8	**Taxes**	$460,000
	Option 2 - Phase 2 Total:	$9,650,000

Opening No.	Opening Type	Date of Opening	Weather
1	Wall	December 8, 2021	Cloud (2ºC)

Assembly Construction

Location: Suite 106, west elevation, underneath corner of window

Assembly (exterior to interior):

- Shiplap cedar siding
- Building paper
- Plywood sheathing
- 38mm x 140mm wood framing with fibreglass batt insulation
- Polyethylene sheet vapour retarder
- Drywall

Notes/Observations

- No evidence of moisture or leakage
- No damage on sheathing or framing
- Wood moisture content: 15.6%

Photo 1: Opening location.

Photo 2: Close-up view of opening.

Opening No.	Opening Type	Date of Opening	Weather
2	Wall	December 8, 2021	Cloud (2ºC)

Assembly Construction

Location: Suite 108, south elevation, corner of wall

Assembly (exterior to interior):

- Shiplap cedar siding
- Building paper
- Plywood sheathing
- 38mm x 140mm wood framing with fibreglass batt insulation
- Polyethylene sheet vapour retarder
- Drywall

Notes/Observations

- Minor staining on sheathing
- Wood moisture content: 24.9%

Photo 3: Opening location.

Photo 4: Close-up view of opening.

Opening No.	Opening Type	Date of Opening	Weather
3	Wall	December 8, 2021	Cloud (2ºC)

Assembly Construction

Location: Roof parapet, south elevation

Assembly (exterior to interior):

- Shiplap cedar siding
- Building paper
- Plywood sheathing

Notes/Observations

- No evidence of moisture or leakage
- No damage on sheathing or framing

Photo 5: Opening location.

Photo 6: Close-up view of opening.

Opening No.	Opening Type	Date of Opening	Weather
4	Wall	December 8, 2021	Cloud (2ºC)

Assembly Construction

Location: Suite 122, west elevation, corner of wall

Assembly (exterior to interior):

- Shiplap cedar siding
- Building paper
- Plywood sheathing
- 38mm x 140mm wood framing with fibreglass batt insulation
- Polyethylene sheet vapour retarder
- Drywall

Notes/Observations

- Minor staining on sheathing in corner
- Wood moisture content: 18.8%

Photo 7: Opening location.

Photo 8: Close-up view of opening.

Opening No.	Opening Type	Date of Opening	Weather
5	Wall	December 8, 2021	Cloud (2ºC)

Assembly Construction

Location: Suite 124, west elevation, below the window

Assembly (exterior to interior):

- Shiplap cedar siding
- Building paper
- Plywood sheathing
- 38mm x 140mm wood framing with fibreglass batt insulation
- Polyethylene sheet vapour retarder
- Drywall

Notes/Observations

- No evidence of moisture or leakage
- No damage on sheathing or framing
- Wood moisture content: 20.1%

Photo 9: Opening location.

Photo 10: Close-up view of opening.

Opening No.	Opening Type	Date of Opening	Weather
6	Wall	December 8, 2021	Cloud (2ºC)

Assembly Construction

Location: Suite 323, south elevation, wall corner

Assembly (exterior to interior):

- Shiplap cedar siding
- Building paper
- Plywood sheathing
- 38mm x 140mm wood framing with fibreglass batt insulation
- Polyethylene sheet vapour retarder
- Drywall

Notes/Observations

- Moisture on sheathing and paper
- No damage on sheathing or framing
- Wood moisture content: 33.6%

Photo 11: Opening location.

Photo 12: Close-up view of opening.

Opening No.	Opening Type	Date of Opening	Weather
7	Wall	December 8, 2021	Cloud (2ºC)

Assembly Construction

Location: Suite 323, east elevation, below the window

Assembly (exterior to interior):

- Shiplap cedar siding
- Building paper
- Plywood sheathing
- 38mm x 140mm wood framing with fibreglass batt insulation
- Polyethylene sheet vapour retarder
- Drywall

Notes/Observations

- Moisture on sheathing and paper
- Wood moisture content: 29.2%

Photo 13: Opening location.

Photo 14: Close-up view of opening.

Opening No.	Opening Type	Date of Opening	Weather
8	Wall	December 8, 2021	Cloud (2ºC)

Assembly Construction

Location: Suite 321, south elevation, inside corner

Assembly (exterior to interior):

- Shiplap cedar siding
- Building paper
- Plywood sheathing
- 38mm x 140mm wood framing with fibreglass batt insulation
- Polyethylene sheet vapour retarder
- Drywall

Notes/Observations

- No evidence of moisture or leakage
- No damage on sheathing or framing
- Wood moisture content: 17.5%

Photo 15: Opening location.

Photo 16: Close-up view of opening.

Opening No.	Opening Type	Date of Opening	Weather
9	Wall	December 8, 2021	Cloud (2ºC)

Assembly Construction

Location: Suite 319, south elevation, inside corner

Assembly (exterior to interior):

- Shiplap cedar siding
- Building paper
- Plywood sheathing
- 38mm x 140mm wood framing with fibreglass batt insulation
- Polyethylene sheet vapour retarder
- Drywall

Notes/Observations

- Moisture staining on framing and paper
- Wood moisture content: 20.0%

Photo 17: Opening location.

Photo 18: Close-up view of opening.

Opening No.	Opening Type	Date of Opening	Weather
10	Wall	December 8, 2021	Cloud (2ºC)

Assembly Construction

Location: Suite 317, south elevation, inside corner

Assembly (exterior to interior):

- Shiplap cedar siding
- Building paper
- Plywood sheathing
- 38mm x 140mm wood framing with fibreglass batt insulation
- Polyethylene sheet vapour retarder
- Drywall

Notes/Observations

- Moisture staining on framing and paper
- Wood moisture content: 28.9%

Photo 19: Opening location.

Photo 20: Close-up view of opening.

Opening No.	Opening Type	Date of Opening	Weather
11	Wall	December 8, 2021	Cloud (2ºC)

Assembly Construction

Location: Suite 315, east elevation, inside corner

Assembly (exterior to interior):

- Shiplap cedar siding
- Building paper
- Plywood sheathing
- 38mm x 140mm wood framing with fibreglass batt insulation
- Polyethylene sheet vapour retarder
- Drywall

Notes/Observations

- No evidence of moisture or leakage
- No damage on sheathing or framing
- Wood moisture content: 23.3%

Photo 21: Opening location.

Photo 22: Close-up view of opening.

Opening No.	Opening Type	Date of Opening	Weather
12	Wall	December 8, 2021	Cloud (2ºC)

Assembly Construction

Location: Suite 311, east elevation, inside corner

Assembly (exterior to interior):

- Shiplap cedar siding
- Building paper
- Plywood sheathing
- 38mm x 140mm wood framing with fibreglass batt insulation
- Polyethylene sheet vapour retarder
- Drywall

Notes/Observations

- Moisture staining on paper and sheathing
- Wood moisture content: 31.9%

Photo 23: Opening location.

Photo 24: Close-up view of opening.

Opening No.	Opening Type	Date of Opening	Weather
13	Wall	December 8, 2021	Cloud (2ºC)

Assembly Construction

Location: Suite 309, east elevation, inside corner

Assembly (exterior to interior):

- Shiplap cedar siding
- Building paper
- Plywood sheathing
- 38mm x 140mm wood framing with fibreglass batt insulation
- Polyethylene sheet vapour retarder
- Drywall

Notes/Observations

- Moisture staining on paper and sheathing
- Wood moisture content: 23.4%

Photo 25: Opening location.

Photo 26: Close-up view of opening.

Opening No.	Opening Type	Date of Opening	Weather
14	Wall	December 8, 2021	Cloud (2ºC)

Assembly Construction

Location: Suite 307, east elevation, outside corner

Assembly (exterior to interior):

- Shiplap cedar siding
- Building paper
- Plywood sheathing
- 38mm x 140mm wood framing with fibreglass batt insulation
- Polyethylene sheet vapour retarder
- Drywall

Notes/Observations

- No evidence of moisture or leakage
- No damage on sheathing or framing
- Wood moisture content: 20.1%

Photo 27: Opening location.

Photo 28: Close-up view of opening.

Opening No.	Opening Type	Date of Opening	Weather
15	Wall	December 8, 2021	Cloud (2ºC)

Assembly Construction

Location: Suite 303, east elevation, outside corner

Assembly (exterior to interior):

- Shiplap cedar siding
- Building paper
- Plywood sheathing
- 38mm x 140mm wood framing with fibreglass batt insulation
- Polyethylene sheet vapour retarder
- Drywall

Notes/Observations

- No evidence of moisture or leakage
- No damage on sheathing or framing
- Wood moisture content: 17.4%

Photo 29: Opening location.

Photo 30: Close-up view of opening.

Opening No.	Opening Type	Date of Opening	Weather
16	Wall	December 8, 2021	Cloud (2ºC)

Assembly Construction

Location: Suite 301, north elevation, inside corner

Assembly (exterior to interior):

- Shiplap cedar siding
- Building paper
- Plywood sheathing
- 38mm x 140mm wood framing with fibreglass batt insulation
- Polyethylene sheet vapour retarder
- Drywall

Notes/Observations

- Staining on sheathing and paper
- Wood moisture content: 29.1%

Photo 31: Opening location.

Photo 32: Close-up view of opening.

Opening No.	Opening Type	Date of Opening	Weather
17	Wall	December 8, 2021	Cloud (2ºC)

Assembly Construction

Location: Suite 202, north elevation, wall corner

Assembly (exterior to interior):

- Shiplap cedar siding
- Building paper
- Plywood sheathing
- 38mm x 140mm wood framing with fibreglass batt insulation
- Polyethylene sheet vapour retarder
- Drywall

Notes/Observations

- No evidence of moisture or leakage
- No damage on sheathing or framing
- Wood moisture content: 23.4%

Photo 33: Opening location.

Photo 34: Close-up view of opening.

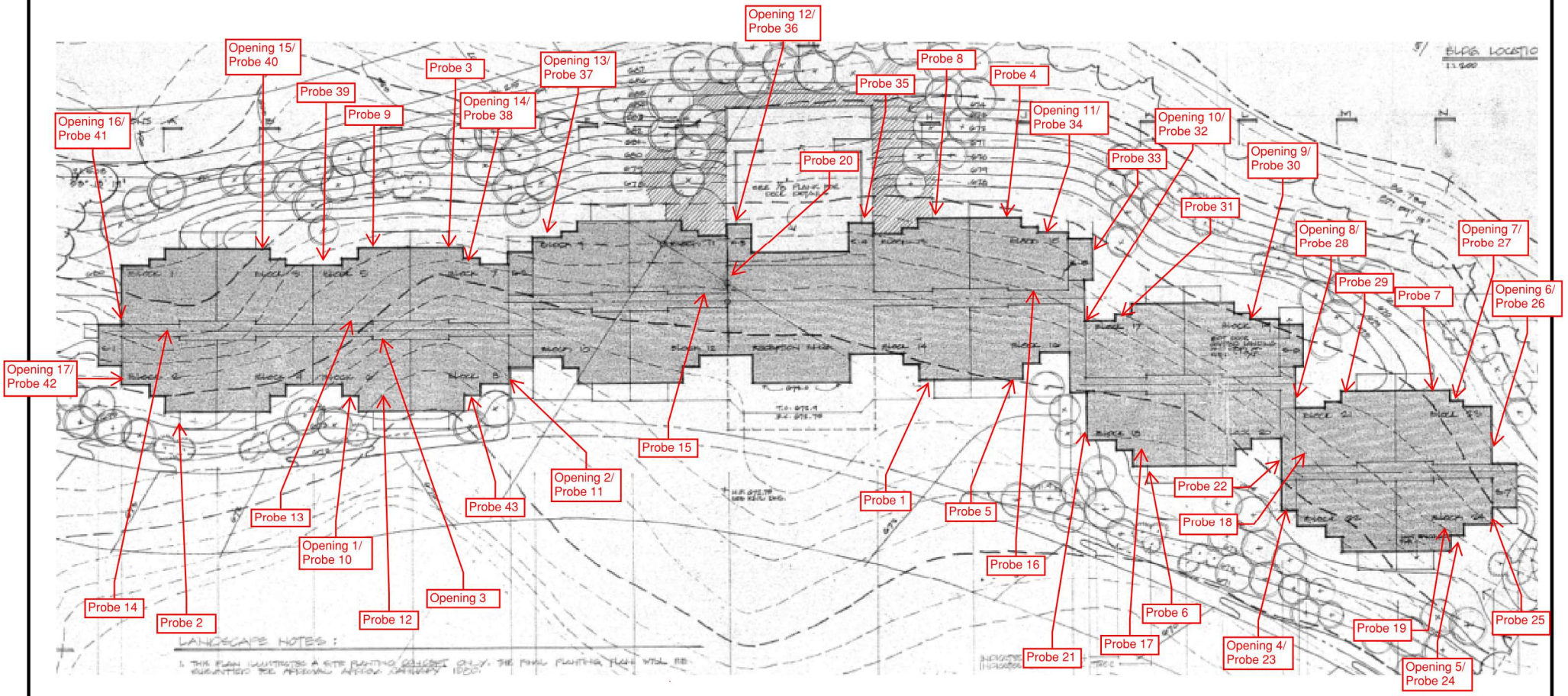
Moisture probes were completed at multiple wall areas to check the moisture content of exterior wall sheathing. Descriptions of moisture content readings are provided below.

Moisture Content (%)	Description	Risk of Fungal Growth
19 or lower	Safe moisture content (i.e. will not support rot)	Low
Between 19 and 28	May support fungal growth (i.e. support rot once initiated)	Medium
28 or higher	May initiate fungal growth (i.e. initiate onset of rot)	High

The following table summarizes the moisture content readings taken at Tantalus Resort Lodge.

Probe #	Elevation	Location	Moisture Content (%)	Risk of Fungal Growth
1	W	Below third floor balcony saddle	13.5	Low
2	S	Below third floor balcony saddle	13.1	Low
3	E	Below fourth floor balcony saddle	15.8	Low
4	E	Below fourth floor balcony saddle	15.1	Low
5	W	Below fourth floor balcony saddle	13.3	Low
6	W	Below fourth floor balcony saddle	8.2	Low
7	E	Below fifth floor balcony saddle	16.9	Low
8	E	Below sloped roof wall saddle at fifth floor	10.9	Low
9	E	Below sloped roof wall saddle at fifth floor	20.5	Medium
10	W	Below first floor window	15.6	Low
11	S	Inside corner at first floor	24.9	Medium
12	E	Chimney at roof level	15.0	Low
13	W	Roof deck wall	24.6	Medium
14	W	Roof deck wall	23.1	Medium
15	W	Roof level wall	14.7	Low
16	W	Roof deck wall	13.8	Low
17	E	Chimney at roof level	13.7	Low
18	N	Roof deck wall	18.3	Low
19	E	Chimney at roof level	19.6	Medium
20	S	Roof level wall	14.9	Low
21	N	Below first floor window	24.4	Medium
22	N	Below first floor window	25.5	Medium
23	W	Inside corner at first floor	18.8	Low
24	W	Below first floor window	20.1	Medium
25	S	Below first floor window	24.7	Medium
26	S	Third floor wall	33.6	High
27	E	Below third floor window	29.2	High
28	S	Inside corner at third floor	17.5	Low
29	E	Beside balcony saddle at third floor	13.6	Low
30	E	Inside corner at third floor	20.0	Medium
31	E	Below third floor window	18.9	Low
32	S	Inside corner at third floor	28.9	High
33	S	Third floor wall	17.3	Low
34	E	Inside corner at third floor	23.3	Medium
35	E	Below third floor window	13.7	Low
36	E	Inside corner at third floor	31.9	High
37	E	Inside corner at third floor	23.4	Medium
38	E	Outside corner at third floor	20.1	Medium
39	E	Below third floor window	11.5	Low
40	E	Outside corner at third floor	17.4	Low
41	N	Inside corner at third floor	29.1	High
42	N	Inside corner at second floor	23.4	Medium

Probe #	Elevation	Location	Moisture Content (%)	Risk of Fungal Growth
43	W	Below second floor window	13.3	Low



PROJECT NORTH

sense engineering
104 - 788 COPPING STREET
NORTH VANCOUVER, BC
V7M 3G6 604-365-3664

PROJECT NAME:
Tantalus Report Lodge
Garage, Siding and Roof Evaluation

ADDRESS:
4200 Whistler Way, Whistler

DRAWING:
Site Plan

ISSUED FOR EVALUATION:
FEB 10, 2022

DRAWN BY: KAB
CHECKED BY: BGV
DATE: FEB. 8, 2022
SCALE: NTS
PROJECT NO: 22vR006A
DRAWING NO: 1

- In issuing this report, *Sense Engineering* does not assume any of the duties or liabilities of the designers, builders or owners of the subject property. Owners, prospective purchasers, tenants or others who use or rely on the contents of this report do so with the understanding as to the limitations of the documents reviewed and understand that *Sense Engineering* cannot be held liable for damages which may be suffered with respect to the purchase, ownership, or use of the subject property.

- The scope of our work and responsibilities related to our work are defined in our project authorization ("Conditions of Assignment").

- Any user accepts that decisions made or actions taken based upon interpretation of our work are the responsibility of only the parties directly involved in the decisions or actions.

- No party other than the Client shall rely on the Consultant's work without the express written consent of the Consultant, and then only to the extent of the specific terms in that consent. Any use which a third party makes of this work, or any reliance on or decisions made based on it, is the responsibility of such third parties. Any third party user of this report specifically denies any right to any claims, whether in contract, tort and/or any other cause of action in law, against the Consultant (including Sub-Consultants, their officers, agents and employees). The work reflects the Consultant's best judgement in light of the information reviewed by them at the time of preparation. It is not a certification of compliance with past or present regulations. Unless otherwise agreed in writing by *Sense Engineering*, it shall not be used to express or imply warranty as to the fitness of the property for a particular purpose. No portion of this report may be used as a separate entity; it is written to be read in its entirety.

- Only the specific information identified has been reviewed. No physical or destructive testing and no design calculations have been performed unless specifically recorded. Conditions existing but not recorded were not apparent given the level of study undertaken. Only conditions actually seen during examination of representative samples can be said to have been appraised and comments on the balance of the conditions are assumptions based upon extrapolation. Therefore, this work does not eliminate uncertainty regarding the potential for existing or future costs, hazards or losses in connection with a property. We can perform further investigation on items of concern if so directed.

- The Consultant is not responsible for, or obligated to identify, mistakes or insufficiencies in the information obtained from the various sources, or to verify the accuracy of the information.

- No statements by *Sense Engineering* are given as or shall be interpreted as opinions for legal, environmental or health findings. *Sense Engineering* is not investigating or providing advice about pollutants, contaminants, hazardous materials or communicable diseases/viruses.

- The Client and other users of this report expressly deny any right to any claim against *Sense Engineering*, including claims arising from personal injury related to pollutants, contaminants or hazardous materials, including but not limited to asbestos, mould, mildew or other fungus.

- Budget figures are our opinion of a probable current dollar value of the work and are provided for approximate budget purposes only. Accurate figures can only be obtained by establishing a scope of work and receiving quotes from suitable contractors.

- Time frames given for undertaking work represent our opinion of when to budget for the work. Failure of the item, or the optimum repair/replacement process, may vary from our estimate.