



BEACON WEST TRAFFIC STUDY

Prepared for the Town of Sidney

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1.0 OVERVIEW

The Beacon West Catchment Area Traffic Impact Study is a comprehensive assessment of the transportation network in the Beacon Avenue West Catchment Area. This area is the convergence of the Town of Sidney, District of North Saanich, Victoria Airport Authority (VAA), and Ministry of Transportation and Infrastructure (MoTI) lands and roads. While multiple transportation studies have been completed in the general area, this is the first one to identify the network needs for all user groups and associated triggers due to all of the parties. Two major commercial developments have been planned for the area including Sandown and Sidney Crossing. To date, the Sandown commercial area has seen the construction of a Canadian Tire store, but additional commercial land uses have not been added at this time and the Sidney Crossing development has not proceeded at this time.

Recognizing the strategic commercial and industrial importance of the area, the Town completed the West Side Local Area Plan (WSLAP) in 2017 for their portion of the Catchment Area. It provides the framework for the land use and transportation direction for the Beacon Avenue West Catchment Area. This plan combined with VAA's development lands and Sandown has facilitated the need for a coordinated approach between the Town, District of North Saanich, MoTI, and VAA to plan a transportation network that can continue to serve the industrial traffic in the area while also accommodating local users.

The Beacon West Catchment Area Traffic Impact Study builds on the transportation vision outlined in the WSLAP to determine the required improvements to accommodate trucks (and house movers), passenger vehicles, bicycles, pedestrians, and transit to accommodate all parties. Ultimately, the purpose of this study is three-fold:

1. Undertake a comprehensive review of the catchment area of Beacon Avenue West to evaluate the effects of potential development.
2. Evaluate the effects of regional growth and recommend mitigation measures to address current and future travel demands.



3. Outline transportation improvements that support all road users in the Beacon West Catchment Area to facilitate the efficient and safe movement of traffic, pedestrians, cyclists, and heavy trucks.

1.1 STUDY AREA

The Beacon Avenue West Catchment Area is the area immediately west of Highway 17 (Pat Bay Highway) and north of Beacon Avenue. The Catchment Area includes the West Sidney Business Park, approximately 120+ homes in Sidney, VAA lands, and at the north end properties in North Saanich including the former Sandown Lands. Each of these areas/lands utilize roads within Sidney, North Saanich, and MoTI jurisdictions.

The boundaries of the study area are defined as McDonald Park Road / Highway 17 to the north, Highway 17 to the east, Beacon Avenue to the south, and West Saanich Road to the west. See **Map 1** for the study area.

Map 1. Study Area





1.2 PLANNING & POLICY CONTEXT

Established community policies, plans, and strategies related to the Beacon Avenue West Catchment Area are summarized in the following section including specific direction regarding transportation planning in the study area.

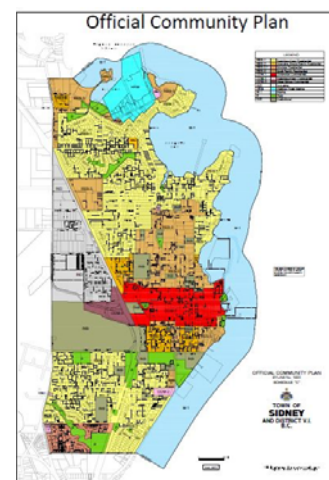
1.2.1 LOCAL PLANNING DIRECTION

Town of Sidney Official Community Plan (2007)

The Town's Official Community Plan (OCP) provides broad objectives and policies that help guide decisions on planning, land use and provision of municipal services in the Community. The current OCP was done in 2007I however, it is currently undergoing a full review and expected to be finalized in November 2021.

Section 17 of the current OCP outlines the objectives and policies pertaining to transportation. The following summarizes broad transportation objectives from the OCP that give general direction to this study:

- To move goods and people efficiently, conveniently and safely within and adjacent to Sidney
- To encourage the efficient movement of commercial vehicles through the industrial area of Sidney
- To improve access between the east and west sides of Sidney and to the Pat Bay Highway
- To encourage public transit as an alternative means of transportation
- To promote walking and cycling as integral components of the overall transportation network.



A summary of relevant OCP policies to guide the Beacon West Traffic Study is provided in **Table 1**. Note: the current OCP does not provide any policy direction on trucks and goods movement.



TABLE 1: SUMMARY OF RELEVANT OCP POLICIES

| Transportation Area | Relevant Direction for the Study Area | Policy / Plan Reference |
|--------------------------------|--|---|
| Public Transit | The Town intends to work with BC Transit, MOTI, and adjacent municipalities to establish better transit service between areas on the peninsula and Sidney, encourage and support car-pooling initiatives, and more express transit between Swartz Bay and Victoria, with stops at Sidney and the Victoria International Airport. | <ul style="list-style-type: none"> • Policy 17.3.4 • Policy 17.3.5 |
| Walking + Cycling | The Town will continue to work with the CRD, MOTI, and local groups to support safe, convenient, and connected cycling and pedestrian networks. Sidewalks and walkways will be provided and linked to encourage safe and convenient pedestrian movement throughout the Town. | <ul style="list-style-type: none"> • Policy 17.3.8 • Policy 17.3.11 |
| Regional Transportation | The Town will continue to work with the Ministry of Transportation and other agencies to improve access between Sidney, the Pat Bay Highway, the Victoria International Airport and the District of North Saanich. | <ul style="list-style-type: none"> • Policy 17.3.12 |



Town of Sidney West Local Area Plan (2017)

The West Side Local Area Plan (WSLAP), adopted in 2017, provides detailed policies and recommendations to guide the future of the West Side neighbourhood over the next 30 years.¹ The primary focus of the plan is on future transportation infrastructure and land use in the area. The three planning goals in the WSLAP are as follows:

- **Functional Streets** | Multi-functional streets that service local business, people, and the environment.
- **People Spaces** | Safe, comfortable, and convenient places for people to walk, cycle, stay, and play.
- **Land Use Direction** | Practical, feasible, sustainable, and responsive land use directions for the West Side.



The WSLAP also contains five planning principles for the West Side area, two of which are directly relevant for this study:

- **Active Transportation & Connectivity** | Encourage a modal shift by developing the active transportation network within the area and strengthening linkages to/from downtown, schools, North Saanich, and elsewhere.
- **Transportation Efficiency** | Support all road users by facilitating the efficient and safe movement of commercial trucks and traffic within and to/from the West Side.

Section D of the WSLAP (Transportation & Mobility) contains specific recommendations to address existing transportation challenges. References to these recommendations are referenced in this study; however, for the purposes of this section, a summary of the seven transportation directions from WSLAP (Section D.8) are provided below.

1. **Permeable Surfaces** | swales and rain gardens are recommended to enhance stormwater capacity within road rights-of-way

¹ Barefoot Planning + Design. (2017). West Side Local Area Plan. Available online at: <http://www.sidney.ca/Assets/Administration/2017/WSLAP+final.pdf>



2. **Landscaping and Beautification** | Low-maintenance and low-water landscaping can be used to beautify the streets and buffer pedestrians from vehicular traffic, while mitigating maintenance costs.
3. **Incremental Infrastructure Improvements** | Incremental improvements can be made to sidewalk infrastructure as the neighbourhood changes such as upgrading crushed stone pathways to paved surfaces.
4. **Accommodating Heavy Trucks** | Maintain existing turning radii and truck mobility in the Industrial Area by utilizing at-grade infrastructure (landscaping, pedestrian paths) and restricting large tree locations near key access points.
5. **Neighbourhood Identity** | Support the development of unique, West Side-specific street elements, including bollards, streetlights, and street furniture to improve the streets' functioning and help build the character of the neighbourhood.
6. **Neighbourhood Wayfinding** | Develop a wayfinding strategy for the West Side, including neighbourhood-specific signage and related design elements.
7. **Off-Street Parking** | Progressive transportation and parking strategies should be used to facilitate rather than hinder a sustainable future for this area. Policy should be developed to strongly encourage end-of-trip cycling facilities as part of all new developments.

District of North Saanich Official Community Plan (2007)

Similar to the Town of Sidney, the District of North Saanich is currently undergoing a full review of its OCP. Its existing OCP, last updated in 2007, contains a section on transportation (Section 18.3).² The following summarizes broad transportation objectives from the OCP that give general direction to this study:

- To balance transportation needs by a system of roads (arterial, collector and local) and pathways (bicycle and pedestrian) that provide efficient linkage between residential areas and the Patricia Bay Highway while remaining sensitive to the environment and rural community values.

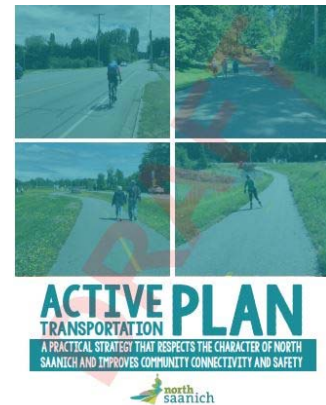
² More information about the District's OCP update is available online at: <https://northsaanich.ca/your-community/official-community-plan/>



- To encourage transportation by bicycle as a means of reducing vehicular traffic and emissions and promoting a sense of community.
- To encourage safe bicycling by providing an adequate bicycle network and by supporting education programs especially for children.
- To encourage public transit as an alternative means of transportation and to support park and ride sites at appropriate locations.

District of North Saanich Active Transportation Plan (draft)

The District is in the process of completing its Active Transportation Plan. The purpose of the plan is to identify how to improve its roads and trails to make it easier for people to walk, cycle, and roll in North Saanich.³ While still a draft document at the time of writing this report, the Active Transportation Plan includes the following goals:



- Increase the number of active trips to support emission reductions, improve community health, increase access to transit and local businesses.
- Improve safety on local streets to make it more comfortable to walk and cycle
- Improve safety on major roadways and local roads to make it more comfortable to walk and cycle.
- Support increased use of electric bikes which are well suited to the topography and ageing demographic.
- Coordinate with key stakeholders, Tseycum First Nation and Pauquachin First Nation to maintain infrastructure and achieve mutually beneficial improvements.
- Align the active transportation plan and its recommendations with other plans and projects.
- The rural character shall be considered when identifying infrastructure needs.

³ More information about the District's Active Transportation Plan is available online at:
<https://www.connectnorthsaanich.ca/active-transportation-plan#:~:text=The%20Active%20Transportation%20Plan%20will,community%20health%20and%20well%2Dbeing>



One of the core network improvements identified in the draft plan that has relevance to this study is connecting the multi-use pathway on McDonald Park Road to the Flight Path multi-use pathway.

Victoria Airport Authority Land Use Plan and Permitted Uses: Land Use Guidelines (2019)

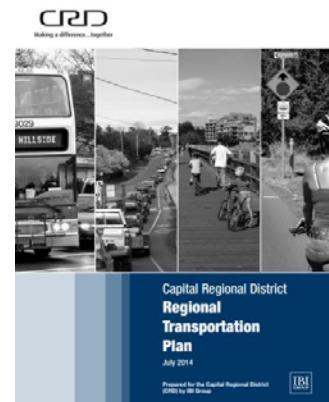
This document identifies the re-alignment of Stirling Way to Galaran Road / Beacon Avenue with a roundabout to allow for future commercial development and improve traffic operations.

1.2.2 REGIONAL PLANNING DIRECTION

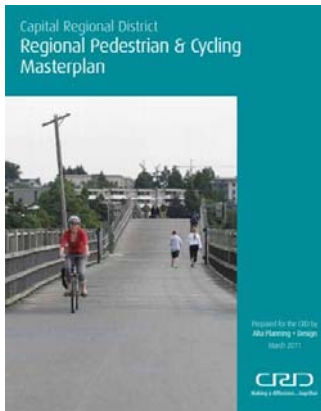
CRD Regional Transportation Plan (2014)

In 2014, the Capital Regional District (CRD) developed a Regional Transportation Plan (RTP) to identify immediate priorities and long-term strategies to guide planning and development of a regional multi-modal transportation system that meets future growth demands and is focused on sustainability.⁴ The plan contains regional outcome statements that each have a list of key actions. Relevant actions for this study are as follows:

- Transportation and land use planning tools are integrated at the local and regional levels.
- Walking is an increasingly popular and desirable mode of transportation that is supported by safe, convenient, and accessible pedestrian infrastructure.
- Cycling is an appealing, safe, convenient, and viable transportation option for residents and visitors of all skill and confidence levels.
- Public transit is a preferred choice, attracting new riders through comfortable, safe, accessible, and convenient service.



⁴ More information about the plan is available online at: <https://www.crd.bc.ca/project/regional-transportation/regional-transportation-plan>



CRD Pedestrian & Cycling Plan (2011)

The CRD Regional Pedestrian and Cycling Master Plan (PCMP) describes a strategic approach for achieving a significant shift in transportation throughout the region.

Specifically, the plan set a cycling mode share target of 15% for the entire Capital Region. According to Map 7 of the plan (Recommended Facility Separation on PIC Bikeway Corridors - Peninsula), Galaran Road and McDonald Park Road are

identified as 'Bicycle Lane / Shoulder Bikeway', which is defined as "bikeways that accommodate cycling on streets without a curb and gutter, where a fog line is used to delineate a shoulder."⁵

Transit Future Plan: Victoria Region (2011)

The Victoria Transit Future Plan provides a vision for improving the region's transit network over the next 25 years.⁶ The plan designates the Pat Bay Highway as part of the Rapid Transit Network (RTN). RTN services are designed to move high volumes of passengers between major regional destinations along key transportation corridors.



Services are frequent (15 minutes or better between 7:00 a.m. and 10:00 p.m.) seven days a week and stop less often than traditional transit services. RTN services use high capacity transit vehicle technologies such as light rail vehicles and high capacity buses. Other investments required along the corridor are premium transit stations, off-board ticketing and typically corridor branding.

⁵ More information about the plan is available online at: https://www.crd.bc.ca/docs/default-source/regional-planning-pdf/pedestrian-amp-cycling-master-plan.pdf?sfvrsn=2028fc9_0

⁶ More information about the plan is available online at: <https://www.bctransit.com/victoria/transit-future/victoria-transit-future-plan>



1.3 TECHNICAL STUDIES

There have been three technical transportation studies completed in the area over the last 7 years that have assessed the traffic impact of new developments along with traffic operations. The three studies include:

- Victoria Airport Authority Beacon Avenue Development Site Traffic Impact Assessment (2015)
- Sidney Gateway Development Traffic Impact Assessment (2016)
- Sandown Commercial Development Transportation Review (2017)

A brief overview of each study is provided below including the key findings/recommendations.

1.3.1 VAA BEACON AVENUE DEVELOPMENT SITE TRAFFIC IMPACT ASSESSMENT

This study, prepared by NovaTrans Engineering Inc., included a traffic impact assessment in support of the proposed VAA Beacon Avenue Development. The development sites included the north-east quadrant of the Airport lands and in the south-west quadrant of intersection of Beacon Avenue and Highway 17. Based on the analysis, the study outlined two options:

- **Option 1 – Existing Stirling Way Alignment** | This option uses the existing alignment of Stirling Way with the development severed by the roadway. Both Stirling Way and Galaran Road at Beacon Avenue would remain three-legged intersection with a roundabout at Stirling Way.
- **Option 2 – Stirling Way Realignment** | Option 2 realigns Stirling Way skirting both development parcels to the south in order to create one contiguous parcel for the development. The existing Stirling Way would be integrated back into the development with the access to Beacon Avenue provided as a fourth (south) leg at the intersection of Galaran Road at Beacon Avenue.



The study has several conclusions; the most relevant ones are outlined below:

- Under both options the two access points into the site off Stirling Way will operate very well into the future under basic access stop control. In addition, as volumes on Stirling Way are low, no left turn bays would be required into the sites from Stirling Way.
- The Stirling Realignment Option 2 provides for a cleaner, contiguous development site. However, the trade-offs are likely higher costs. The differential cost is the construction of about 800m of roadway (both Stirling and Beacon) for Option 2 vs. an additional 1-lane roundabout and 150m of roadway reconstruction for Option 1.

1.3.2 SIDNEY GATEWAY DEVELOPMENT TRAFFIC IMPACT ASSESSMENT

This study, prepared by WATT Consulting Group included a traffic impact assessment of a proposed commercial development at the Highway 17 / Beacon Avenue Intersection. The proposed development was called the “Gateway Project” and was later renamed to “Sidney Crossing”. The proposal included approximately 99,000 square foot of commercial and office uses.

The study found that the proposed development would not have a large impact on the surrounding non-highway intersections on opening day in 2020. The Highway 17 / Beacon Avenue intersection would require the addition of a dual eastbound left turn lane, extension of the eastbound right turn lane, and the extension of northbound left turn lane. The study also indicated that with the re-alignment of Stirling Way, there would be a significant improvement in the operations for traffic on Stirling Way trying to access Beacon Avenue. Lastly, it concluded that the Stirling Way / Galaran Road / Beacon Avenue single lane roundabout option would operate well with the development traffic in 2020 and 2030.

Some of the key recommendations in the report that are most relevant for this study included:

- Realign Stirling Way to Galaran Road and install a single lane roundabout



- Add sidewalk along Beacon Avenue frontage and a pedestrian overpass connecting the east and west sides of Beacon Avenue to improve existing pedestrian connections to the site
- Maintain bicycle lanes along Beacon Avenue site frontage

1.3.3 SANDOWN COMMERCIAL DEVELOPMENT TRANSPORTATION REVIEW

This study, prepared by Bunt & Associates, included a transportation review of the Sandown shopping centre development. The development site, located at 1810 Glamorgan Road, included approximately 152,018 square feet of commercial retail floor area.

The study found that the proposed development would generate up to 555 vehicle trips in the weekday PM peak hour and 805 trips during the Saturday peak hour after accounting for existing “pass-by” traffic. It concluded that the traffic impact of the proposed development on the area roads in the vicinity of the project will be minimal with traffic operations remaining well within capacity.

2.0 EXISTING CONDITIONS

2.1 ROAD NETWORK

Within the study area, there are five (5) major (highway / arterial / collector) roadways along with multiple local roads (see **Map 2**). The major roads are described as follows:

- **Highway 17** is a four lane divided arterial highway under the jurisdiction of MOTI.
- **Beacon Avenue** is a two lane undivided collector road with bike lanes on both sides. Beacon Avenue has a rural cross-section with no sidewalks or curb and gutters. However, on the north side of Beacon Avenue, east of Stirling Way there is a pedestrian area located behind extruded asphalt curb.
- **McDonald Park Road** is a two lane undivided collector road. South of Henry Ave, there are bike lanes on both sides of McDonald Park Road. North of Mills Road, the west side of the road has no sidewalk or curb and gutter, and there is

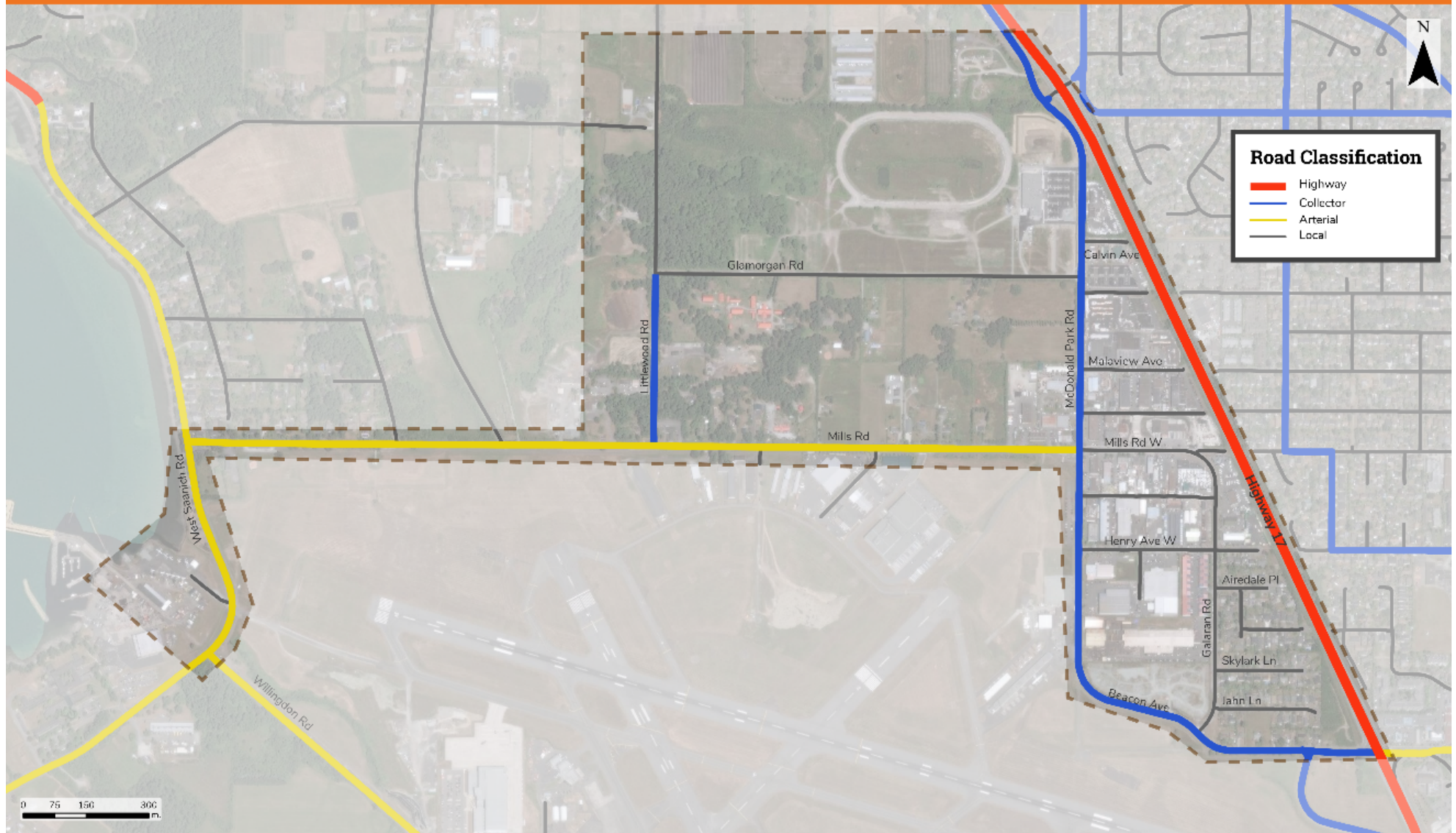


a large drainage ditch that runs along the west side of the road. There are some sections with sidewalk and curb and gutter on the east side of the road.

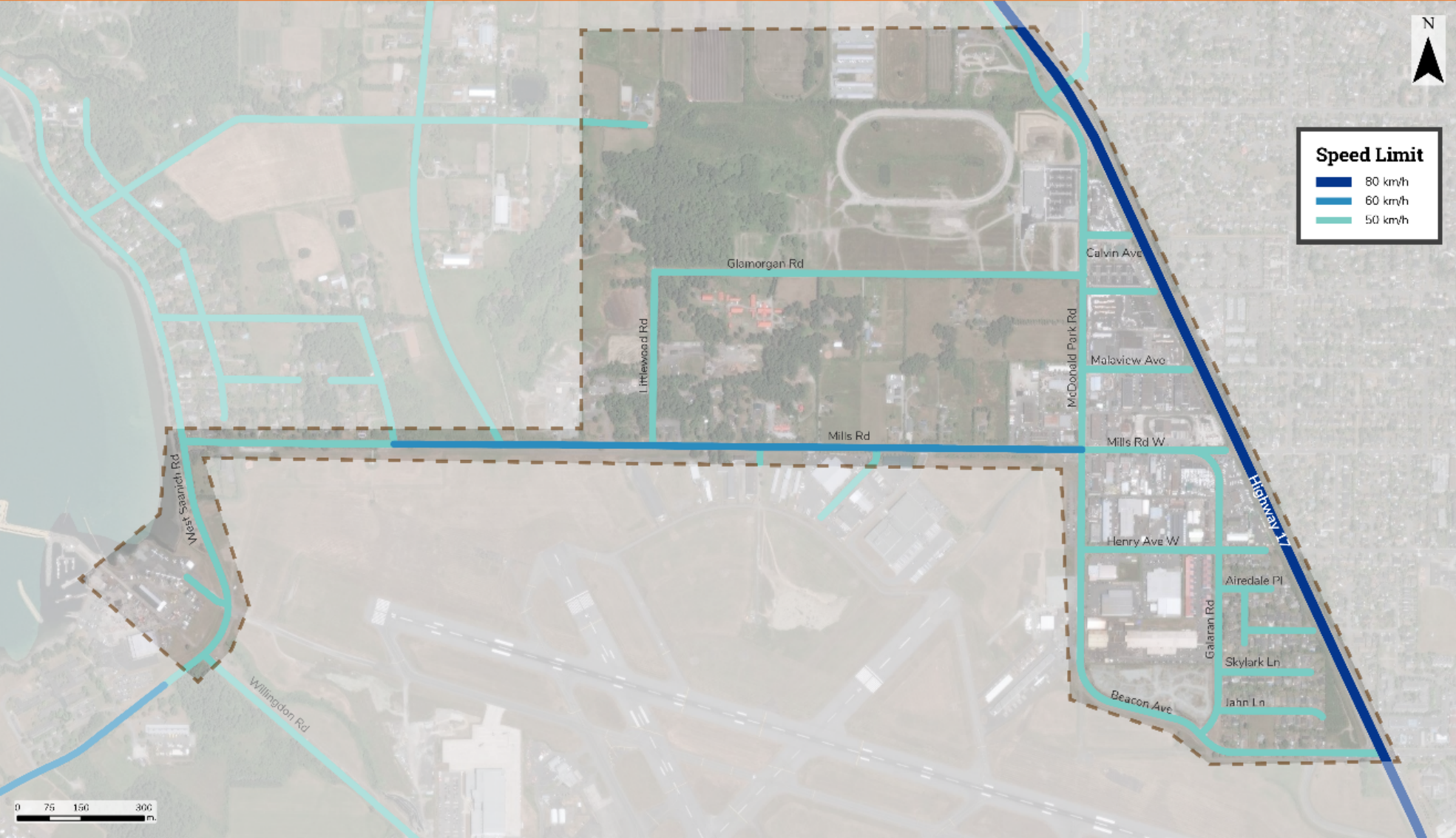
- **Mills Road** is a two lane undivided arterial road. West of McDonald Park Road, Mills Road has a rural cross-section with a ditch on both sides. West of McDonald Park Road there are no shoulders. East of McDonald Park Road, Mills Road has wide gravel shoulders that are utilized for parallel parking.
- **West Saanich Road** is a two lane undivided arterial road with no shoulders, within the study area.

The speed limit on Highway 17 is 80 km/h within the study area. Mills Road between Meadland Road and McDonald Park Road has a speed limit of 60 km/h. All other roads in the study area have a speed limit of 50 km/h.

Map 2. Road Network



Map 3. Posted Speed Limits





2.2 OPERATIONAL ANALYSIS

2.2.1 INTERSECTION DATA COLLECTION

Intersection movement counts were conducted during the AM and PM peak hours at key intersections within the study area. The counts were conducted between August 27th and September 2nd, 2020. The observed volumes were balanced and a Covid adjustment factor was applied (see **Section 2.2.2**) to counter the impact to volumes due to the on-going Covid pandemic. The resulting 2020 intersection volumes are shown on **Map 4**.

2.2.2 COVID FACTOR

It has been observed that traffic volumes during the Covid pandemic are lower than would typically be expected. In order to estimate typical 2020 traffic volumes, a Covid factor was applied to the observed volumes. This factor was determined by comparing the observed volumes on Highway 17 and on Beacon Avenue to previous historical counts, including counts conducted in September 2019. It was determined that the volumes on Highway 17 were 15% lower than expected, while traffic volumes on Beacon Avenue were only 1.5% lower than expected. The volume reduction on Beacon Avenue was assumed to be representative of the reduction on the remaining roads in the study area. As a result, a Covid factor of 15% was applied to the observed volumes on Highway 17 and a Covid factor of 2% was applied to the remaining volumes within the study area.

2.2.3 ANALYSIS RESULTS

The 2020 AM and PM peak hour volumes were analyzed in Synchro / SimTraffic software to determine the 2020 conditions at the study area intersections. The intersection movement levels of service (LOS) are summarized in **Tables 2 and 3** for the AM and PM peak hour respectively.



TABLE 2. 2020 INTERSECTION MOVEMENT LOS – AM PEAK HOUR

| Intersection | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|---------------------------------|------------|---|---|------------|---|---|-----------|---|---|-----------|---|---|
| | L | T | R | L | T | R | L | T | R | L | T | R |
| Hwy 17 / Beacon Ave | F | C | A | F | E | A | E | D | A | D | B | A |
| Beacon Ave / Stirling Way | C | - | B | - | - | - | - | A | A | A | A | - |
| Beacon Ave / Galaran Rd | - | - | - | C | - | B | A | A | A | A | A | A |
| McDonald Park Rd / Mills Rd | B | B | B | B | B | B | B | B | A | B | B | B |
| McDonald Park Rd / Glamorgan Rd | A | A | A | A | A | A | A | A | A | B | B | B |
| McDonald Park Rd / John Rd | - | A | A | B | B | - | - | - | - | A | - | A |
| Hwy 17 / McDonald Park Rd | A | A | A | B | A | A | - | - | A | - | - | A |
| W Saanich Rd / Mills Rd | - | B | B | A | A | - | - | - | - | A | - | A |

During the AM peak hour, the Highway 17 / Beacon Avenue intersection has multiple movements that are at failing levels of service (LOS E/F), including the northbound, southbound, and eastbound left turn movements and the southbound through movement. The remaining study intersections operate well in the AM with all movements at LOS C or better.



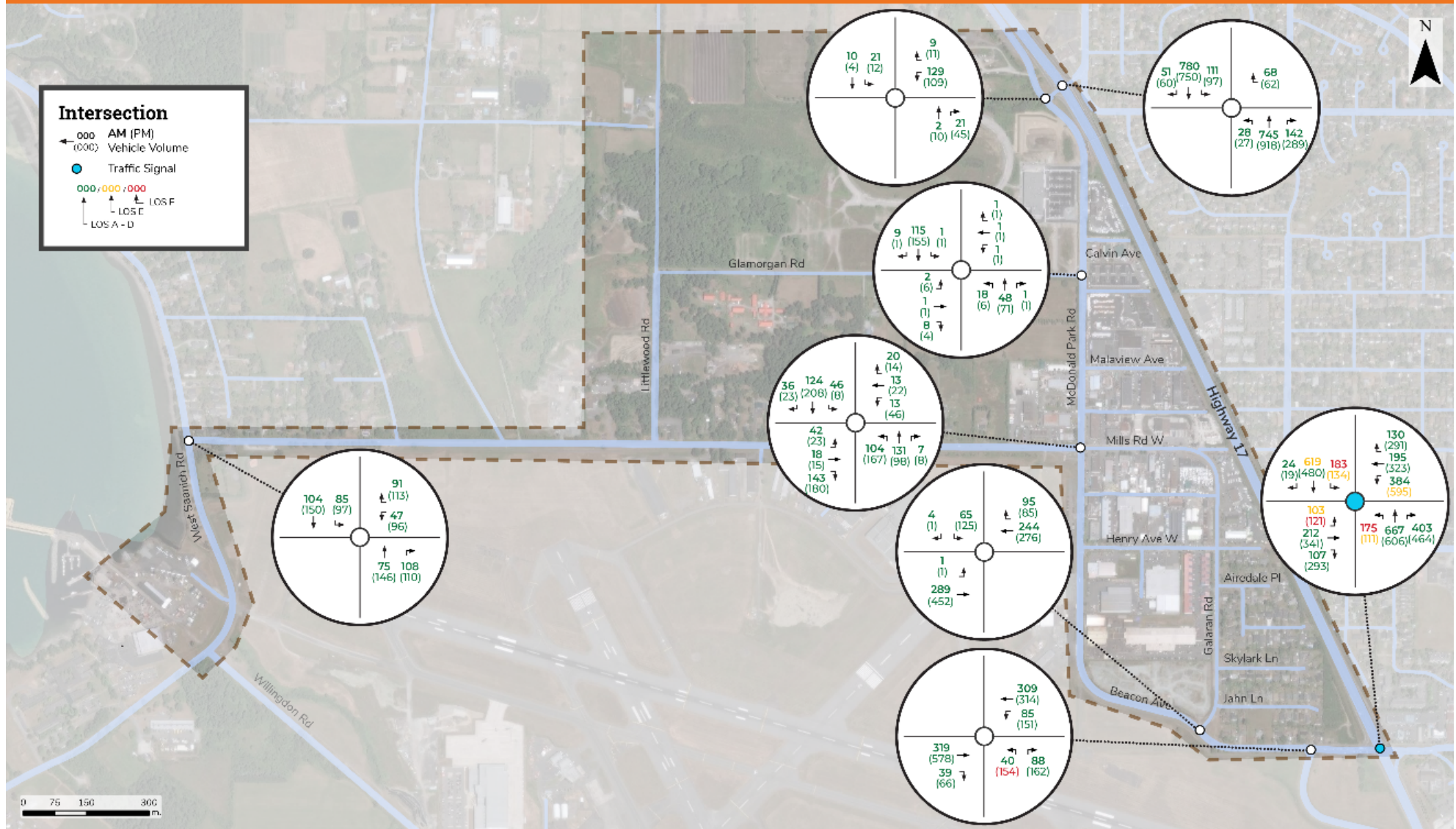
TABLE 3. 2020 INTERSECTION MOVEMENT LOS – PM PEAK HOUR

| Intersection | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|---------------------------------|------------|----|----|------------|----|----|-----------|----|----|-----------|----|----|
| | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT |
| Hwy 17 / Beacon Ave | E | D | A | E | D | A | F | D | A | E | C | A |
| Beacon Ave / Stirling Way | F | - | C | - | - | - | - | A | A | B | A | - |
| Beacon Ave / Galaran Rd | - | - | - | D | - | B | A | A | - | - | A | A |
| McDonald Park Rd / Mills Rd | B | B | B | B | B | B | A | A | B | B | B | B |
| McDonald Park Rd / Glamorgan Rd | A | A | A | A | A | A | B | B | B | A | A | A |
| McDonald Park Rd / John Rd | - | B | B | C | C | - | - | - | - | A | - | A |
| Hwy 17 / McDonald Park Rd | B | A | A | B | A | A | - | - | A | - | - | A |
| W Saanich Rd / Mills Rd | - | A | A | A | A | - | - | - | - | C | - | B |

During the PM peak hour, all four of the left turn movements at the Highway 17 / Beacon Avenue intersection operate at failing LOS. At Beacon Avenue / Stirling Way, the northbound left turn is failing (LOS F) due to the high through volume on Beacon Avenue. The southbound left turn at Beacon Avenue / Galaran Rd is also borderline operationally (LOS D) as a result of Beacon Avenue through traffic.

The remaining intersections operate well in the PM peak hour with all movements at LOS C or better.

Map 4. Intersection Volumes - Existing Conditions





2.3 TRAFFIC CHARACTERISTICS

Automatic traffic counters were installed on Beacon Avenue, Galaran Road, McDonald Park Road, Mills Road, and West Saanich Road to collect data traffic volumes, vehicle speeds, and vehicle classifications. Three-day counts on each road segment were conducted, either from September 1st to 3rd or September 8th to 10th, 2020. The observed data is summarized in **Table 4 and Table 5** below; the AADT volumes are also shown on **Map 5**.

TABLE 4. DAILY VOLUMES AND SPEED SUMMARY

| Road (Segment) | AADT | Classification | Meets Road Class | Posted Speed Limit (km/h) | 85 th % Speed (km/h) | Speed Issue? |
|--|--------|----------------|------------------------|------------------------------------|---------------------------------------|-----------------|
| Beacon Ave (Galaran Rd – Stirling Way) | 10,957 | Collector | No | 50 | 54 | No |
| Galaran Rd (Jahn Pl – Skylark Ln) | 2,686 | Local | No | 50 | 50 | No |
| McDonald Park Rd (Henry Ave – Galaran Rd) | 8,395 | Collector | Yes | 50 | 60 | No |
| McDonald Park Rd (John Rd – Glamorgan Rd) | 1,724 | Collector | No | 50 | 52 | No |
| Mills Rd (East of Littlewood Rd) | 2,686 | Arterial | No | 60 | 71 | Yes |
| W. Saanich Rd (Mills Rd – Widgeon Dr) | 5,280 | Arterial | Yes | 50 | 67 | Yes |

Beacon Avenue has the most traffic and would be considered as operating at an arterial level, not a collector. As the busiest road in the area it should have the highest classification (arterial). Galaran Road is a secondary route to the industrial area off Beacon Avenue. The current volume on this road is greater than a local road classification and should be adjusted to a collector standard. While the north section of



McDonald Park Road is below a collector standard the future volumes as well as the connection of Highway 17 to the industrial lends this road to a collector standard. Mills Road has volumes that are at a collector standard level; however, as a key east-west connection can remain as an arterial roadway.

In terms of traffic speeds all of the corridors are operating within 10km/h of the post speed limit with the exception of Mills Road (at 11km/h over the posted) and West Saanich Road (17km/h over the posted speed limit). Both of these roads are generally straight corridors, with limited traffic control (interruptions), and limited adjacent 'surveillance' created by denser development / more doors. These types of roads are difficult to manage speeds due to their nature. If desired, pavement markings such as converging chevrons, dragon teeth, or transverse bars could be considered to help with speed management.

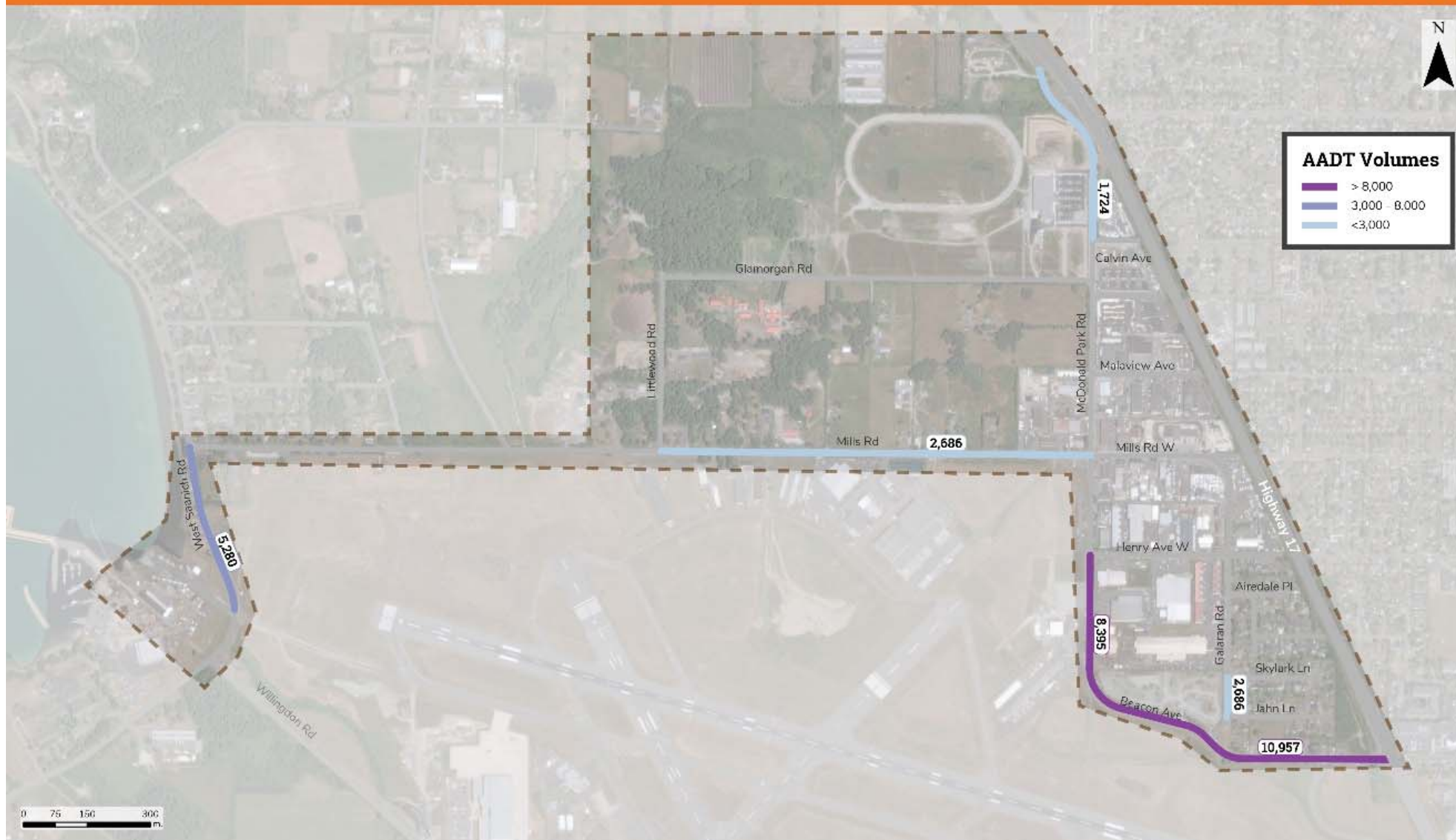
TABLE 5. VEHICLE CLASSIFICATION

| Road (Segment) | Vehicle Class (%) | | | | |
|--|-------------------|-----|----------------------|--------------|------------|
| | Passenger | Bus | Single Unit Truck | Semi-trailer | Motorcycle |
| Beacon Ave (Galaran Rd – Stirling Way) | 90.8 | 1.4 | 4.9 | 1.5 | 1.5 |
| Galaran Rd (Jahn Pl – Skylark Ln) | 89.9 | 1.9 | 5.9 | 1.1 | 1.3 |
| McDonald Park Rd (Henry Ave – Galaran Rd) | 88.1 | 1.5 | 6.7 | 2.2 | 1.6 |
| McDonald Park Rd (John Rd – Glamorgan Rd) | 83.3 | 1.7 | 9.6 | 4.1 | 1.3 |
| Mills Rd (East of Littlewood Rd) | 89.8 | 1.2 | 7.0 | 0.8 | 1.3 |
| W. Saanich Rd (Mills Rd – Widgeon Dr) | 85.4 | 1.6 | 9.3 | 0.5 | 3.2 |



The study area has a relatively high percentage of heavy vehicles, with the highest heavy vehicle percentage (15%) occurring on the north end of McDonald Park Road between John Road and Glamorgan Road; the heavy vehicle percentage of the remaining roads range from 8% to 11%. These volumes of heavy trucks are expected due to the nature of the land use in the Beacon Avenue West Catchment Area.

Map 5. Average Annual Daily Traffic (AADT)





2.4 MULTI-MODAL & ACTIVE TRANSPORTATION

The study area's existing active transportation network is limited as shown in **Map 6**. Fragmented sidewalks, streets with undefined edges, poor sidewalk connections, and the lack of bike facilities continue to make it challenging for pedestrians and cyclists to get around in safe and efficient manner. The following provides a summary of the key barriers facing active transportation today.

2.4.1 PEDESTRIAN NETWORK

The existing pedestrian network contains several gaps in connectivity. As shown in **Map 6**, apart from short segments of sidewalk on McDonald Park Road, Mills Road, and on Beacon Avenue from Stirling Way to the Pat Bay Highway, the study area has poor sidewalk coverage. Pedestrians are forced to walk on informal gravel and vegetated shoulders throughout the area to reach key destinations. However, while the sidewalk network is limited, the study area benefits from two multi-use pathways that provide connectivity to various nodes including West Saanich Road, Beacon Avenue, and the pedestrian overpass that connects McDonald Park Road with Ardwell Avenue. The multi-use pathways include (1) Flight Path Trail, (2) the Highway Path, and (3) a short segment along the west side of McDonald Park Road north of Glamorgan Road.

The Flight Path provides east-west connectivity along Mills Road connecting West Saanich Road in the west with McDonald Park Road in the east. The Flight Path then heads south along the west side of McDonald Park Road and south side of Beacon Avenue to Stirling Way (where it continues south around the airport lands).

The Highway Path serves as a critical north-south connection, especially for recreational users; however, it currently lacks a consistent surface and width, lighting, seating, and maintenance. The Highway Path is identified as one of the key transportation priorities in the West Side Local Area Plan. Lastly, the new multi-use pathway on the west side of McDonald Park Road north of Glamorgan Road has added facilities in this area; however, it is disconnected to facilities to the south. This new facility is consistent with



the recommendations of the WSLAP, which envisions an at-grade path on the west side of McDonald Park Road north of Mills Road.



Highway Path (left) and new multi-use pathway on McDonald Park Road north of Glamorgan Road (right).

The study area's limited sidewalk network is especially evident on Galaran Road. The WSLAP identifies Galaran Road as the interface between residential and industrial uses. Its existing pedestrian conditions are poor with a lack of sidewalks on both sides of the street and limited crossings. One of the highest priorities for improvement identified in the WSLAP is to redevelop Galaran Road with a sidewalk, landscaped buffer, and on-street parking on the east side, consistent with the future vision of the existing residential area. Upgrades to Galaran Road are planned for 2023 including a sidewalk on the east side and a gravel pathway on the west side; parking on both sides will be retained.



Existing sidewalk facilities are limited on Galaran Road, which results in poor walking conditions for existing residents and employees.



Pedestrian volumes were collected as part of the intersection counts. See **Table 6** for a summary of pedestrian volumes in the peak hours. As shown in the table, few pedestrians were observed in the area with the highest volumes at Mills Road / MacDonald Park Road and Highway 17. However, as the counts were conducted during the COVID pandemic, the observed volumes may be lower than would typically occur.

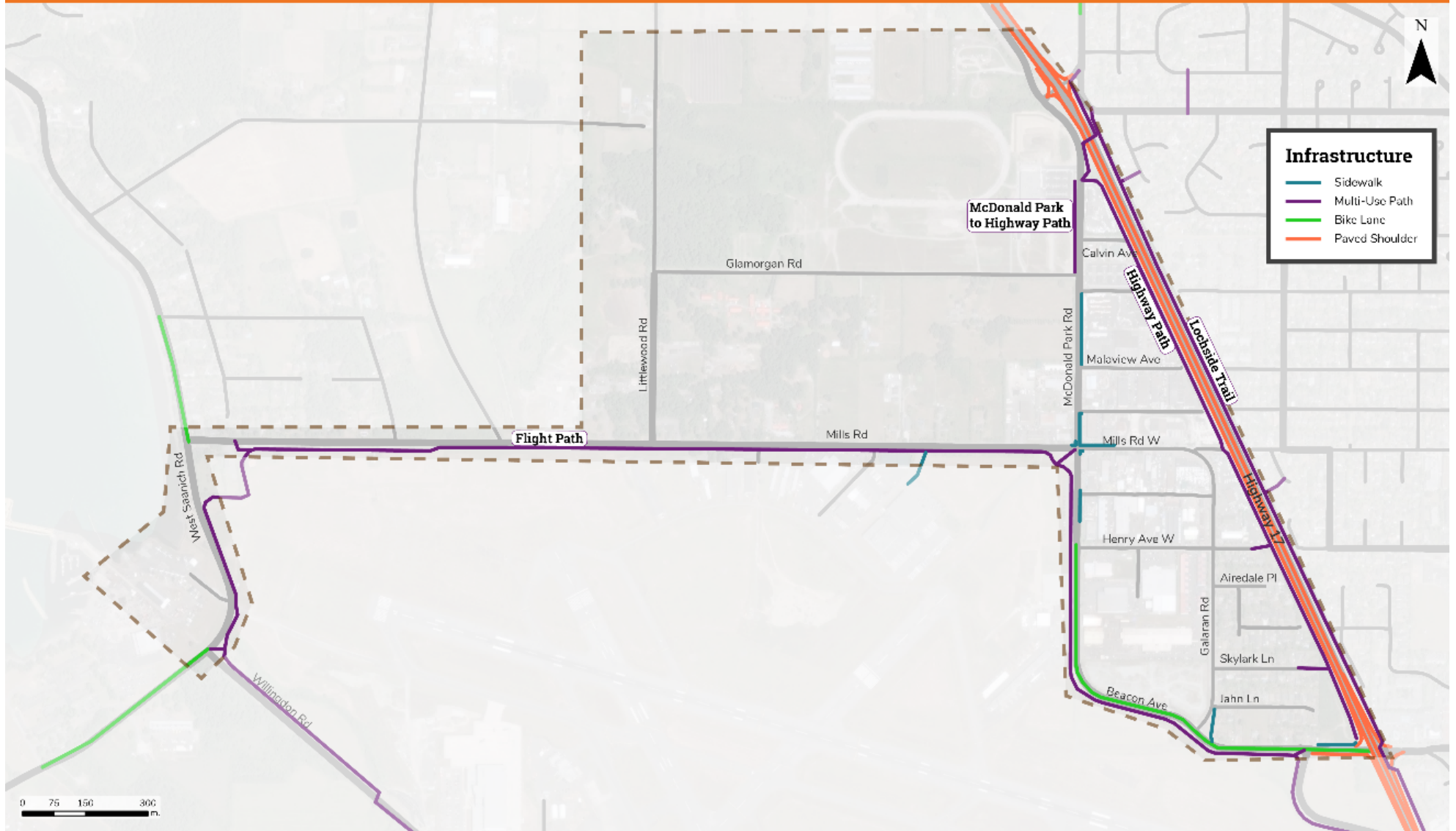
TABLE 6. PEDESTRIAN COUNTS

| Intersection | Total Pedestrians | |
|---------------------------------|-------------------|-----------|
| | AM Peak | PM Peak |
| Hwy 17 / Beacon Ave | N/A | 11 |
| Beacon Ave / Stirling Way | 8 | 5 |
| Beacon Ave / Galaran Rd | 1 | 0 |
| McDonald Park Rd / Mills Rd | 7 | 4 |
| McDonald Park Rd / Glamorgan Rd | 0 | 3 |
| McDonald Park Rd / John Rd | 0 | 0 |
| Hwy 17 / McDonald Park Rd | 0 | 0 |
| W Saanich Rd / Mills Rd | 0 | 0 |
| Total | 16 | 23 |

The key barriers to the pedestrian network are:

- Uncomfortable walking environments due to heavy truck traffic, particularly on Galaran Road
- Lack of sidewalk connectivity
- Lack of lighting, particularly on the Highway Path
- Poor visibility of crosswalks at several locations in the study area

Map 6. Active Transportation Network





2.4.2 BIKE NETWORK

Similar to the pedestrian network, the bike network in the study area is largely underdeveloped. The Flight Path and Highway Path provide some connectivity, but the lack of bike facilities on Galaran Road and McDonald Park Road north of Mills Road present barriers to current and prospective cyclists trying to access employment destinations in the study area. Further, the lack of bike facilities on Henry Avenue and Mills Road result in poor east-west connectivity and make it more challenging to access the multi-use paths.

Unbuffered bike lanes are located on Beacon Avenue from Highway 17 to Henry Avenue and a 'bikeway' is located on McDonald Park Road north of Henry Avenue. The Town of Sidney does not define what a bikeway facility is; however, it functions like a shared use lane where cyclists share the vehicle lane with motor vehicles.



Unbuffered bike lanes on Beacon Avenue.



Bicycle volumes were also included in the intersection counts completed in the study area. **Table 7** illustrated the bicycle volumes. As the counts were conducted during the COVID pandemic, the observed volumes may be lower than would typically occur. As shown in the table, a total of 38 bikes were observed in the AM peak hour compared to 66 in the PM peak hour for the entire study area. The West Saanich Road / Mills Road intersection had the highest number of bike activity, followed by the Beacon Avenue / Stirling Way intersection. These locations are highly used as cyclists can utilize the Flight Path.

TABLE 7. BIKE COUNTS

| Intersection | Total Bikes | |
|---------------------------------|-------------|-----------|
| | AM Peak | PM Peak |
| Hwy 17 / Beacon Ave | N/A | 6 |
| Beacon Ave / Stirling Way | 13 | 10 |
| Beacon Ave / Galaran Rd | 2 | 4 |
| McDonald Park Rd / Mills Rd | 2 | 8 |
| McDonald Park Rd / Glamorgan Rd | 2 | 12 |
| McDonald Park Rd / John Rd | 3 | 5 |
| Hwy 17 / McDonald Park Rd | 1 | 3 |
| W Saanich Rd / Mills Rd | 15 | 18 |
| Total | 38 | 66 |

Key barriers to the cycling network are:

- Poor east-west connectivity to the multi-use paths
- Lack of a safe bike facility on McDonald Park Road, where truck vehicle volumes are highest
- Except for the pedestrian overpass at the northern edge of the study area or the signal at Highway 17, there are limited opportunities to safely cross Highway 17 to access downtown Sidney and the Lochside Regional Trail



2.5 TRANSIT

This section draws from Section D3 of the WSLAP to summarize the existing transit conditions. The study area is primarily served by two transit routes and an additional four routes that stop at Beacon Avenue and Stirling Way, as presented below and shown in **Map 7**.

Primary

- Route 83 (Sidney / Brentwood / Royal Oak)
- Route 85 (North Saanich)

Additional

- Route 71 (Swartz Bay / Downtown via West Sidney)
- Route 82 (Sidney / Saanichton via Stautw)
- Route 87 (Saanichton / Sidney via Dean Park)
- Route 88 (Sidney / Airport)

The 70 (Swartz Bay / Downtown), 72 (Swartz Bay / Downtown) and 75 (Saanichton / Royal Oak / Downtown) all provide regional connections to/from the study area. The 70 Swartz Bay / Downtown offers limited stop service and is currently designated within the transit system as a “Regional Route.” However, as the Transit Future Plan is implemented over time, this route is designated to evolve to become one of the system’s four Rapid Transit routes offering 15 minute or better frequencies throughout the day.

Connections to routes serving the study area occur primarily at the McTavish Exchange and in Downtown Sidney at James White at Fifth and Fifth at Beacon. Routes 83 and 85 are the only transit routes with extensive coverage in the study area, whereas others only traverse the southern part of the area via Beacon Avenue West. Overall bus service is limited with average frequency ranging from 1 to 2 hours on weekdays.



A preliminary assessment of the quality and design of the bus stops within the study area was completed. For the purposes of this study, bus stops will be categorized into two types, which can be described as:

1. Basic Bus Stop, includes mandatory elements, such as identification markings (bus stop pole, identification sign, painted curb).
2. Enhanced Bus Stop, includes the Basic Bus Stop amenities, but also includes landing pad, and accessible routes leading to / from the bus stop, and extra passenger amenities to improve the transit experience such as seating, lighting, and shelter.

The study area has a total of 17 bus stops found on various streets including McDonald Park Road, Galaran Road, Beacon Ave West, and Mills Road, West Saanich Road. According to the WSLAP, except for the westbound bus stop on Beacon Avenue W at Stirling Way (102251), all of the bus stops in the study area are considered 'basic' and many lack a painted curb, landing bay, or accessible routes to / from the stop.



Route 85 (North Saanich) left and shown to the right is example of the bus stops commonly found in the study area, which lack a painted curb, landing bay, and accessible routes to/from the stop.



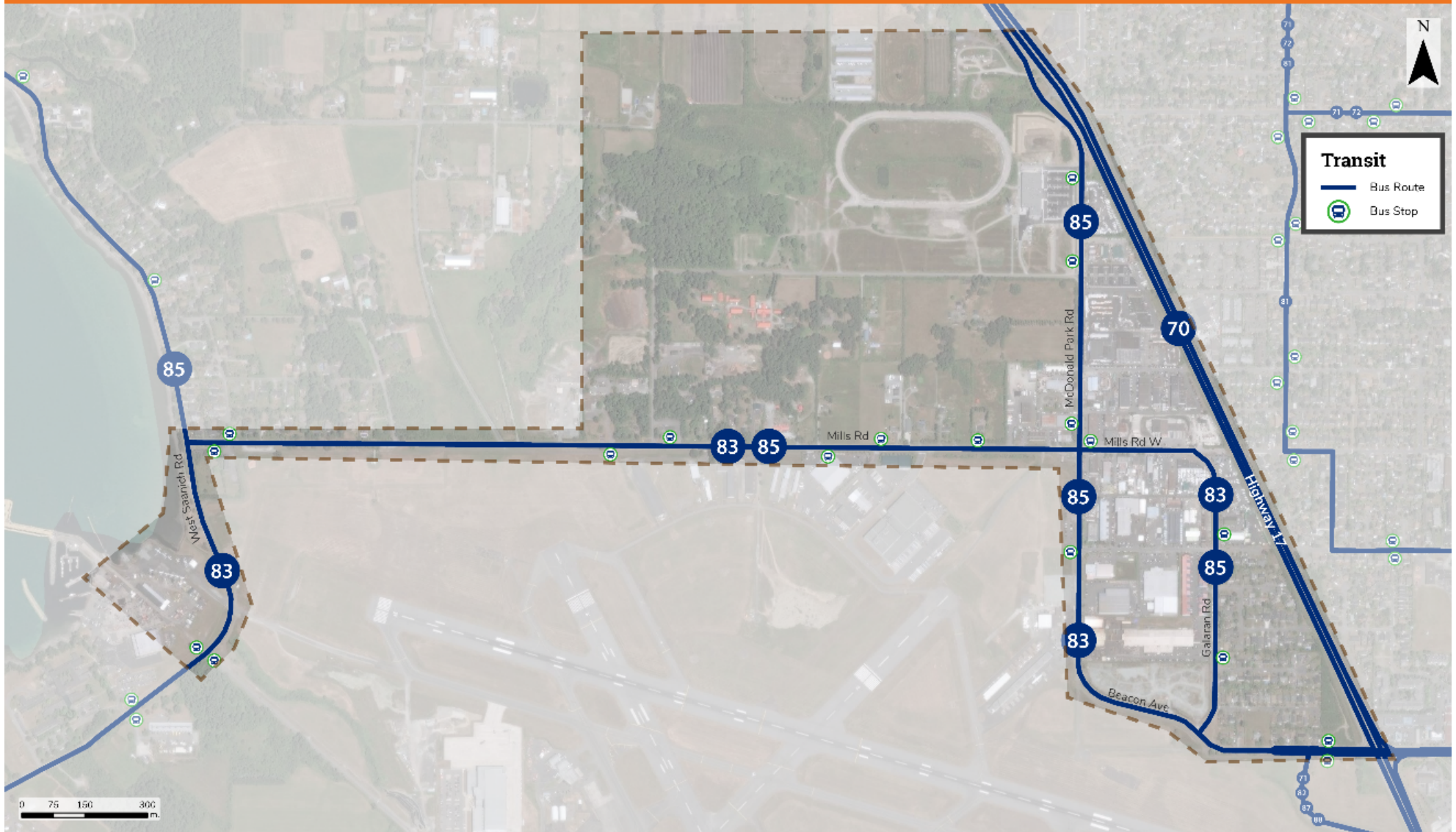
Ridership data provided by BC Transit confirmed that ridership is very low in the study area. Except for the bus stop at Beacon Ave W / Pat Bay Highway, boardings and alightings average less than 5 per day across the 17 bus stops. Overall there are less than 35 passengers using transit in the study area.

TABLE 8. SUMMARY OF AVERAGE OF DAILY RIDERSHIP IN STUDY AREA⁷

| Bus Stop Location / ID | Boardings | Alightings | Total |
|---|-----------|------------|-----------|
| Beacon Ave W at Patricia Bay EB, (102248) | 0 | 7 | 8 |
| Beacon Ave W at Stirling WB, (102251) | 6 | 0 | 6 |
| Galaran at Skylark NB, (102257) | 0 | 0 | 0 |
| Galaran at Henry Ave W NB, (102266) | 0 | 1 | 1 |
| McDonald Park at Henry Ave W SB, (102267) | 0 | 1 | 2 |
| Mills Rd W at McDonald Park WB, (102279) | 1 | 3 | 4 |
| McDonald Park at Mills SB, (102383) | 2 | 0 | 2 |
| McDonald Park at Glamorgan SB, (102300) | 0 | 0 | 0 |
| Mills Road at West Saanich EB, (101779) | 0 | 1 | 2 |
| Mills Road at 1620 Block EB, (101813) | 0 | 0 | 0 |
| Mills Road at 1893 Block EB, (101814) | 0 | 0 | 1 |
| Mills Road at 1920 Block WB, (102281) | 0 | 0 | 1 |
| Mills Road at Avenger WB, (102284) | 0 | 0 | 1 |
| Mills Road at Littlewood WB, (102289) | 0 | 0 | 0 |
| Mills Road at West Saanich WB, (102298) | 0 | 0 | 1 |
| West Saanich at 9850 Block EB, (102268) | 1 | 1 | 2 |
| West Saanich at 9860 Block WB, (102273) | 1 | 1 | 2 |
| Total | 11 | 15 | 33 |

⁷ Average daily ridership figures provided by BC Transit based on counts from September 2018.

Map 7. Transit Network





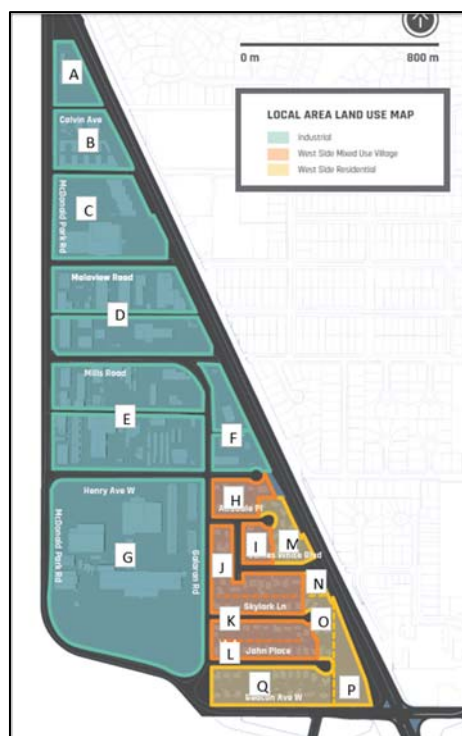
3.0 LAND USE ANALYSIS

The expected future level of development is based on discussions and information provided by each of the individual jurisdictions (Town of Sidney, District of North Saanich, and the Victoria Airport Authority).

3.1 TOWN OF SIDNEY FUTURE DEVELOPMENT

For the Town of Sidney's portion of the Beacon West study area, the following assumptions were made regarding the long term future land use:

- the existing industrial areas (Area A to G) will further densify to an average lot coverage of 40% (assuming single storey buildings);
- the residential areas in Area H to L will transition to mixed use buildings consisting of an average of 4 storey multifamily residential buildings with ground floor commercial space; and
- the residential areas in Area M to Q will transition to an average of 5 storey multifamily residential buildings.



For the purposes of this study, it was assumed that the industrial areas will be fully developed by 2040. Based on the above, the estimated total 2040 land use, including existing buildings / doors is summarized in **Table 9**.



TABLE 9. 2040 LAND USE SUMMARY – TOWN OF SIDNEY

| Area | Land Use | Industrial (G.F.A. – sq. ft.) | Commercial (G.F.A. – sq. ft.) | Residential Units |
|--------------|-------------|----------------------------------|----------------------------------|----------------------|
| A | Industrial | 35,835 | | |
| B | Industrial | 62,155 | | |
| C | Industrial | 144,214 | | |
| D | Industrial | 213,219 | | |
| E | Industrial | 283,172 | | |
| F | Industrial | 65,336 | | |
| G | Industrial | 480,315 | | |
| H | Mixed Use | | 54,902 | 191 |
| I | Mixed Use | | 29,915 | 104 |
| J | Mixed Use | | 74,852 | 260 |
| K | Mixed Use | | 89,144 | 310 |
| L | Mixed Use | | 47,649 | 166 |
| M | Residential | | | 110 |
| N | Residential | | | 29 |
| O | Residential | | | 104 |
| P | Residential | | | 128 |
| Q | Residential | | | 303 |
| Total | | 1,284,249 | 296,463 | 1705 |

This table is for the total square footage / units in the West Side Area and includes existing industrial square footage and residential doors.



3.2 DISTRICT OF NORTH SAANICH FUTURE DEVELOPMENT

Based on discussions with District staff, all the development within the District's portion of the Beacon West study area will occur at the Sandown site on McDonald Park Road. When complete, the Sandown site will consist of three large tenants (including the existing Canadian Tire store and two similar size tenants) and five smaller retail / restaurant tenants. In total, it is expected that the Sandown site will contain approximately 170,000 sq. ft. of commercial space. By 2040, all of the North Saanich increase in land use density is expected to be built out.

3.3 VICTORIA AIRPORT AUTHORITY FUTURE DEVELOPMENT

The Victoria Airport Authority specified nine parcels of land within their jurisdiction where future development is expected. The previously proposed Sidney Crossing development on the southwest corner of Highway 17 / Beacon Avenue and along Beacon Avenue was also included (Area #10) in the future land use. The parcel locations are identified on **Figure 1**. The expected land use and development size for each parcel is summarized in **Table 10**. The potential development in VAA is expected to be fully built-out by 2040.



TABLE 10. LAND USE SUMMARY - VAA

| Area | Land Use | Gross Floor Area sq. ft. |
|-------|--------------------------|--------------------------|
| 1 | Aviation Services | 23,056 |
| 2 | Industrial | 47,415 |
| 3 | Industrial | 51,742 |
| 4 | Industrial Business Park | 55,811 |
| 5 | Aviation Services | 27,642 |
| 6 | Industrial Business Park | 38,675 |
| 7 | Aviation Services | 32,292 |
| 8 | Aviation Services | 30,010 |
| 9 | Industrial | 168,821 |
| 10 | Commercial | 210,972 |
| Total | | 686,430 |



Figure 1: Future VAA Development Locations



4.0 LONG TERM CONDITIONS

4.1 LONG TERM VOLUMES (2040)

The future traffic growth within the Beacon West study area is expected to be primarily a result of the development within the study area. Due to the limited growth expected in North Saanich additional background traffic growth is not expected in the study area with the exception of Highway 17. For Highway 17 through volumes, a 2% linear annual growth factor (provided by the MOTI) was applied to the existing volumes to determine the long term highway volumes. For the Beacon Avenue West Catchment area the trips expected from the developments were added to the existing 2020 traffic volumes. Trips were based on full built out of the VAA, North Saanich, and Sidney land use densities identified in Section 3.

4.2 OPERATIONAL ANALYSIS

The long term 2040 AM and PM peak hour volumes were analyzed in Synchro / SimTraffic software to determine the long term conditions within the study area. The intersection movement levels of service (LOS) are summarized in **Tables 11 and 12** for the AM and PM peak hour respectively.



TABLE 11. 2040 INTERSECTION LOS – AM PEAK HOUR

| Intersection | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|---------------------------------|------------|---|---|------------|---|---|-----------|---|---|-----------|---|---|
| | L | T | R | L | T | R | L | T | R | L | T | R |
| Hwy 17 / Beacon Ave | F | E | A | D | C | A | F | F | A | F | F | A |
| Beacon Ave / Stirling Way | F | - | E | - | - | - | - | A | A | B | A | - |
| Beacon Ave / Galaran Rd | - | - | - | F | - | C | B | B | - | - | A | A |
| McDonald Park Rd / Mills Rd | F | F | F | C | C | C | B | B | B | B | B | B |
| McDonald Park Rd / Glamorgan Rd | A | A | A | A | A | A | B | B | B | B | B | B |
| McDonald Park Rd / John Rd | - | A | A | C | C | - | - | - | - | A | - | A |
| Hwy 17 / McDonald Park Rd | C | A | A | C | A | A | - | - | A | - | - | A |
| W Saanich Rd / Mills Rd | - | A | A | A | A | - | - | - | - | C | - | B |

During the AM peak hour, the Highway 17 / Beacon Avenue intersection continues to have multiple movements that are at failing levels of service (LOS E/F) including the northbound , eastbound, and westbound left turn and through movements. In the long term the northbound through will drop to a LOS F in the AM as well.

At the Beacon Avenue / Stirling Way and Beacon Avenue / Galaran Road intersections, the left turns onto Beacon Ave are at LOS F. The right turn off Stirling Way onto Beacon Ave is also at LOS E.

The McDonald Park Road / Mills Road northbound movement will operate at LOS F while the remaining movements will be at LOS C or better with the existing stop control. The remaining study intersections operate well in the AM with all movements at LOS C or better.



TABLE 12. 2040 INTERSECTION LOS – PM PEAK HOUR

| Intersection | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|---------------------------------|------------|---|---|------------|---|---|-----------|---|---|-----------|---|---|
| | L | T | R | L | T | R | L | T | R | L | T | R |
| Hwy 17 / Beacon Ave | F | F | A | E | F | A | F | F | A | F | F | A |
| Beacon Ave / Stirling Way | F | - | F | - | - | - | - | A | A | F | A | - |
| Beacon Ave / Galaran Rd | - | - | - | F | - | C | A | A | - | - | A | A |
| McDonald Park Rd / Mills Rd | F | F | F | F | F | F | E | E | C | C | C | C |
| McDonald Park Rd / Glamorgan Rd | A | A | A | A | A | A | C | C | C | C | C | C |
| McDonald Park Rd / John Rd | - | B | B | F | F | - | - | - | - | A | - | A |
| Hwy 17 / McDonald Park Rd | C | A | A | C | A | A | - | - | A | - | - | A |
| W Saanich Rd / Mills Rd | - | A | A | A | A | - | - | - | - | F | - | B |

Under long term conditions, during the PM peak hour operations break down at multiple intersections within the study area. At the Highway 17 / Beacon Avenue intersection, the majority of movements fail, with all left turn and through movements at LOS E/F in the PM.

At Beacon Avenue / Stirling Way, the northbound movements and the westbound left turn are at LOS F. At Beacon Avenue / Galaran Road, the left turn onto Beacon Ave is at LOS F. At McDonald Park Road / Mills Road, the northbound and southbound movements are all at LOS F and the eastbound left / through movement is at LOS E. The southbound movement at McDonald Park Road / John Road is also at LOS F.

The westbound left turn at West Saanich Road / Mills Road is at LOS F.

For details on existing and expected queues at Highway 17/Beacon Avenue see **Appendix A**.



5.0 MITIGATIONS

Where existing and long term operational issues were identified at the study intersections, mitigation measures were identified and reviewed to improve the intersection operations to acceptable levels of service.

5.1 HIGHWAY 17 / MCDONALD PARK ROAD

Potential modifications to the Highway 17 / McDonald Park Road intersection were examined to determine the impacts on surrounding traffic conditions. Closure of the northbound / southbound left turn lanes (on Highway 17) would improve the safety of the intersection but would divert the left turning traffic to the nearest intersection, with most vehicles diverting to Highway 17 / Beacon Avenue intersection. The added traffic at Highway 17 / Beacon Avenue would reduce the operations of the northbound and southbound left turn lanes to LOS F (from LOS E under existing conditions). The southbound left turn is impacted the most, with the delay increasing from 75 seconds to 4.5 minutes.

Modifying the Highway 17 / McDonald Park Road intersection to a full-movement signalized intersection has the potential to reduce traffic at the Highway 17 / Beacon Avenue intersection. However, this change would likely result in increased volumes through the residential neighbourhood east of Highway 17, particularly on Ardwell Avenue. The Ardwell Avenue / McDonald Park Road intersection is closely spaced (less than 30m) with the Highway 17 intersection. The close proximity of this intersection may create additional challenges if a heavy left turn from Ardwell Avenue onto MacDonald Park Road occurs. A detailed study of the impacts of a full movement intersection should be conducted before changes are made.

Although the potential for a signal was reviewed above, it is understood based on discussions with MOTI staff that it is unlikely that a signal will be implemented at this location, as this section of the Highway 17 corridor is working towards becoming a freeway with interchanges and no signals.



5.2 HIGHWAY 17 / BEACON AVENUE

Short term mitigation measures include the addition of dual northbound, southbound, and eastbound left turn lanes and a second westbound through lane (R.O.W. permitting). While these measures improve conditions in the short term; the intersection will have failing movements at only 20% of 2040 build-out, including LOS F on the eastbound through lane and LOS E on the southbound, eastbound, and westbound left turns and southbound through lanes. Long term mitigation may require grade separation to manage queues and delays.

5.3 BEACON AVENUE / STIRLING WAY AND BEACON AVENUE / GALARAN ROAD

Upgraded traffic control (signal or roundabout) is required at Beacon Avenue / Stirling Way under existing conditions and will be required at Beacon Avenue / Galaran Road before 20% of 2040 buildout. See **Table 13** (Section 7) for land use and trips generate at 20% built-out. However, a signal or roundabout at Stirling Way is problematic due to the proximity to the Highway 17 intersection and the need to have two upgraded 'T' intersections (Stirling Way and Galaran Road). It has been previously recommended, in multiple studies, to realign Stirling Way to the Galaran Road intersection and install a roundabout. In the short term, a single lane roundabout is adequate and improves the short and long term impacts at these two intersections. In the long term the roundabout will be required to be increased to a two lane roundabout. Concept sketches of a single lane and a two lane roundabout at Beacon Ave / Galaran Rd / Stirling Way (along with a re-aligned Stirling Way) are shown below.

The implementation of a short term upgrade, traffic signals, at Stirling Way / Beacon Avenue, is not recommended as the roundabout at Galaran Road is needed within 5 years and creates throw-away costs for installation of the signal and then the removal. The poor movement (northbound left) occurs for a limited period of the day (two hours maximum). It is recommended that funds be directed towards the realignment of Stirling Way rather than a temporary signal.



Concept sketch of a single lane Beacon Ave / Galaran Rd / Stirling Way roundabout and Stirling Way realignment.



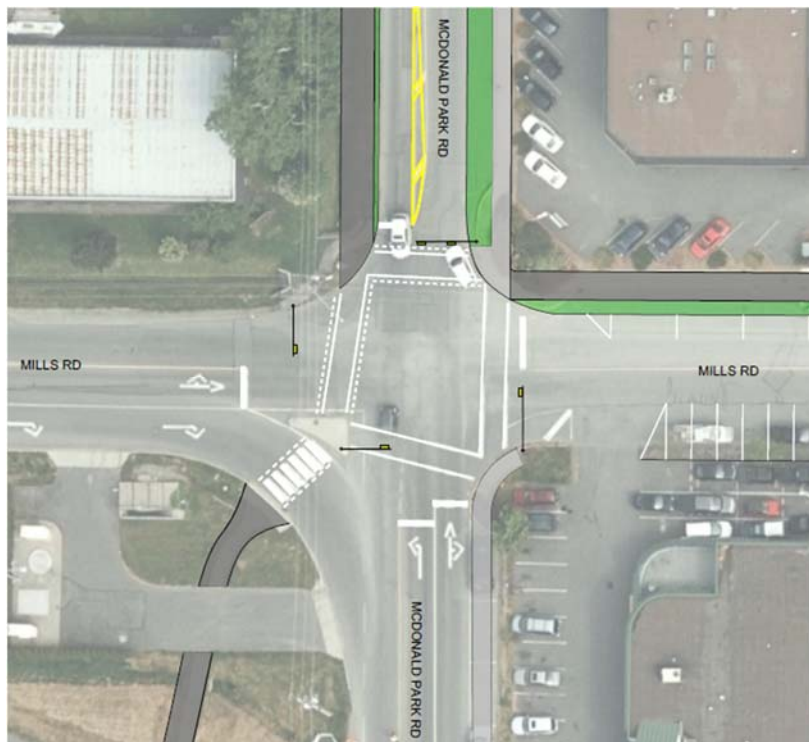
Concept sketch of a two-lane Beacon Ave / Galaran Rd / Stirling Way roundabout and Stirling Way realignment.



5.4 MCDONALD PARK ROAD / MILLS ROAD

There are no mitigations required in the short term at this intersection. Upgraded traffic control at this intersection will be required before the expected development is 60% built out (estimated to occur by 2035 if linear rate of development occurs). A traffic signal is warranted at 60% build-out (See Table 13 for land use and trips generate at 60% built-out); with a signal, the intersection operates at LOS C or better for all movements in the long term. A signal is recommended over a roundabout due to the lack of right-of-way to accommodate the size of roundabout required for truck traffic. A concept sketch of a McDonald Park Road / Mills Road signal (including recommended cross section upgrades discussed in Section 6) is shown below.

Although the traffic signal is not warranted until 60% of build-out, a signal may be considered at an earlier date if a multi-use path is constructed on Mills Road or on McDonald Park Road (north of the intersection) in order to provide a signalized crossing to the existing Flight Path on the southwest corner.



Concept sketch of signalized McDonald Park Rd / Mills Rd intersection.



5.5 MCDONALD PARK ROAD / JOHN ROAD

John Road is at LOS F in the PM peak hour under long term conditions; however, this movement is low volume (less than 20 vph). Therefore, improvement is not necessary.

5.6 WEST SAANICH ROAD / MILLS ROAD

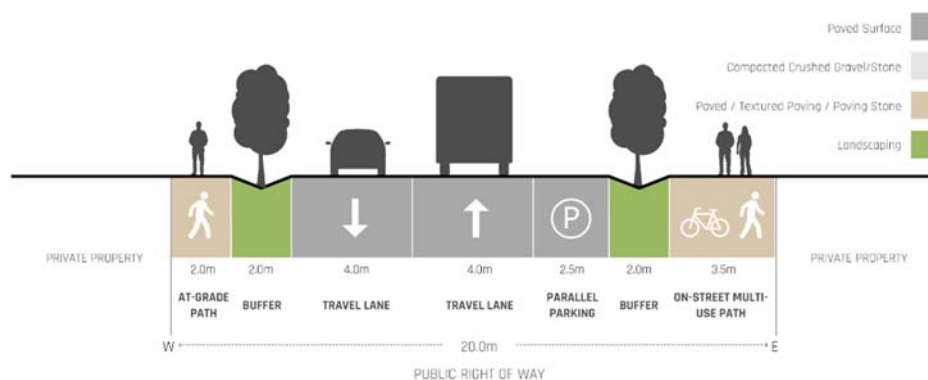
The westbound left turn off Mills Road onto West Saanich Road is at LOS E during the PM peak hour. Modifying the intersection to an all-way stop results in improvement of the intersection operations to LOS C or better for all movements.

6.0 OPTIONS ANALYSIS

Options for improving the existing road corridors were identified for the study area roads. The cross-sections included in the West Sidney Local Area Plan were used as a starting point for creating the options and are designed to balance vehicle / truck accommodation with improved pedestrian / bicycle facilities and work with existing constraints. The full plan views for each option are included in **Appendix A**.

6.1 MCDONALD PARK ROAD (NORTH OF MILLS ROAD)

In the West Sidney Local Area Plan, the recommended cross-section for McDonald Park Road north of Mills Road includes an east-side sidewalk and a west-side multi-use path, each separated from the road by a boulevard. Parallel parking was retained on the east side of McDonald Park Road.



McDonald Park Road Cross Section from WSLAP



Based on this cross-section, two options for McDonald Park Road were created. Both options retained the existing multi-use path on the west side of McDonald Park Road north of Glamorgan Road (along the Sandown property frontage). In Option 1, the multi-use pathway switches to the east side of McDonald Park Road from Glamorgan Road to Mills Road (matching the WSLAP cross-section), maintaining the drainage ditch on the west side of the roadway. In Option 2 the multi-use path continues the west side of McDonald Park Road; the existing drainage ditch would be removed to provide space for the multi-use path while maintaining the existing vegetation along the west property line. Both options also formalize the parallel parking on the east side of the road and include a sidewalk on the side of the road opposite the multi-use path. The existing travel lanes for both options are oversized at 4.0m to accommodate large trucks. These lane widths could be reduced to 3.6m which would still accommodate the high truck volumes and could also provide a shoulder on the west side of McDonald Park Road. Oversized lanes may encourage higher vehicle speeds, particularly for passenger vehicles.

Option 1





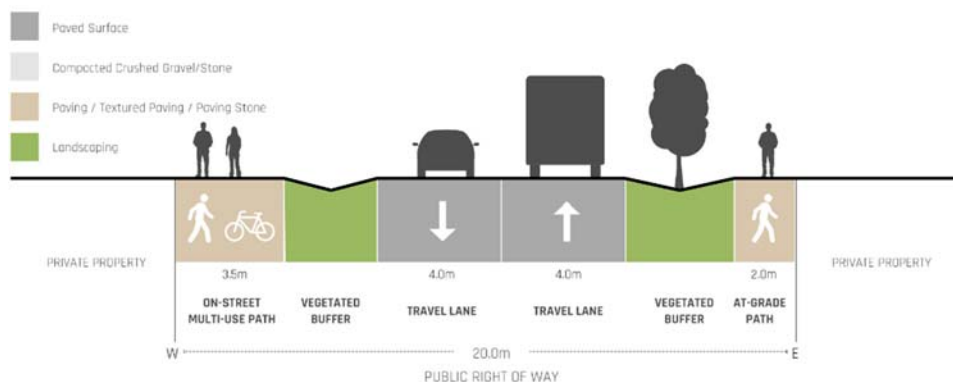
Option 2



The primary difference between the two options is the placement of the multi-use pathway and sidewalk. Option 1 requires pathway users to cross McDonald Park Road at Glamorgan Road; they would have to cross again at Mills Road to continue onto the Flight Path. Option 2 requires that the significant drainage ditch on the west side be removed to provide space for the pathway but provides a continuous pathway along the west side that removes the need for two crossings of McDonald Park Road and aligns with the existing path south of Mills Road; therefore Option 2 is the preferred option. Option 2 also aligns with the District of North Saanich draft Active Transportation Plan (March 2021) recommendation of a multi-use pathway on the west side of McDonald Park Road between Glamorgan Road and Mills Road, to connect the existing multi-use pathways to the north and south.

6.2 MCDONALD PARK ROAD (SOUTH OF MILLS ROAD)

The WSLAP cross-section for McDonald Park Road south of Mills Road retains the existing multi-use path (the 'Flight Path') on the west side of McDonald Park Road and the existing travel lane widths (4.0m). The design also includes an at-grade pathway on the east side, separated from the road by a vegetated buffer.



McDonald Park Road Cross Section from WSLAP

Option 1 maintains the existing Flight Path and bicycle lanes (south of Henry Road) and adds a 2m at-grade path and vegetated buffer on the east side of the road, but would require the removal of existing trees on the east side of the road between Henry Avenue and Mills Road. Option 2 replaces the at-grade path with a raised sidewalk adjacent to the edge of the road. A sub-option for Option 2 is to replace the existing northbound bicycle lane with vegetation and direct all cyclists to the Flight Path. On the west side of the road the existing marked bicycle lane could be converted to a shoulder (no markings for bicycles). Both options would result in a loss of 5 parking spaces near the Mills Road intersection.

For the section between Henry Road and Mills Road bicycle lanes could be added to each side. In Option 1 this would eliminate the landscape area on the east side. In Option 2 the existing section of sidewalk would need to be relocated to accommodate bicycle lanes to Mills Road. For the Option 2 sub-option, no change to the Option 2 plan view shown below would be required. Alternatively, with Option 1 eliminating the landscaped area on the east side could be used to provide space for parallel parking (approximately 6 spaces could be gained).



Option 1



Option 2

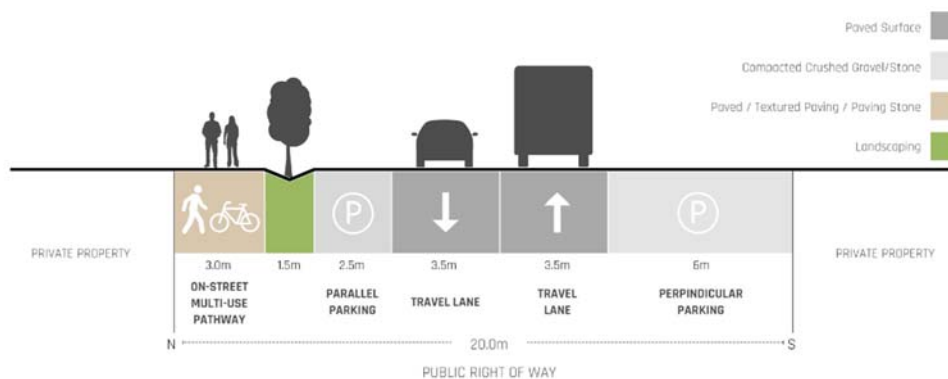


The primary difference between the options provided is the placement and type of pedestrian facility on the east side of McDonald Park Road. Both options provide pedestrian access to the east side businesses. The boulevard in Option 1 provides separation between pedestrians and traffic (bicycle lanes) but would require removal of a number of mature trees that are on / near the property line. The sidewalk in Option 2 also provides protection for pedestrians as a raised facility and with the bicycle lanes between the sidewalk and road. If the sub-option for Option 2, which replaces the bicycle lanes with boulevard, the pedestrians would be separated by vegetation from the roadway; however, all cyclists would have to use the Flight Path and not be provided two options (bicycle lane and Flight Path) for travelling along the corridor.



6.3 MILLS ROAD (EAST OF MCDONALD PARK ROAD)

The WSLAP cross-section for Mills Road, east of McDonald Park Road, provides formalized parking on both sides of the road (perpendicular parking on the south side and parallel parking on the north side). The cross-section also includes a multi-use path on the north side that provides a connection from the Flight Path and with Highway Path. A vegetated boulevard would provide a buffer between the multi-use pathway and the road.



Mills Road, east of McDonald Park Road Cross Section from WSLAP

Option 1 includes the separated multi-use pathway, while Option 2 replaces the multi-use pathway with a 2m sidewalk that meanders along the corridor to avoid having utility poles within the middle of the path/sidewalk. Both options provide the same parking on both sides as per the WSLAP cross-section.

Option 1





Option 2



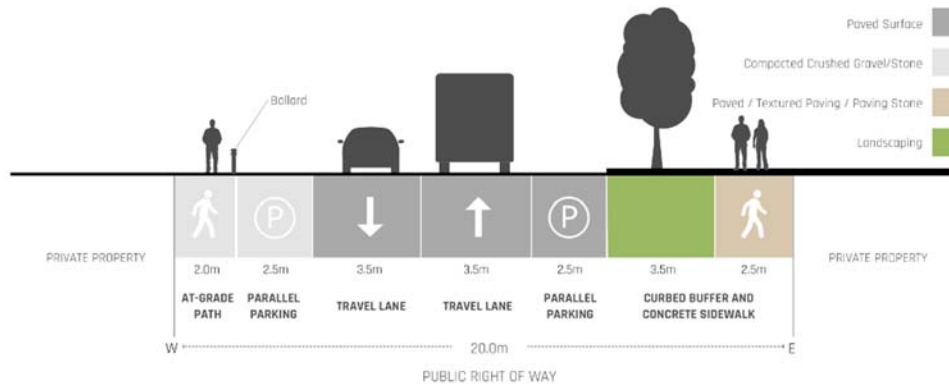
The primary difference between the two options is the placement and type of facility on the north side. Both options accommodate pedestrians; however, the multi-use pathway in Option 1 would accommodate cyclists while the sidewalk in Option 2 would not. However, there are multiple utility poles located on the proposed multi-use pathway location which would require relocation of the utility poles in the event the pathway cannot be routed around some or all of the poles. The narrower Option 2 sidewalk would be able to be built around the poles. Cyclists in Option 2 would share the lane with vehicles. Sharing of the roadway is appropriate as volumes on this corridor are less than 3,000 vpd. However, this corridor is intended to link the Highway Path and the Flight Path; as such, Option 1 is preferred.

6.4 MILLS ROAD (WEST OF MCDONALD PARK ROAD)

The existing cross section on Mills Road, two travel lanes and the Flight Path on the south side are proposed to remain.

6.5 GALARAN ROAD

The West Sidney Local Area Plan cross-section for Galaran Road includes an at-grade path on the west side and a separated sidewalk on the east side of Galaran Road. The design also retains and formalizes the existing parking on both sides of the road.



Galaran Road Cross Section from WSLAP

Option 1 is based on the WSLAP cross-section. Option 2 removes the west-side at-grade path in order to retain the existing natural drainage on the north end of Galaran and uses the additional space to provide perpendicular parking on the south end of Galaran (as opposed to parallel parking in Option 1). Option 2 also places the east sidewalk at the edge of the roadway and eliminating the vegetated boulevard.

Option 1





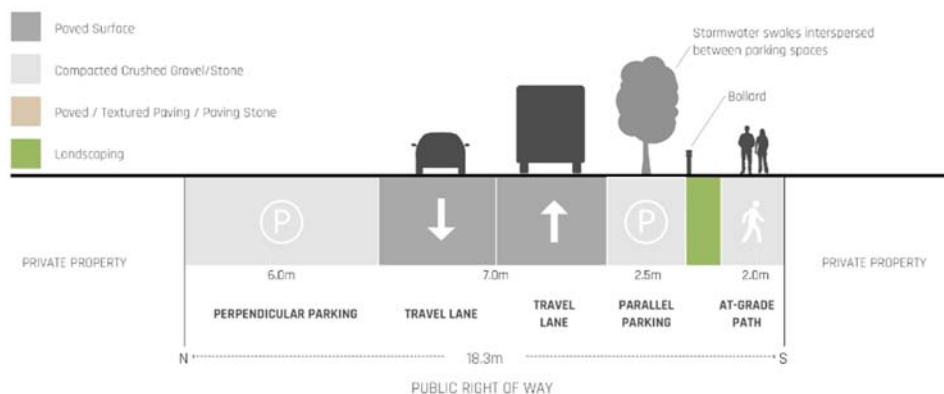
Option 2



Option 1 provides pedestrian connectivity on both sides of Galaran Road, while Option 2 only provides a pedestrian facility on the east side. Option 2 provides additional parking; however, there is ample parking in Option 1 and it is unlikely that the additional parking will be required due to the planned development. The lack of a west side sidewalk in Option 2 also would also cause vehicle users to cross Galaran to access their vehicles from the east side sidewalk. Therefore, the preferred option is Option 1 with modified vegetated boulevard and planned to be implemented in 2023.

6.6 HENRY AVENUE

The WSLAP cross-section for Henry Avenue retains and formalizes the existing parking on both sides of Henry Avenue. The design also provides an at-grade path on the south side with a narrow vegetated buffer separating pedestrians from the roadway.



Henry Avenue Cross Section from WSLAP



Both options retain the existing parking, with parallel parking along the south side and primarily perpendicular parking on the north side. Option 1 includes the at-grade path along the property line and a narrow vegetation buffer between the parking and path. Option 2 places the sidewalk along the parking and maintains the narrow landscape strip along the property line.

Option 1



Option 2



Both options provide the same level of pedestrian connectivity and the same amount of parking. In both options, pedestrians are separated from the vehicle travel lane by the parallel parking area on the south side. Option 1 provides additional separation with the vegetated buffer but may be too narrow of a space to maintain existing natural infiltration for drainage. With the sidewalk in Option 2 drainage infrastructure would be required to be implemented.



7.0 IMPLEMENTATION PLAN

This section provides a strategy / timeline for the implementation of the measures recommended in this traffic study. The timing of these improvements is based on known projects at the time of this report and linear growth of development. If development is accelerated or delayed; improvements may be required earlier or later than identified.

Table 13 outlines built-out years, the estimated amount of trips (during the PM peak hour) or land use to allow for identification of when improvements may be required as development pace may vary.

TABLE 13: LAND USE AND TRIP VOLUME LEVELS BY PERCENTAGE BUILT

| % of Expected Development | Estimated Year | New Development | | | Total Trips (PM Peak) |
|---------------------------|----------------|----------------------|----------------------|---------------------|-----------------------|
| | | Industrial (sq. ft.) | Commercial (sq. ft.) | Residential (units) | |
| 10% | 2022 | 90,223 | 62,844 | 160 | 336 |
| 20% | 2024 | 180,446 | 125,687 | 320 | 672 |
| 30% | 2026 | 270,669 | 188,531 | 480 | 1007 |
| 40% | 2028 | 360,892 | 251,374 | 640 | 1343 |
| 50% | 2030 | 451,115 | 314,218 | 801 | 1679 |
| 60% | 2032 | 541,338 | 377,062 | 961 | 2015 |
| 70% | 2034 | 631,561 | 439,905 | 1121 | 2351 |
| 80% | 2036 | 721,784 | 502,749 | 1281 | 2686 |
| 90% | 2038 | 812,007 | 565,592 | 1441 | 3022 |
| 100% | 2040 | 902,230 | 628,436 | 1601 | 3358 |

Where developments occur frontage improvements to meet the identified cross section should be constructed as part of any rezoning. Redevelopments, without rezoning, should also be encouraged to construct frontage improvements. **Table 14** outlines the implementation strategy.



TABLE 14: IMPLEMENTATION STRATEGY

| Action | Description | Time Frame |
|---|--|------------------------|
| Install a roundabout at Beacon Ave / Galaran Rd | Install a single lane roundabout at Beacon Ave / Galaran Rd intersection. This should be done in conjunction with re-alignment of Stirling Way. | Short term (0-3 years) |
| Re-align Stirling Way to connect to Beacon Ave / Galaran Rd | Re-align Stirling Way to connect to the Beacon Ave / Galaran Rd intersection. This should be done in conjunction with the installation of a roundabout at Beacon Ave / Galaran Rd | Short term (0-3 years) |
| McDonald Park Rd (North of Mills Rd) Corridor Upgrades | Implement the recommended cross-section changes in Option 2 of Section 6.1, including the following: <ul style="list-style-type: none"> - Install a multi-use pathway on the west side of McDonald Park Rd from Glamorgan Rd to Mills Rd - Install a sidewalk on the east side, separated from the travel lane by a vegetated buffer | Short term (0-3 years) |



| Action | Description | Time Frame |
|--|---|-----------------------------|
| Galaran Rd Corridor Upgrades | <p>Implement the recommended cross-section changes in Option 1 of Section 6.5, including the following:</p> <ul style="list-style-type: none"> - Installing a 2m sidewalk on the east side of Galaran Rd, separated from the road by a vegetated buffer - Install a gravel pedestrian pathway on the west side of the road - Formalize the on-street parking on both sides of Galaran Rd | Short term (0-3 years) |
| McDonald Park Rd (South of Mills Rd) Corridor Upgrades | <p>Implement the recommended cross-section changes in Option 2 of Section 6.2, including installing a raised sidewalk adjacent to the east edge of the road. Consider installing bike lanes on both sides of McDonald Park Rd north of Henry Ave</p> | Medium term (5-10 years) |
| Mills Rd Corridor Upgrades | <p>Upgrade the Mills Rd corridor, east of MacDonald Park Road, by formalizing the existing on-street parking (parallel on the north side and perpendicular on the south side) and installing a multi-use pathway along the north property line to connect the Highway Path with the Flight Path and the proposed path on McDonald Park Rd north of Mills Rd. Include a vegetated buffer separating the pathway from the road.</p> | Medium term (5-10 years) |



| Action | Description | Time Frame |
|---|---|--------------------------|
| Henry Ave Corridor Upgrades | Upgrade the Henry Avenue corridor to formalize the existing parallel and perpendicular parking and install a pedestrian pathway on the south side of the road | Medium term (5-10 years) |
| Traffic Signal at McDonald Park Rd / Mills Rd | Install a traffic signal at McDonald Park Rd / Mills Rd. The signal should include signalized crosswalks to access the proposed multi-use pathways on Mills Rd and on McDonald Park Rd north of the intersection. | Long term (10+ years) |
| All-way stop at West Saanich Rd / Mills Rd | Install all-way stop control at the West Saanich Rd / Mills Rd intersection to improve the operations of the westbound movements. | Long term (10+ years) |



APPENDIX A: HIGHWAY 17/BEACON AVENUE QUEUE LENGTHS





| Intersection | Movement | 95 th Percentile Queue (m) | | | |
|----------------------------|----------|---------------------------------------|---------|--------------|--------------|
| | | 2020 AM | 2020 PM | 2040 AM | 2040 PM |
| Highway 17 / Beacon Ave | EBL | 28.8 | 40.8 | 82.5 | 68.5 |
| | EBT | 29.9 | 59.5 | 161.4 | 196.2 |
| | EBR | 26.7 | 26.2 | 25.4 | 30.9 |
| | WBL | 47.9 | 79.3 | 70.6 | 126.9 |
| | WBT | 32.2 | 57.2 | 102.4 | 488.4 |
| | WBR | 0.0 | 0.0 | 12.4 | 486.8 |
| | NBL | 70.2 | 33.5 | 77.6 | 77.5 |
| | NBT | 78.0 | 59.1 | 484.1 | 482.9 |
| | NBR | 10.9 | 10.4 | 47.5 | 30.4 |
| | SBL | 57.9 | 46.4 | 129.3 | 62.5 |
| | SBT | 51.7 | 47.7 | 174.2 | 73.1 |
| | SBR | 0.0 | 0.0 | 106.9 | 73.6 |



APPENDIX B: ROAD CORRIDOR UPGRADE OPTIONS – PLAN VIEWS





APPENDIX B: ROAD CORRIDOR UPGRADE OPTIONS – PLAN VIEWS



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3.0m MULTIUSE PATH

2.0m SIDEWALK

2.5m PARKING

4.0m TRAVEL LANE

4.0m TRAVEL LANE

CONNECTION TO X-WALK

3.0m MULTIUSE PATH (EXISTING)

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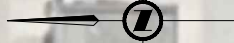
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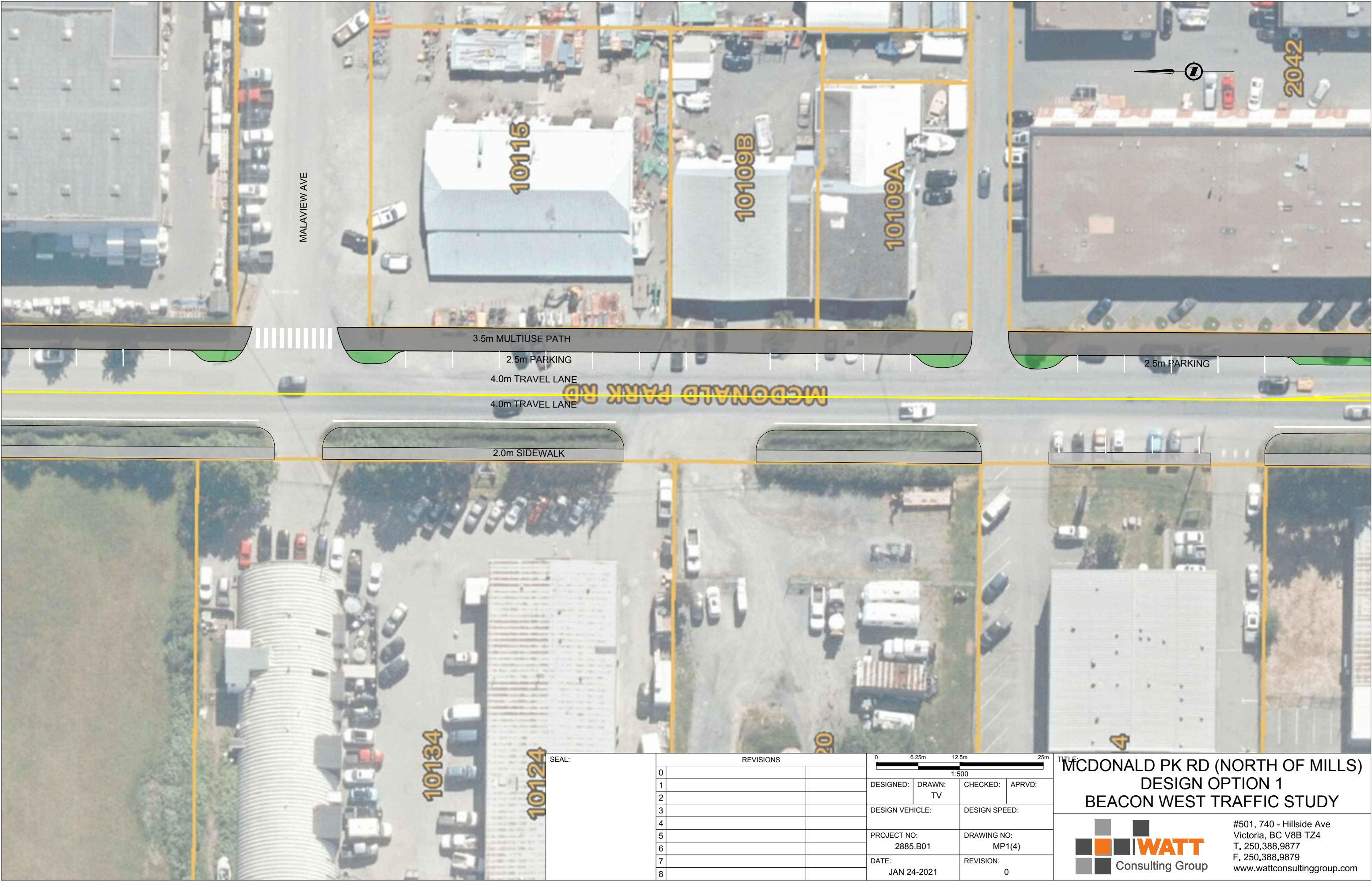
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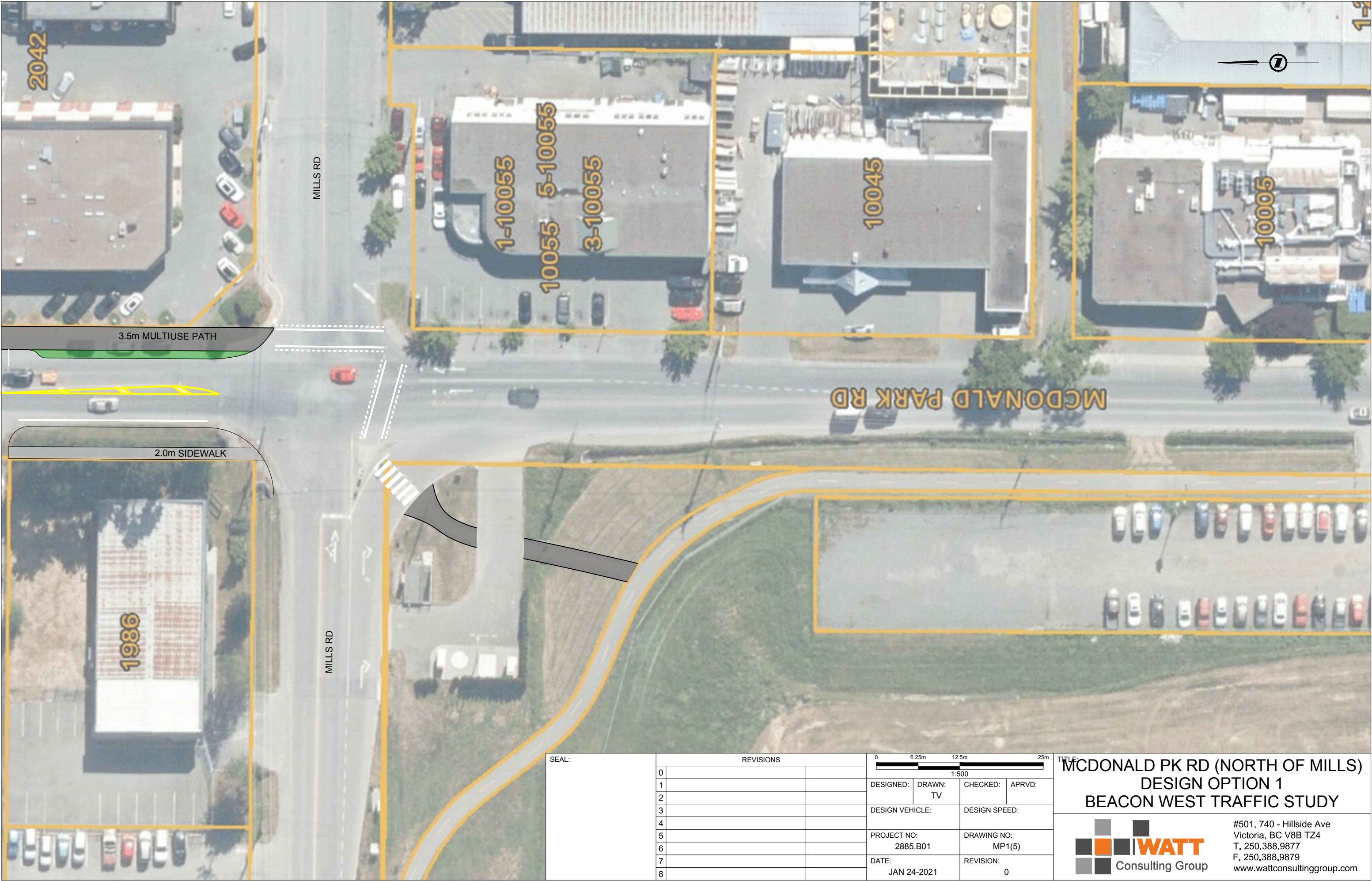
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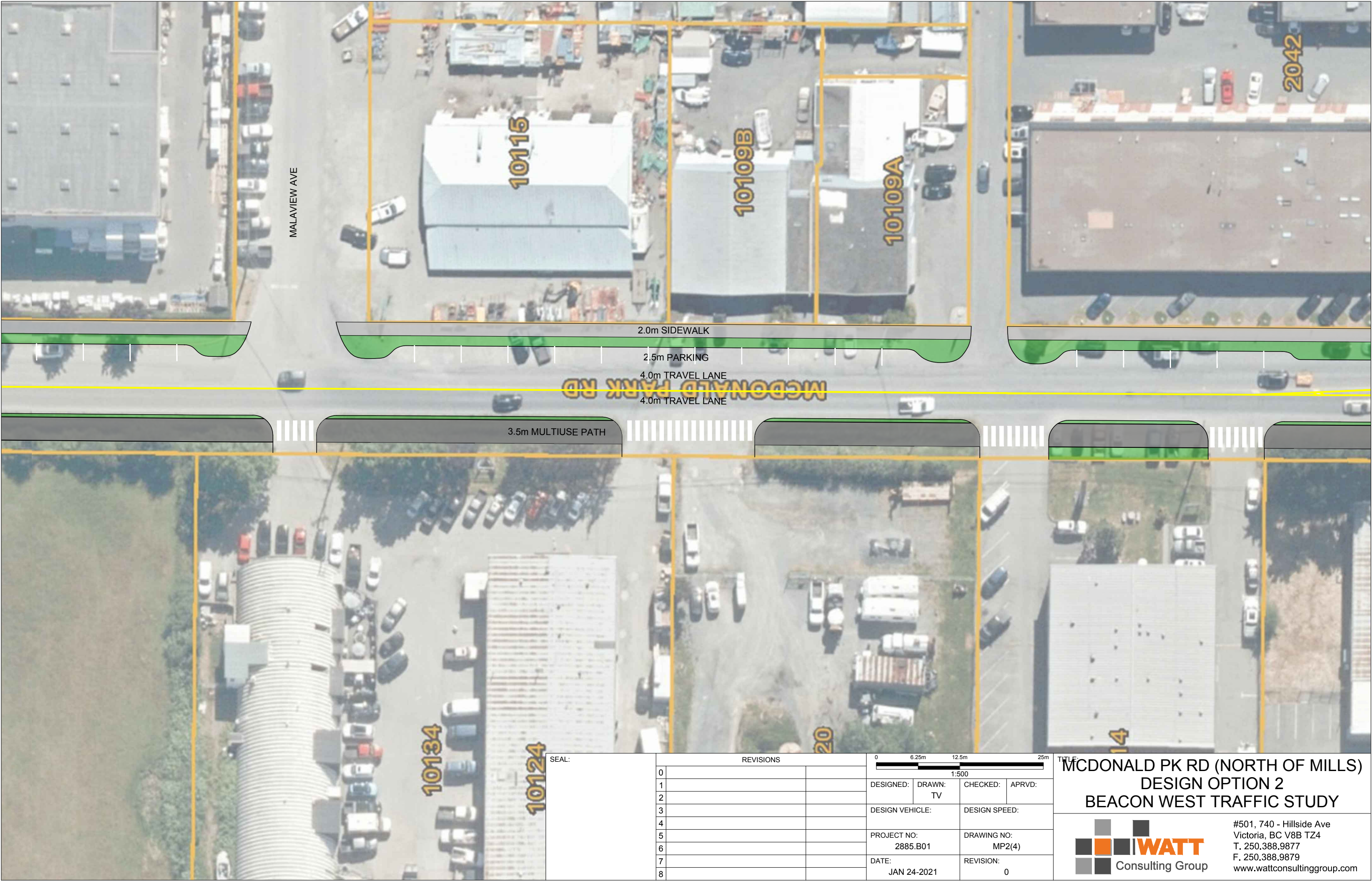
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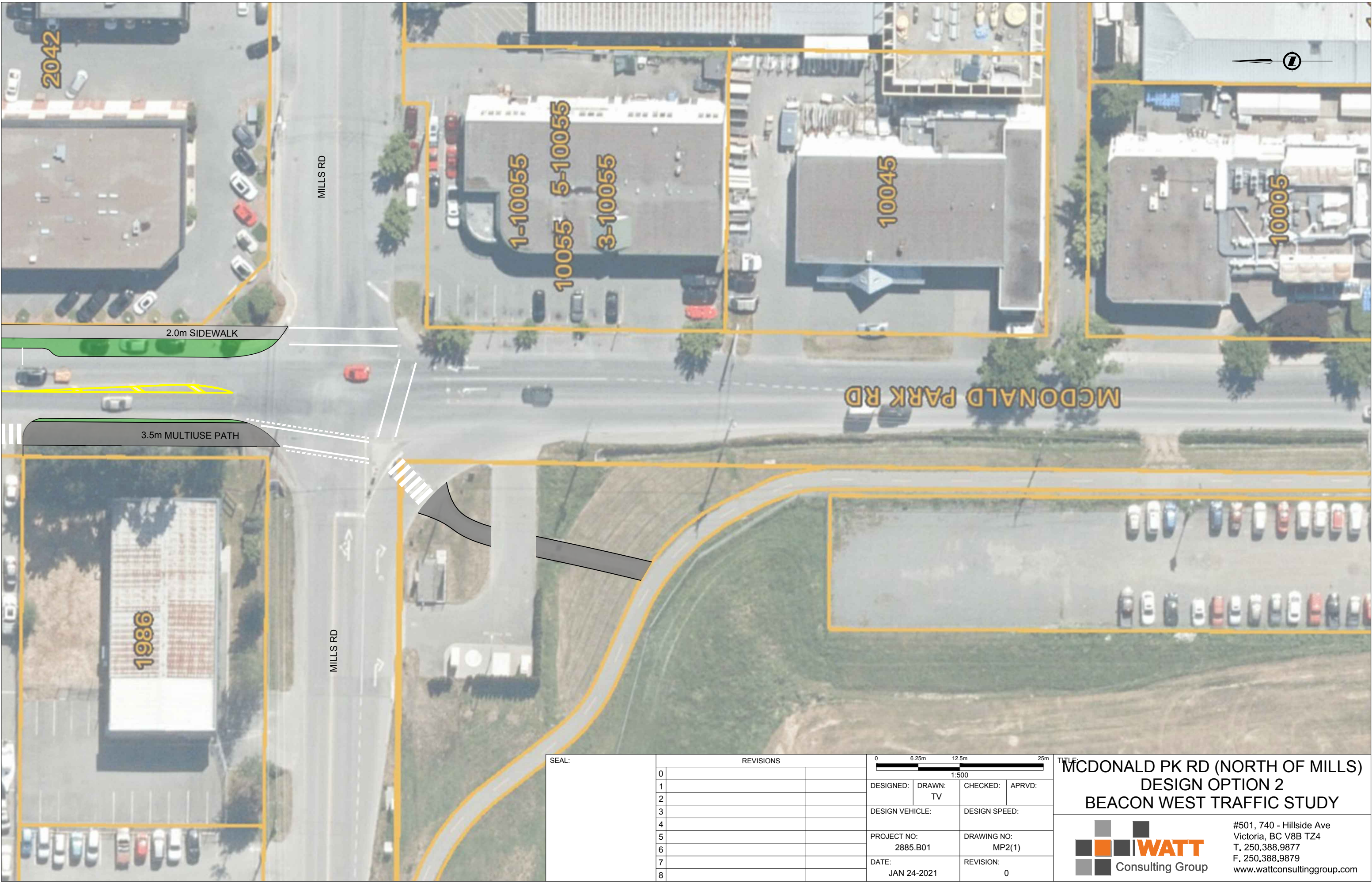
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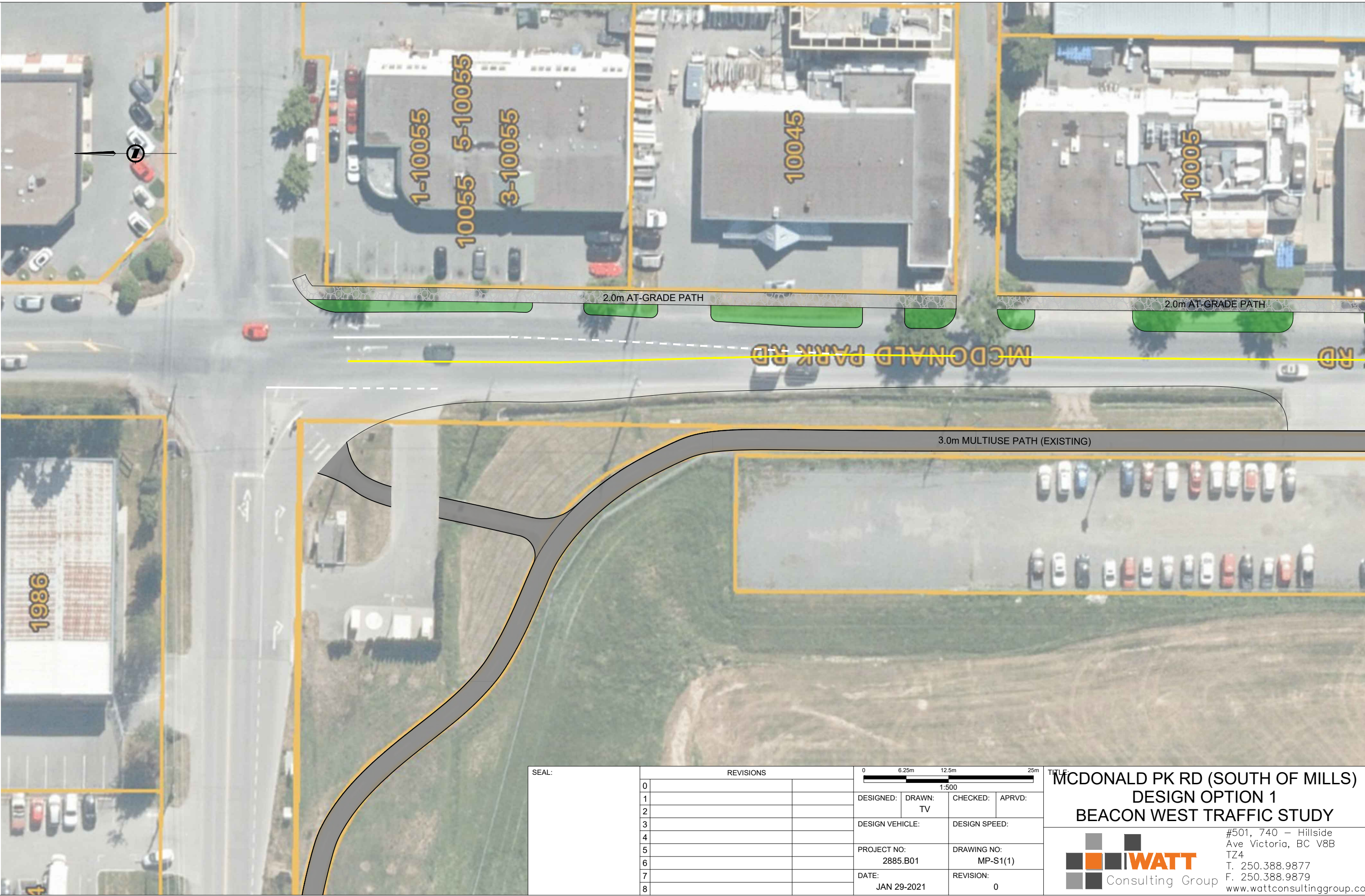
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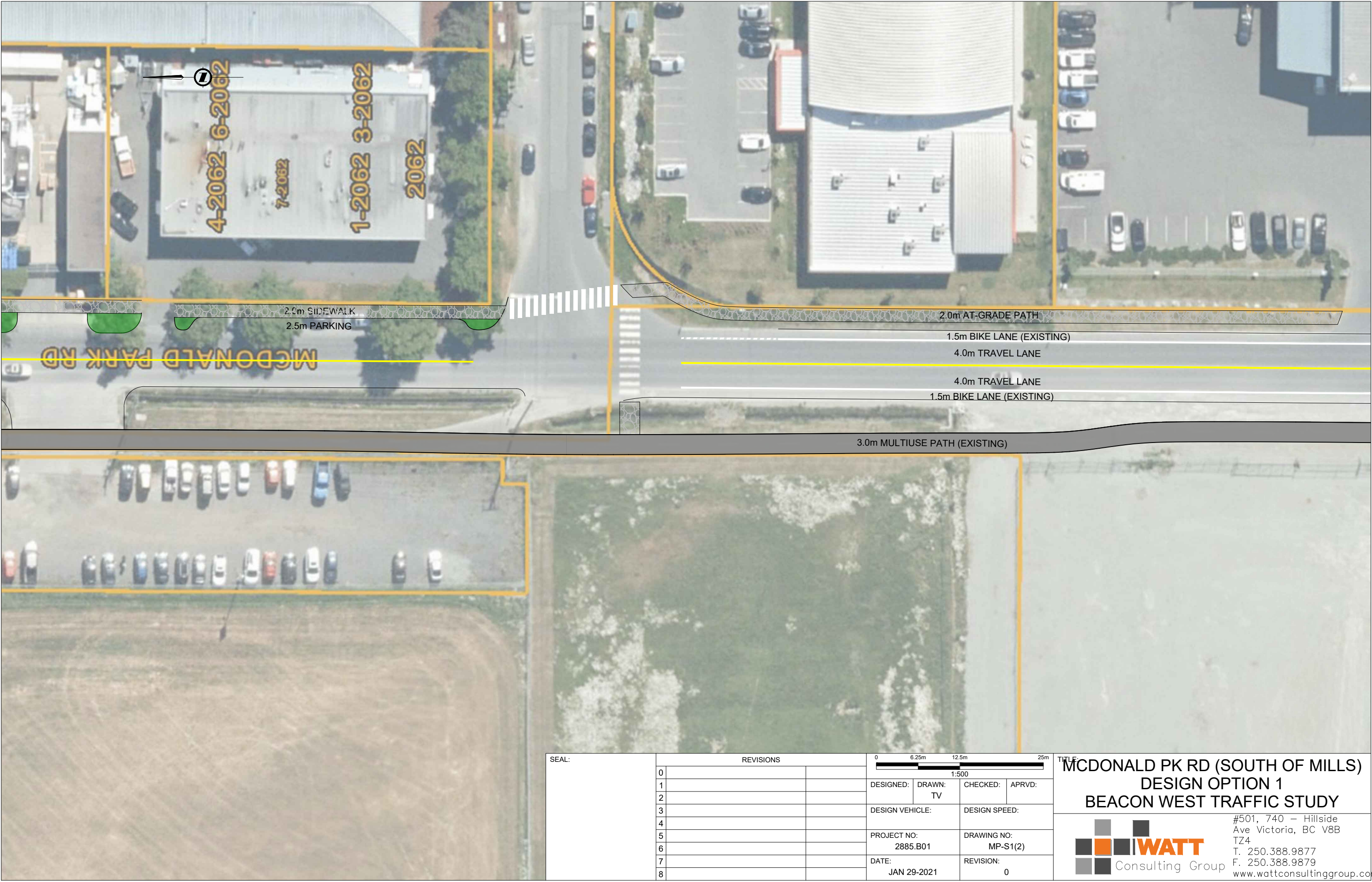


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TITLE:

MCDONALD PK RD (SOUTH OF MILLS)
DESIGN OPTION 1
BEACON WEST TRAFFIC STUDY



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PROJECT: C:\Users\vollema\OneDrive - Watt Consulting Group\Profile\Desktop\Beacon West CAD\Beacon West McDonald Park South_Road Options_Feb 17-2021.dwg
PLOT DATE: 2/21/2021 12:01 PM
PLOTTED BY: Tanner Vollema

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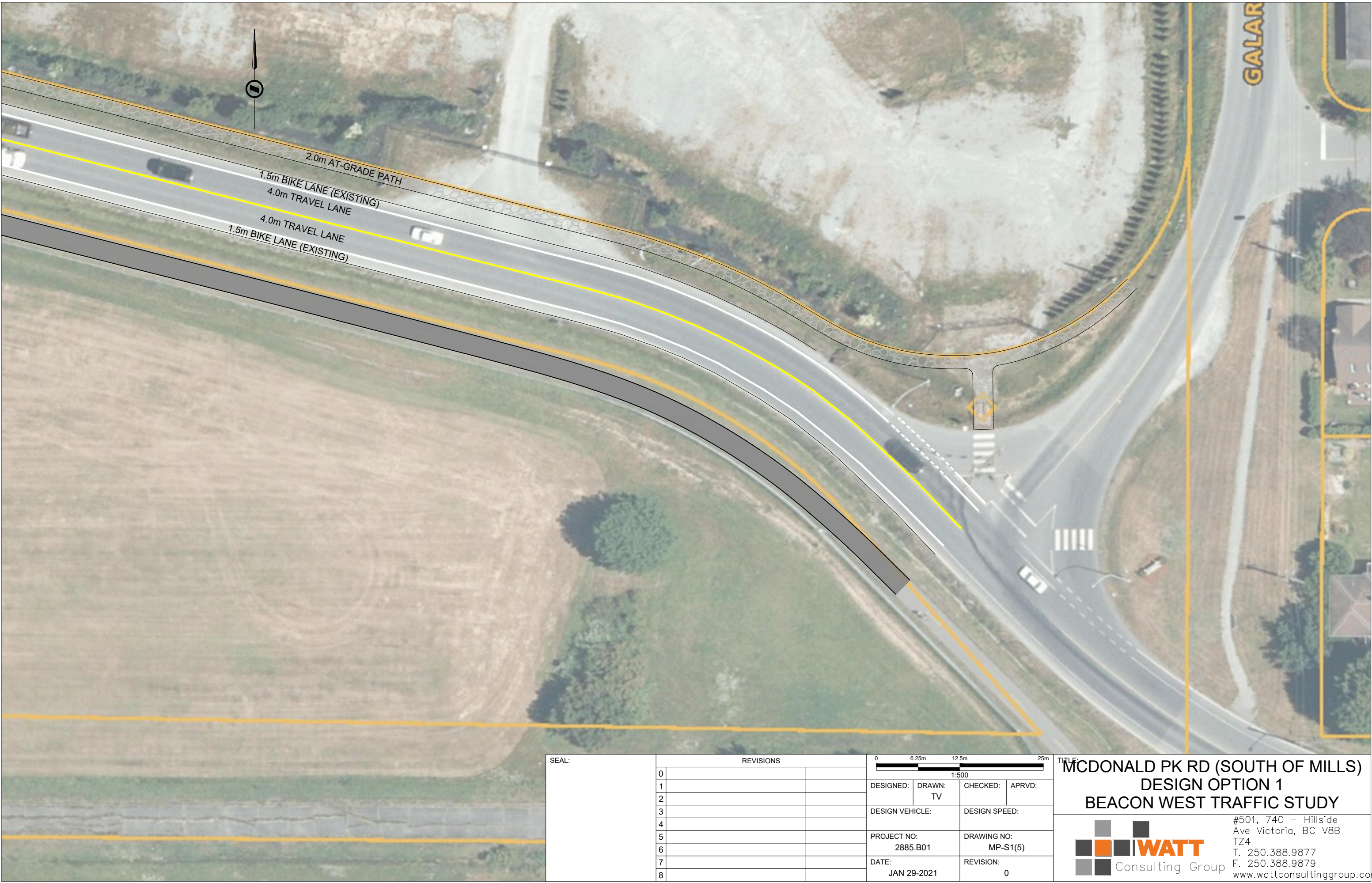
MCDONALD PK RD (SOUTH OF MILLS)
DESIGN OPTION 1
BEACON WEST TRAFFIC STUDY

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PROJECT: C:\Users\vollema\OneDrive - Watt Consulting Group\Profile\Desktop\Beacon West\Beacon West CAD\Beacon West_McDonald Park_South_Road_Options_Feb_17-2021.dwg
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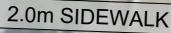
DESIGN OPTION 1

BEACON WEST TRAFFIC STUDY



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2.0m SIDEWALK

3.0m MULTIUSE PATH (EXISTING)

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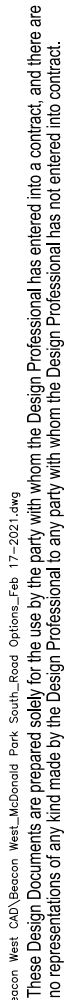
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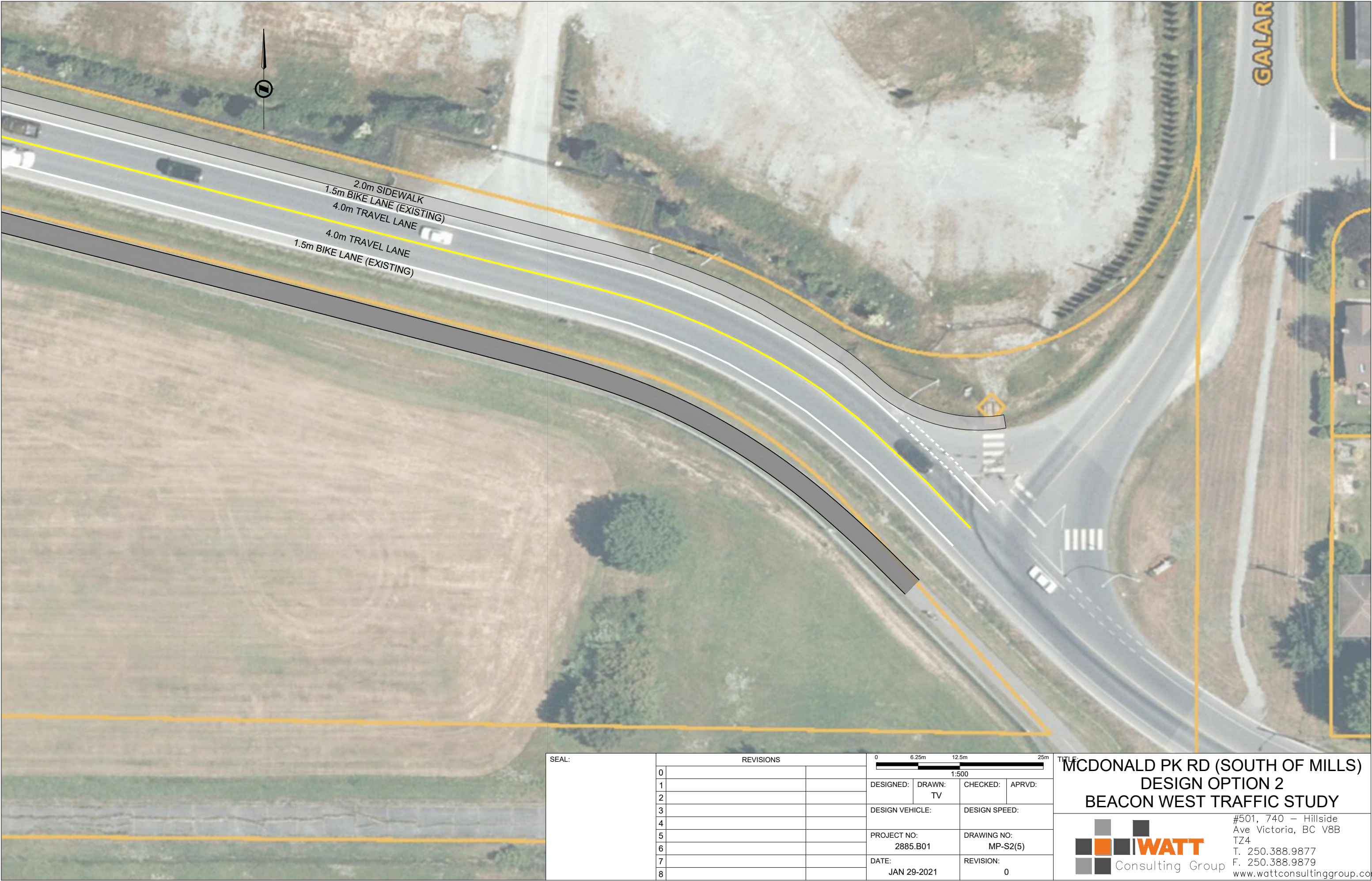
MCDONALD PK RD (SOUTH OF MILLS)
DESIGN OPTION 2
BEACON WEST TRAFFIC STUDY

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TITLE:

MCDONALD PK RD (SOUTH OF MILLS)

DESIGN OPTION 2

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TITLE

**MILLS RD (EAST OF MCDONALD PK RD)
DESIGN OPTION 1
BEACON WEST TRAFFIC STUDY**

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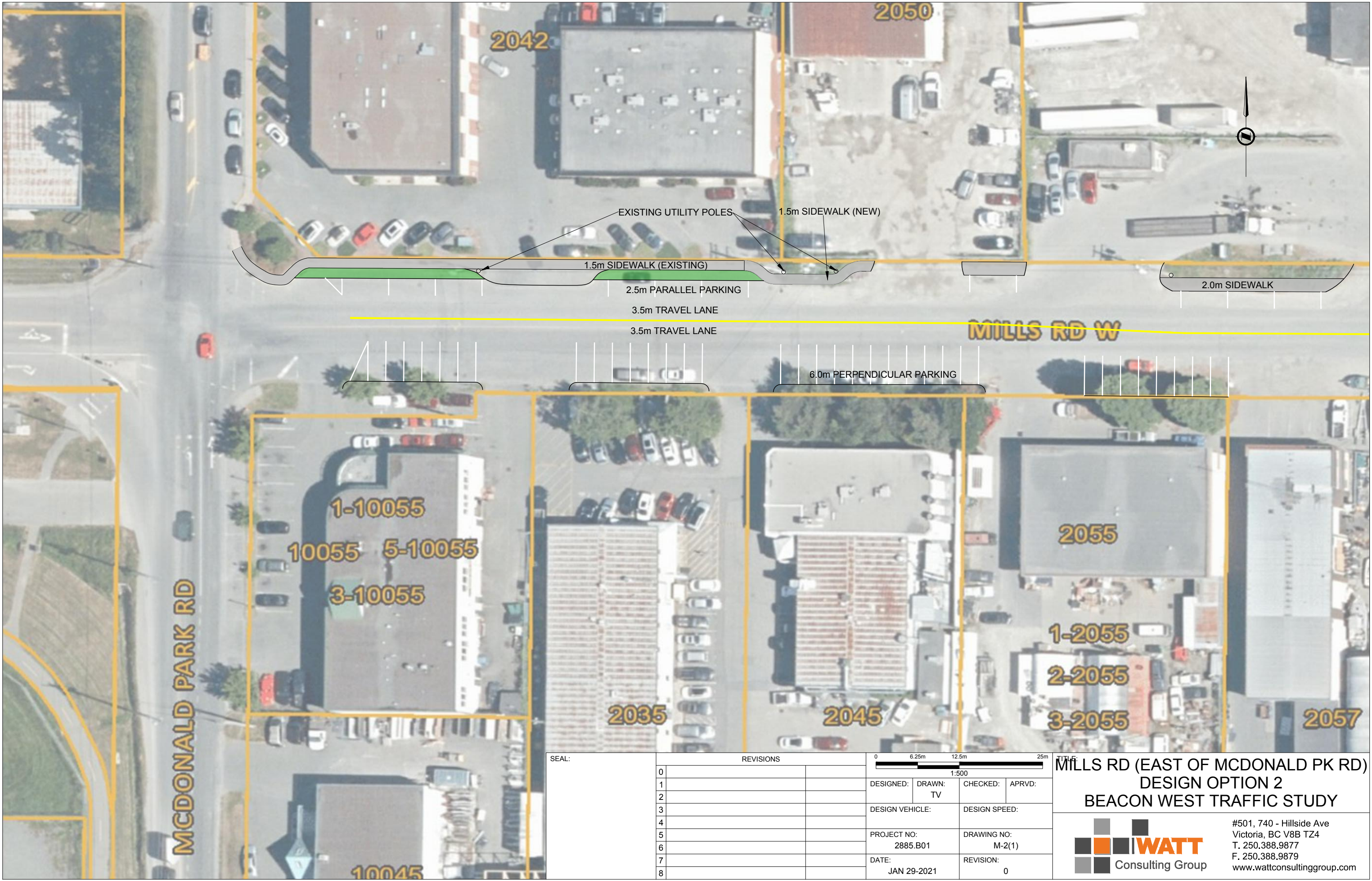
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PLOTTED BY: Tanner Vollema

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MILLS RD (EAST OF MCDONALD PK RD)

DESIGN OPTION 2

BEACON WEST TRAFFIC STUDY

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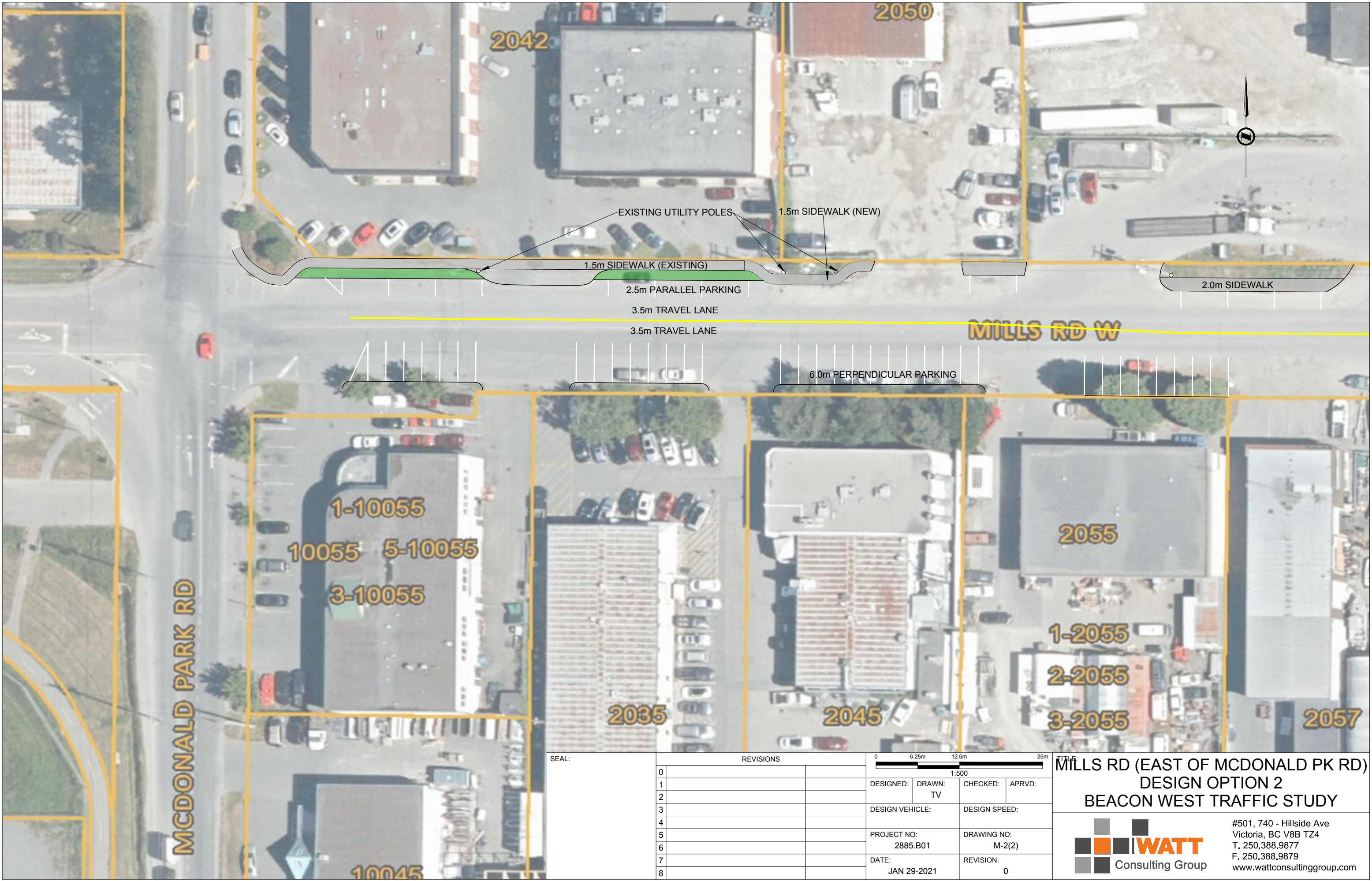
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MILLS RD (EAST OF MCDONALD PK RD)

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TITLE:

GALARAN RD
DESIGN OPTION 1
BEACON WEST TRAFFIC STUDY




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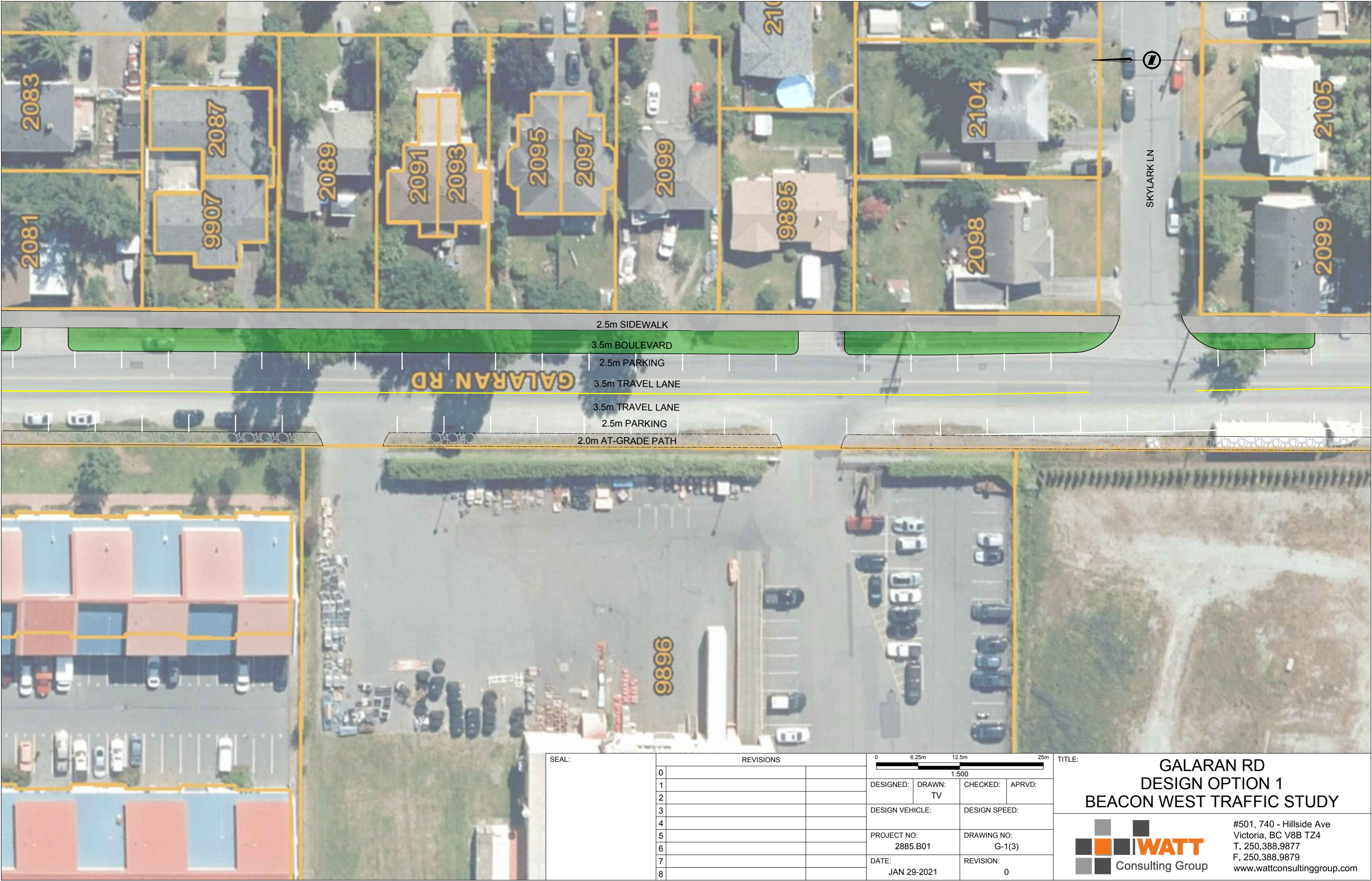


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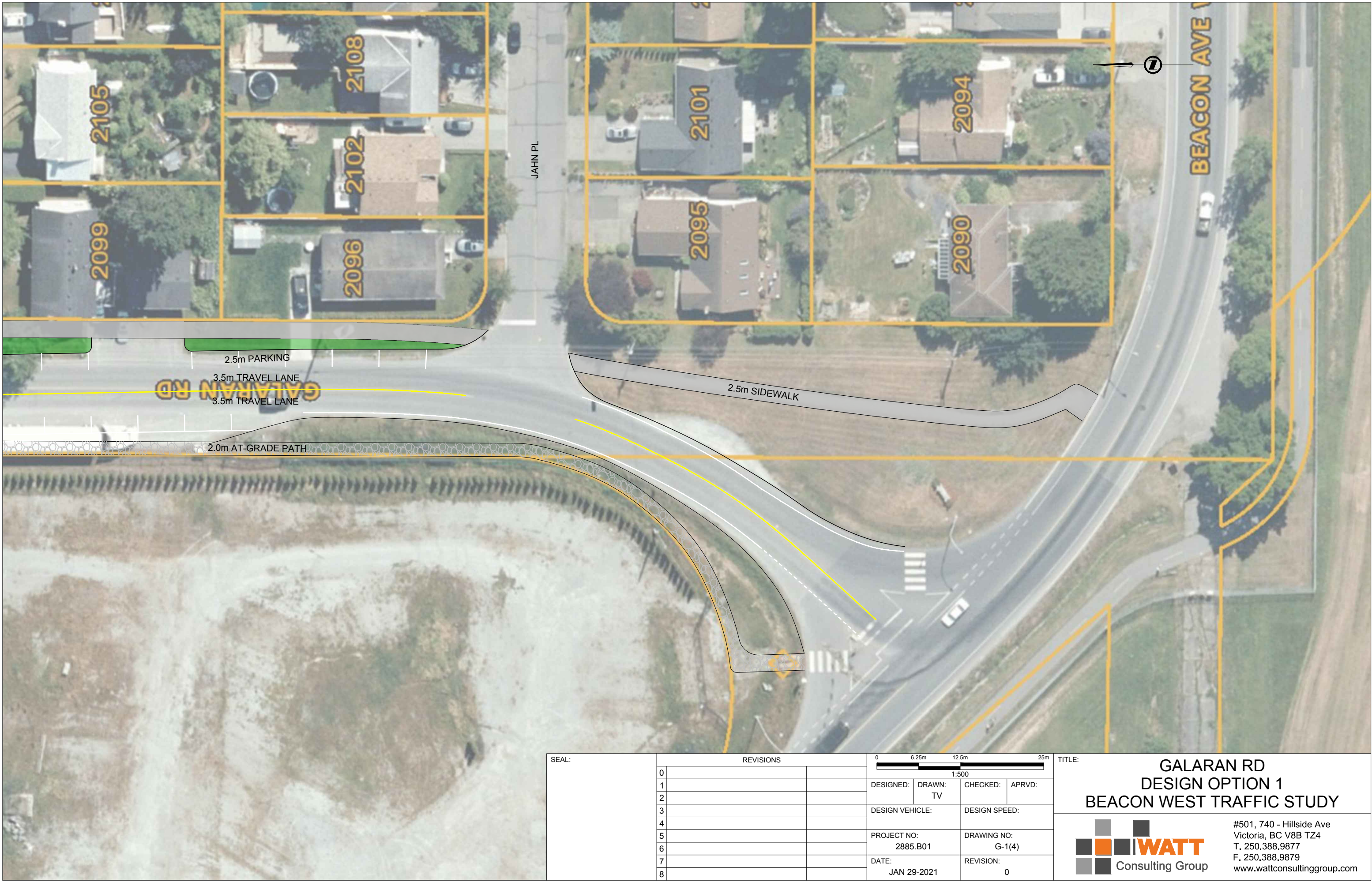
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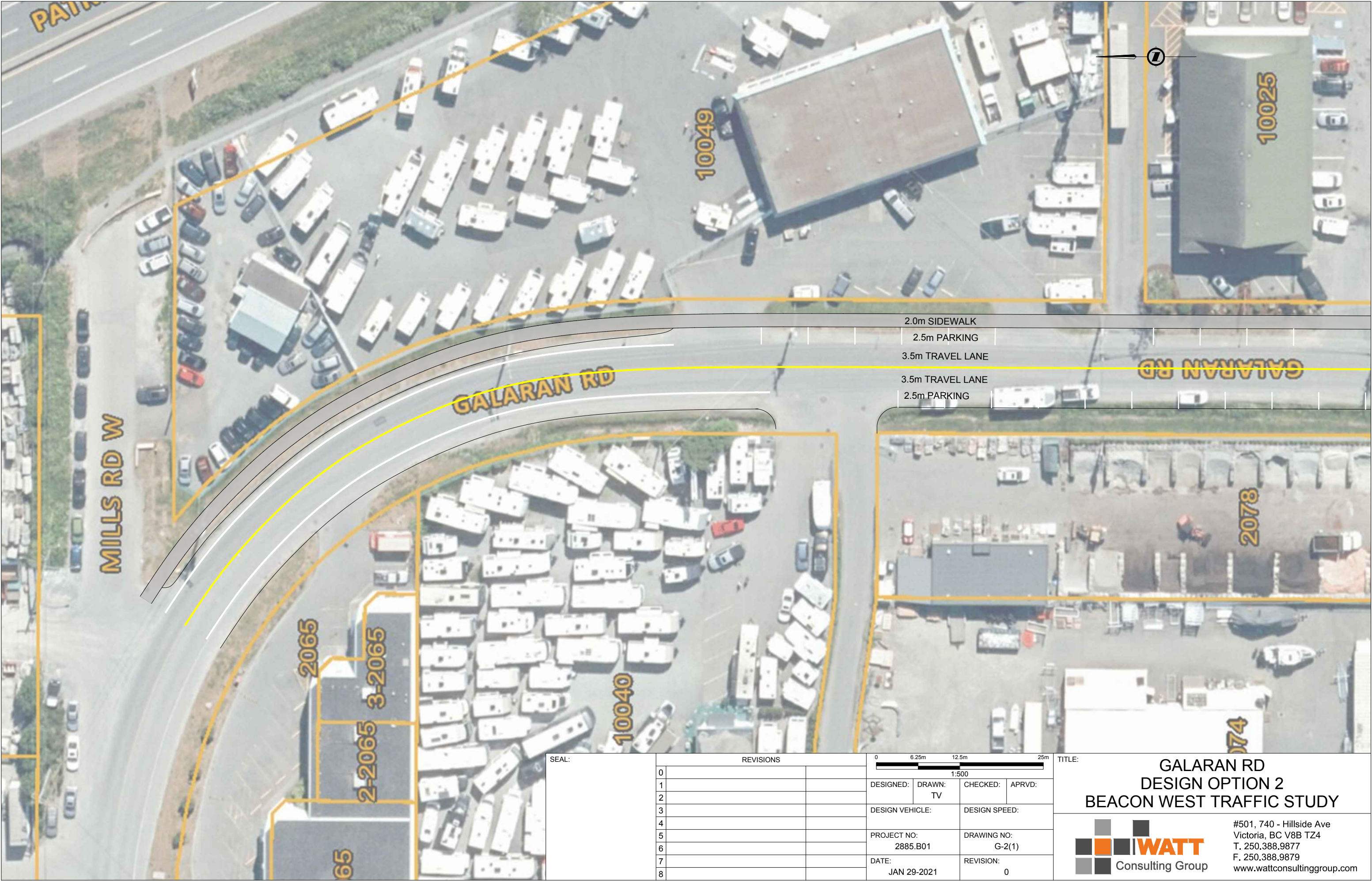
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TITLE:

**GALARAN RD
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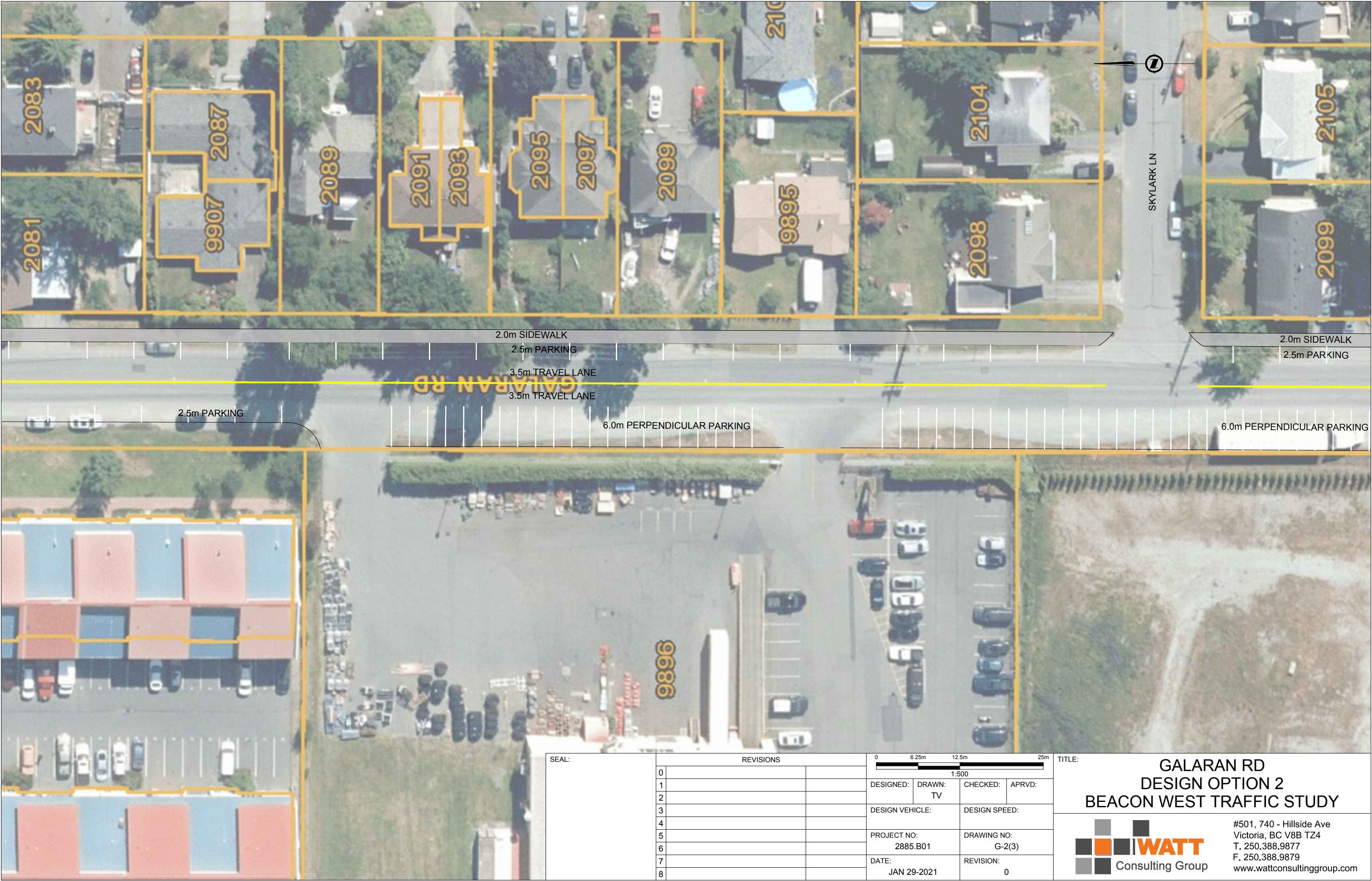
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| TITLE: | GALARAN RD DESIGN OPTION 2 BEACON WEST TRAFFIC STUDY | |
| |  | |
| | #501, 740 - Hillside Ave Victoria, BC V8B TZ4 T. 250.388.9877 F. 250.388.9879 www.wattconsultinggroup.com | |

PROJECT: C:\Users\Vollema\OneDrive - Watt Consulting Group\Profile\Desktop\Beacon West CAD\Beacon West Coloran Rd_Road Options_Feb 17-2021.dwg
PLOT DATE: 2/18/2021 8:28 PM
PLOTTED BY: Tanner Vollema

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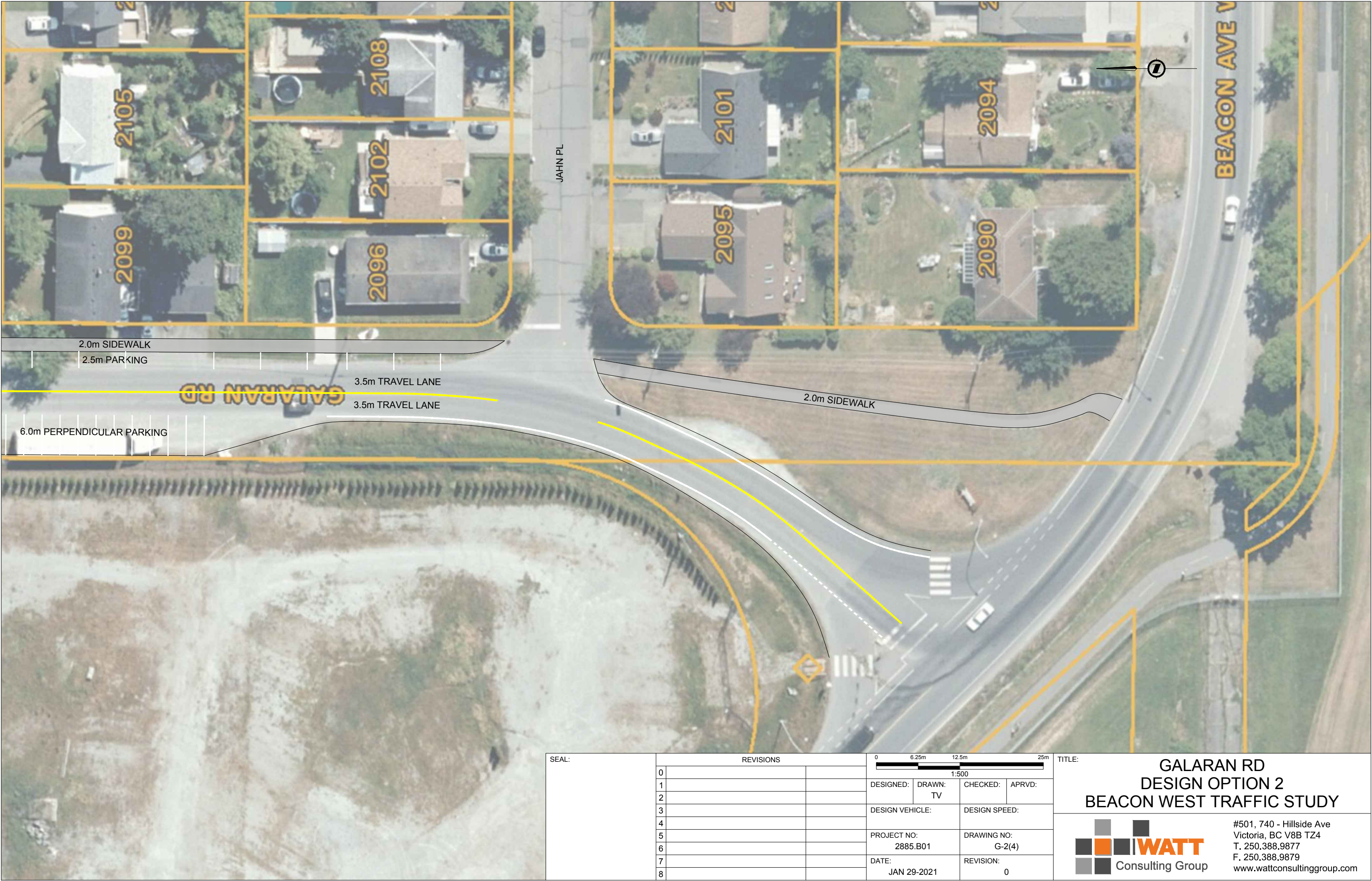
TITLE:

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Victoria, BC V8B TZ4
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F. 250.388.9879
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TITLE:

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DESIGN OPTION 2

BEACON WEST TRAFFIC STUDY

WATT

Consulting Group

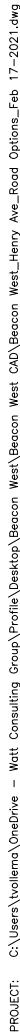
#501, 740 - Hillside Ave

Victoria, BC V8B TZ4

T. 250.388.9877

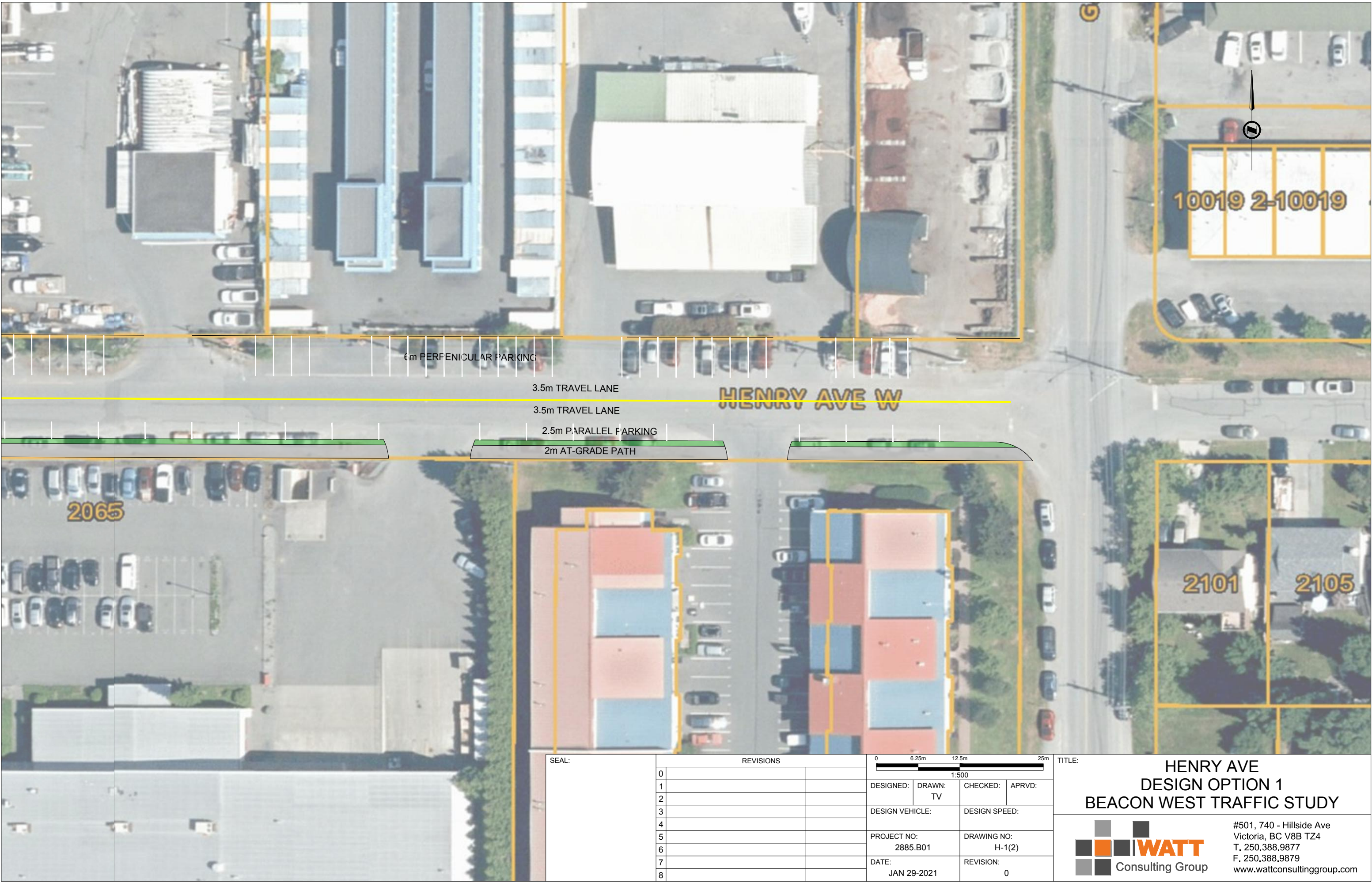
F. 250.388.9879

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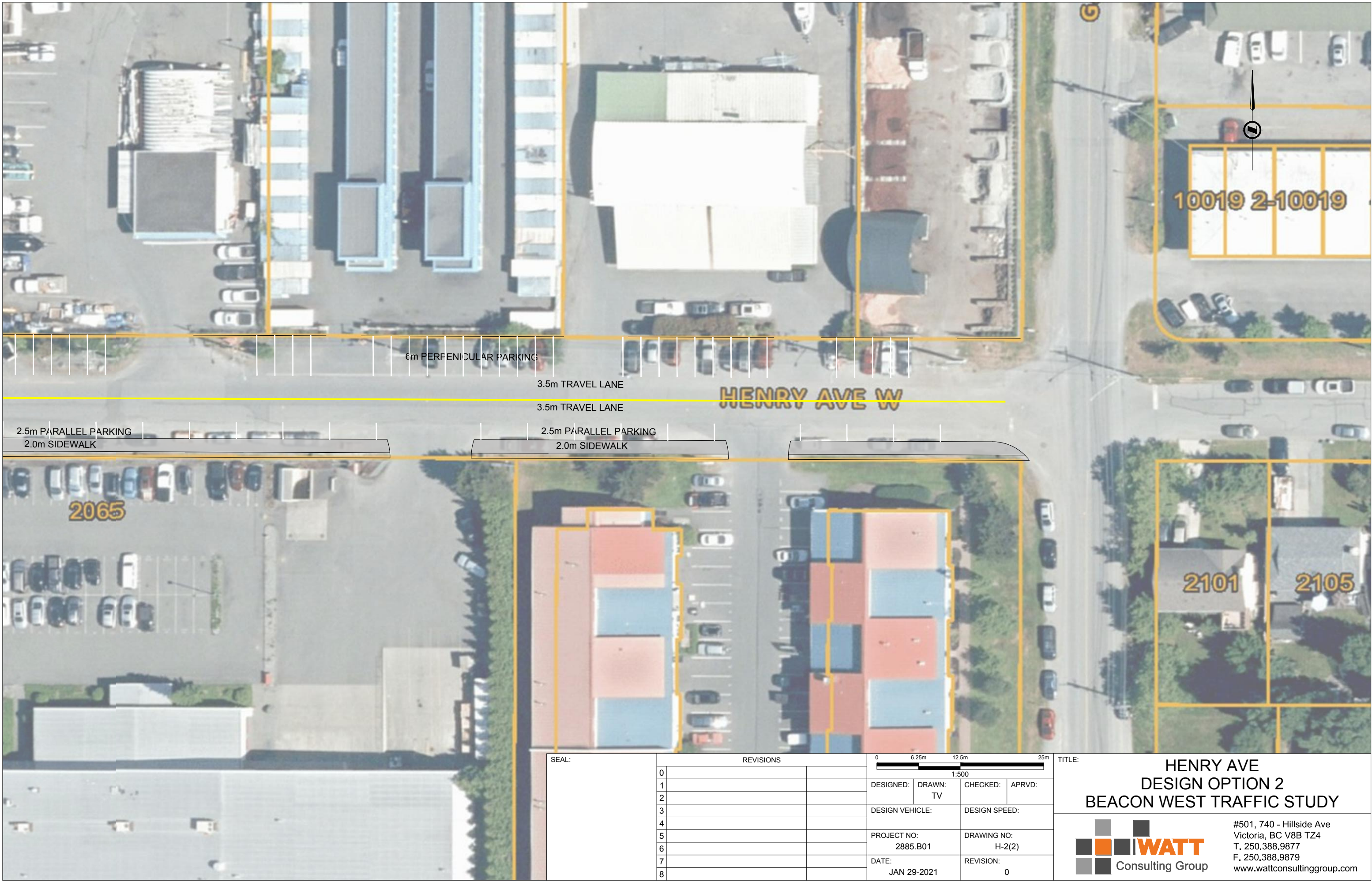
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| | 1 | | DESIGN VEHICLE: | | DESIGN SPEED: | | | |
| | 2 | | PROJECT NO: 2885.B01 | | DRAWING NO: H-2(1) | | | |
| | 3 | | DATE: JAN 29-2021 | | REVISION: 0 | | | |
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PROJECT: V:\Project Files\completed jobs (2)\2800 Jobs\2885 - Beacon West Traffic Study - Sidney\6 - Design\CAD\Beacon West Beacon Ave Roundabout Multi-Lane_Apr 20-2021.dwg
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PLOTTED BY: Tanner Vollema

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| PROJECT NO: 2885.B01 | | DRAWING NO: RB-2 | |
| DATE: APR 20-2021 | | REVISION: 0 | |

TITLE:

STIRLING / BEACON MULTI LANE
ROUNDBOUT CONCEPT SKETCH
BEACON WEST TRAFFIC STUDY

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Consulting Group

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