

# Appendix A

---

Engagement Summary Report



This page is intentionally left blank





# Topaz Park Improvement Plan

ENGAGEMENT SUMMARY REPORT  
MAY 2017 – APRIL 2018





## Introduction

In 2017/18, the City developed the Topaz Park Improvement Plan, a 10-year plan for proposed improvements to Topaz Park.

Community feedback is one of many inputs that help inform and create a Park Improvement Plan. The following summary report outlines results of the three phases of engagement, and key priorities identified by the community.

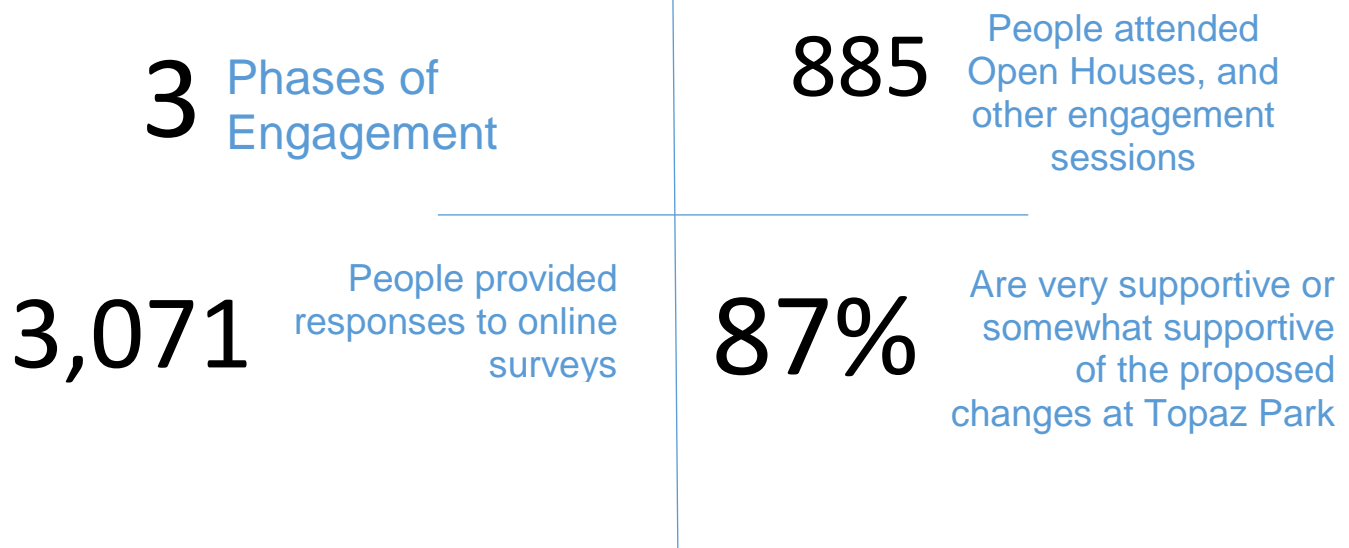


## Project Timeline:





## Engagement Highlights



### Phase 1: May/June 2017

#### What We Did

The first phase focused on collecting community feedback regarding existing park use, existing park conditions and possible future improvements.

As the park facilities were in various stages of their life expectancy, the City wanted to hear from residents that use Topaz Park about what they love and what they would like to see improved, as well as ideas for new activities and park features. The information gathered helped to set the vision for the future of Topaz Park and set priorities for future improvements.

#### How We Engaged

Event	Date	Participation
Online Survey	May 12, - June 12, 2017	794
Quadra Village Days: in person feedback and comments	May 13, 2017	80
Highland Games	May 20, 2017	75
Community Open House at Topaz Park	May 30, 2017	100
Pop-Up information stations in Quadra Village	June 1, 2017	50
Sport Group Stakeholder Meeting	June 7, 2017	11

#### *Communications included:*

- Postcards delivered to 5,000 households and businesses in the vicinity of Topaz Park
- Postering in surrounding neighbourhoods
- Social media
- Digital displays
- Information at Neighbourhood Association meetings and newsletters

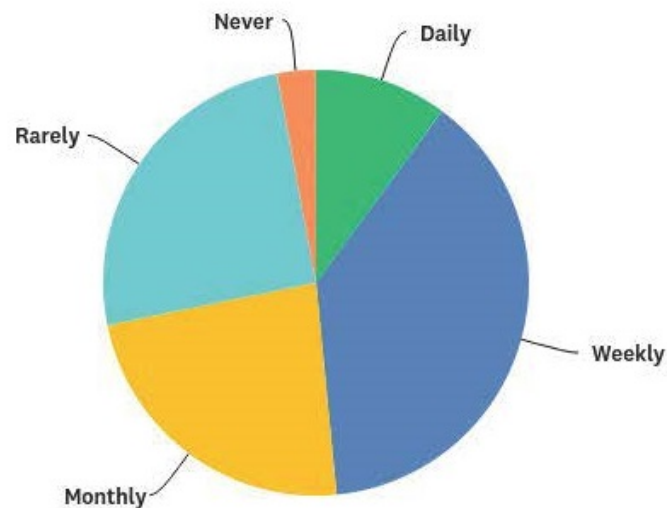


## What We Heard

During Phase 1, we heard from many people via the online survey and the in-person engagement opportunities (chart above). Phase 1 feedback can be found [here](#).

The survey heard from residents and park visitors about the existing facilities. Here are some of the highlights.

### Q4 How often do you visit Topaz Park?

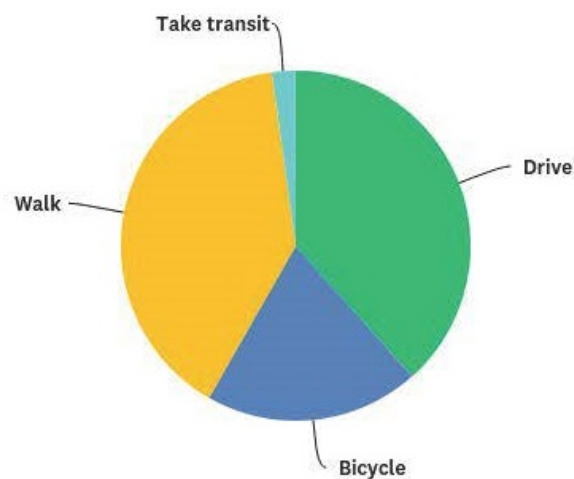


### Transportation:

Additionally,

- 72% of survey respondents felt there is the right amount of car parking at Topaz Park
- 60% of respondents felt there is the right amount of bike parking at Topaz Park; 37% of respondents felt there is not enough bike parking.

### Q5 How do you most often travel to Topaz Park?





### Comments on Existing Park Facilities:

- **Artificial Turf Field:** The carpet of the artificial turf field requires replacing. Some requests to explore the possibility of expanding this field to fit an additional soccer pitch. Some requests for covered / improved bleacher seating for spectators.
- **Grass Sports Fields:** Repairs are needed to grass sports fields, including repairs to the drainage, field surface, infields, and dugouts.
- **Lacrosse Box:** The lacrosse box needs resurfacing and new boards. Seating and lights would be appreciated. Some requests for additional programs to be accommodated into lacrosse box (e.g. bike polo, basketball).
- **Park Circulation:** There is a lack of pathways in this park, and more internal walking paths are needed. There is a need for pathway lighting, especially connecting the main washroom building to the artificial turf field, and between the parking lots on Glasgow and Finlayson Streets. Many requests for a perimeter chip trail.
- **Park Support Amenities:** More support amenities are needed throughout this park, including garbage cans, water fountains, bike racks, and improved signage/wayfinding.
- **Parking:** There is a sufficient amount of parking in this park, but improvements could be made to the Finlayson Street entrance to make entering / leaving easier.
- **Leash-optional Area:** There is a conflict between the leash-optional area and playground. Many requests to provide a perimeter fence around the leash-optional area. The leash-optional area has some spear grass and is muddy in the winter, which could be improved through better surfacing.
- **Park Buildings:** Park buildings could be improved by providing upgrades (water fountains, hot water, paper towel). The existing washrooms are located too far from the playground. Community rental spaces and food services would be appreciated in this park. Food services could be provided by a building or food trucks.
- **Playground / Fitness Area:** The existing playground works well, but lacks a natural play area. Many requests to consider a spray park in this location. Some respondents felt that the selection of equipment in the fitness area could be revised to better meet their ongoing fitness needs.

### Comments regarding New Amenities:

There were over 1,200 requests for new types of amenities. The most-requested types of new amenities (as show in the accompanying chart) were:

- Disc Golf Course
- Water/Spray Park
- Tennis Courts
- Bike Skills Park
- Skateboard / All-wheels park
- Pickleball Courts.

Disc Golf was the most requested new amenity through the online survey. The City also received a community petition requesting a bike skills park (295 signatures). In an earlier 2015 Topaz Park engagement process, the City received a petition for tennis courts (225 signatures in 2015).

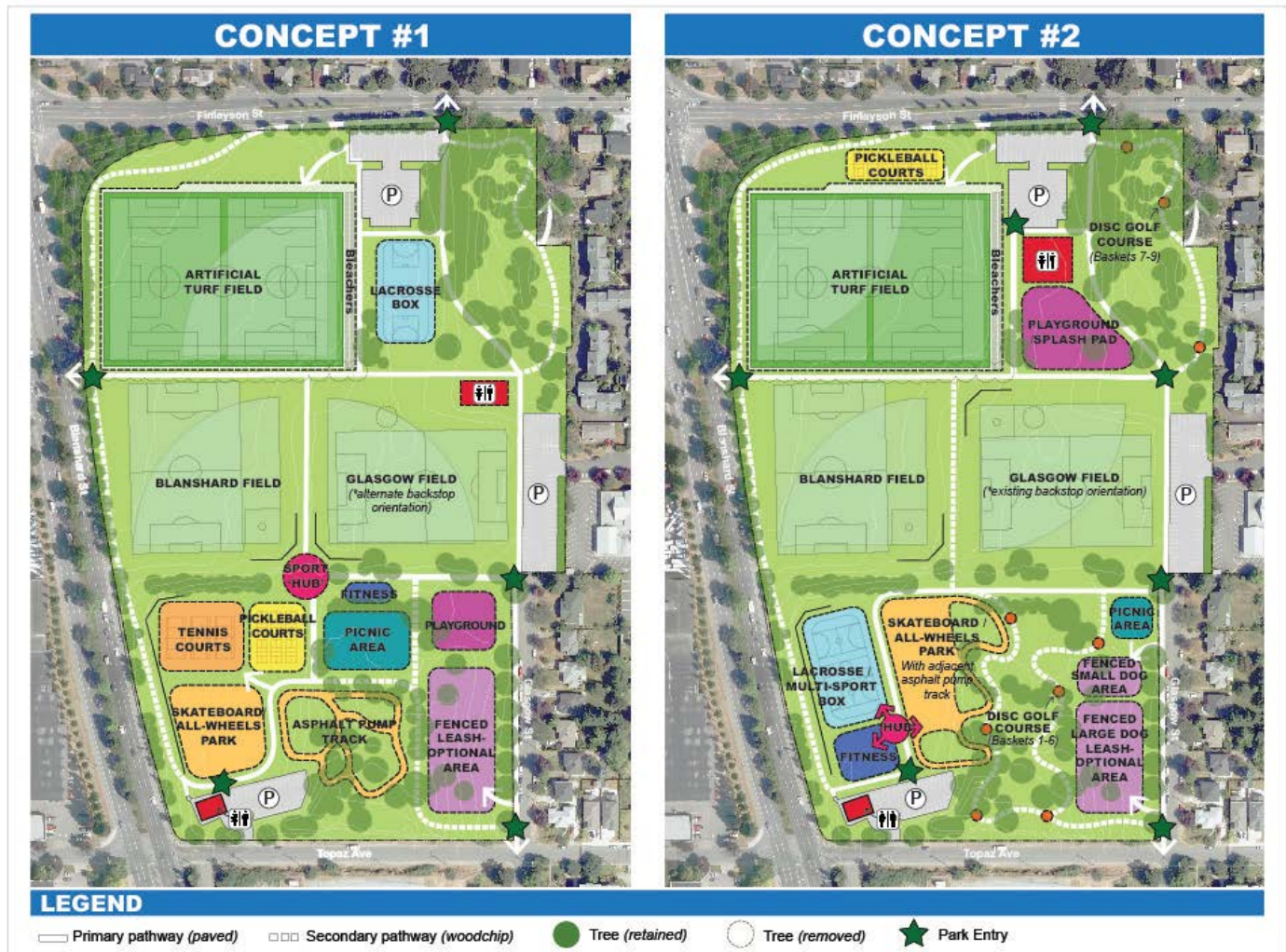


## Phase 2: December 2017/January 2018

### What We Did

The second phase of the project aimed to engage and solicit feedback from the community on two concept plans for improvements at Topaz Park.

The two design concepts for Topaz Park were based on the results of the first phase of public engagement, current site conditions, and direction from Victoria's Parks and Open Spaces Master Plan. Each concept offered a mix of park activities and features for consideration.





## How We Engaged

In December 2017 and January 2018, we heard feedback on the two draft concepts for the park from over 2,000 residents and park visitors.

Event	Date	Participation
Online Survey	December 11, 2017 – January 28, 2018	1896
Sport Group Stakeholder Meeting	November 29, 2017	9
Quadra Village Community Centre Christmas Dinner	December 14, 2017	150
Quadra Village Youth Drop-in: facilitated discussion and the participants completed a workbook on priorities for the park, which fed into the survey responses	December 21, 2017	10
Community Open House at Quadra Elementary School	Saturday January 19, 2018	150

### *Communications included:*

- Postcards delivered to 5,000 households and businesses in the vicinity of Topaz Park
- Postering in surrounding neighbourhoods
- Social media
- Digital displays
- Information at Neighbourhood Association meetings and newsletters
- LED Save-On Food Memorial Centre display,
- Neighbourhood Hot Sheets
- Neighbourhood Association meetings (2)
- Postcards at Crystal Pool
- Digital signs at Royal Athletic Park and Crystal Pool;
- Update on City website
- Large poster display boards in Topaz Park

## What We Heard

Throughout the engagement period, we heard feedback on the two draft concepts for the park from over 2,000 residents. At all of the opportunities for feedback (survey, open house, pop-ups) we had participants complete a priorities exercise, workbook, or main areas of the survey and inputted all of this into the survey. With that all in one place the results reflect more than just those who did the online survey. Phase 2 feedback can be found [here](#).

### **Vision Statement**

One of the survey questions (and those who were at Open House and pop-ups had it in workbooks provided), included the proposed vision statement:

*“Topaz Park is the City of Victoria’s destination park for outdoor recreation and sport, offering a wide variety of activity spaces that contribute to the health and wellness of residents of all ages and abilities.*

*It is an inclusive, flexible gathering place for the community, the region and visitors, to engage in active daily living, to socialize, and to celebrate together at special events.”*



- 72% of respondents felt that this statement strongly reflects their vision for Topaz Park
- 24% of respondents felt that this statement somewhat reflects their vision for Topaz Park
- 3% of respondents felt that this vision statement did not reflect their vision for Topaz Park.
- Most common requested revisions:
  - Should include natural areas/trees (41 responses)
  - Recognition of daily use/role as a neighbourhood park (7 responses)
  - Should be 'a' destination park, rather than 'the' destination park (7 responses).

**Respondents were asked if they supported repurposing Topaz grass field for other amenities:**

- 78% of respondents support this idea
- 22% of respondents do not support this idea
- Most common feedback in support:
  - Will serve more purposes/be more inclusive (102 responses)
  - Will make room for a skatepark/pump track (90 responses)
- Most common feedback not in support:
  - Waste of money/generally a bad idea (41 responses)
  - Don't want to lose a ball diamond (35 responses)
  - Concern about impact on Highland Games/special events (14 responses)

**Respondents were asked if they supported the idea of expanding the artificial turf field:**

- 48% of respondents are generally in support of expanding the turf field
- 16% of respondents are generally not in support of expanding the turf field
- 17% of respondents do not support removing the black cottonwood trees.

**Feedback on park concepts:**

Within the survey, there was much room for open comments. Every response was read and themed according to subject. The following highlights emerged:

- Many respondents told us that they preferred clustering the new park activities together in the southern portion of the park, to make it easier to visit the park as a family.
- 
- The top five most popular amenities across both concepts were:
  1. Disc golf course (390 responses)
  2. Splash pad/water play (236 responses)
  3. Pump track/bike skills park (196 responses)
  4. Tennis courts (188 responses)
  5. Skateboard park (150 responses)
- Disc golf was the most controversial possible new amenity; 205 respondents expressed concern about the inclusion of a disc golf course. Common feedback included:
  - Generally don't support a disc golf course (124 responses)





- Should reduce the number of baskets (28 responses)
- Reconfigure/expand/consolidate disc golf (44 responses)
- Disc golf is in the wrong location (9 responses)

**Overall Park Priorities:** Respondents were asked to rank their overall priorities. The top overall priority was pathway improvements. The lowest overall priority was improvements to the lacrosse box. Overall priorities for park improvements are (#1 being the top priority, #16 being the lowest priority):

1. Pathway improvements
2. Natural play opportunities
3. Community picnic facilities
4. Enhancement/protection of natural areas
5. Skateboard/all-wheels park
6. Splash pad/water play
7. Improvements to grass playing fields
8. Fully-fenced leash-optional area
9. Tennis courts
10. 9-basket disc golf course
11. Asphalt pump track/bike skills park
12. New, larger washroom/community building
13. Enlarging the artificial turf field
14. Pickleball courts
15. Larger outdoor fitness area
16. Improvements to the lacrosse box



## Phase 3: April 2018

### What We Did

On April 9, 2018 we launched Phase 3 and shared the proposed park improvement plan with the community.





## How We Engaged

Online and in-person engagement activities gave the public the opportunity to review and provide feedback on the Park Improvement Plan.

Event	Date	Participation
Online Survey	April 9 – April 28, 2018	381
Community Open House at Topaz park	April 20, 2018	250



### *Communications included:*

- Postcards delivered to 5,000 households and businesses in the vicinity of Topaz Park
- Postering in surrounding neighbourhoods
- Social media
- Digital displays
- Information at Neighbourhood Association meetings and newsletters
- LED Save-On Food Memorial Centre display,
- Neighbourhood Hot Sheets
- Neighbourhood Association meetings (2)
- Postcards at Crystal Pool
- Digital signs at Royal Athletic Park and Crystal Pool;
- Update on City website
- Large poster display boards in Topaz Park
- 8X8 sign in two places in Topaz Park



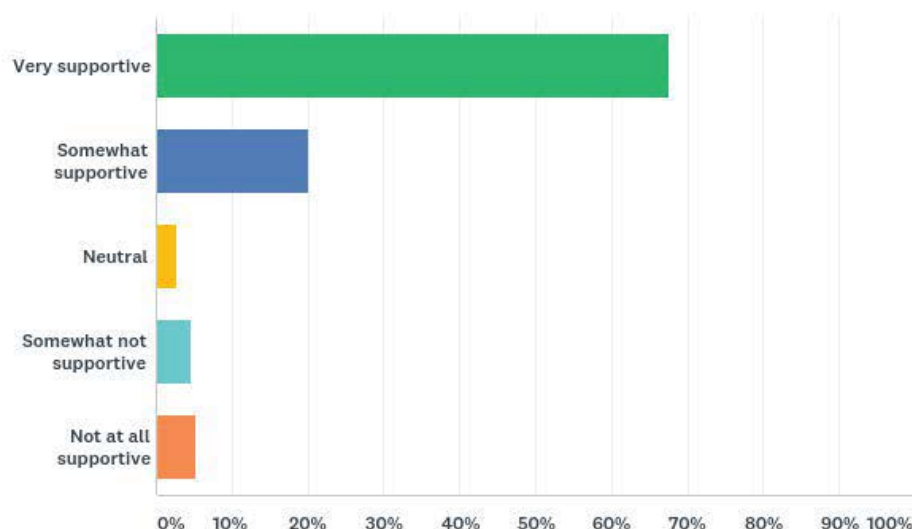
## What We Heard:

Similar to Phase 2, we wanted to ensure that all feedback was compiled and considered equally. At all of the opportunities for feedback (survey, open house) we had participants complete a priorities exercise, workbook, or main areas of the survey and inputted all of this into the survey. Phase 3 feedback can be found [here](#).

### Overall Support

- 87% (online survey and via workbooks at Open House) were very supportive/somewhat supportive of the proposed changes at Topaz Park
  - 67% of respondents were “Very Supportive”
  - 20% were “Somewhat Supportive”
  - 3% were “neutral”
  - 5% were “somewhat not supportive”
  - 5% were “not at all supportive”

Q16 Overall, how supportive are you of the proposed changes at Topaz Park?



### Input on Design Guidelines

- Throughout the engagement period, via online survey and at the Open house, we asked for input on the design guidelines for each of the areas listed below. Strong support was evident for the design guidelines and the concept for each park amenity or feature. Many respondents also provided specific comments about each new amenity or park feature. These comments are included in the full survey results in [Appendix C](#).



Amenity/Park Feature	Percentage of responses that indicated "Support/No change"
Turf Field	82%
Sport Box	91%
Grass Fields/Sport Hub	82%
Skateboard Park	82%
Bike Skills Park	73%
Tennis/Pickleball Courts	71%
Fitness Area	83%
Picnic/Playground	79%
Leash-Optional Area	70%
Walking/Cycling Paths	81%
Signage/Wayfinding	91%
Parking	79%
Washrooms	75%
Natural Areas	81%
Event Infrastructure	89%

## Next Steps

Staff will be reporting to Council on the Topaz Park Improvement Plan in June 2018.





This page is intentionally left blank



# Appendix B

---

Parking Impact Assessment



This page is intentionally left blank



Date: April 25, 2018  
To: Dianne Murray  
cc: Alia Johnson  
From: Shaun Heffernan  
File: 001328.0068.01  
Subject: Topaz Park Parking Study

## 1.0 INTRODUCTION

The City of Victoria has requested that Urban Systems Ltd. investigate the potential parking impacts of a proposed redevelopment of Topaz Park. A new concept for Topaz Park has been identified, which will include the addition of several recreational facilities. This could potentially result in an increased demand for parking at Topaz Park.

In order to better understanding the impacts of the proposed Topaz Park redevelopment on parking demand this analysis considers, current parking supply and demands, the parking impacts of the new proposed facilities in the redevelopment plan and alternative parking solutions to accommodate displaced parking customers.

## 2.0 METHODOLOGY

To determine the impacts of the proposed site redevelopment on parking demand in Topaz Park and the surrounding neighbourhood, parking on the site was inventoried to verify the current number of stalls and level of utilization. This inventory was then adjusted based on expected changes resulting from the proposed concept plan. This was done to analyze changes in parking demand and supply before and after the redevelopment.

To determine the potential impact of the development on parking demand, several equivalency factors from the Institute of Transportation Engineers (ITE) Parking Generation 4<sup>th</sup> edition guide were used to estimate the parking impacts of the redevelopment during periods of peak demand (generally during major events). The evaluation of new parking demands involved estimating the maximum number of park users that could be accessing each recreational service during weekday evenings, weekend days and special events (i.e. soccer tournament).

The results of this analysis is a high-level estimate of the number of stalls available (supply), the number of stalls required (demand), and the total parking surplus or deficit of the Topaz Park site before and after the redevelopment project. Importantly, this analysis also evaluates the availability of other off-street parking and on-street parking options within the study area.



## 2.1 Study Area

For the purpose of this analysis the study area includes Topaz Park and several nearby residential streets to the north and east of the park. This area was determined using an estimated threshold for which pedestrians will park and walk to utilize the facilities at Topaz Park. Topaz Park itself is approximately 25.2 acres in area.

This study area is shown in **Figure 1.0** (below).

**Figure 1.0 – Topaz Park Parking Study Area, Victoria BC:**





## 3.0 EXISTING CONDITIONS

The following section evaluates the existing parking demand and supply in the study area, including:

- existing parking restrictions;
- the current parking supply and levels of utilization of on-site parking at Topaz Park during different periods of the day - weekends and weekday evenings;
- estimated current parking demands for the Topaz Park site based on land use; and
- estimated mode share based on Statistic Canada Census Information.

### 3.1 Existing Parking Restrictions (On-Street Parking)

The study area currently contains a number of existing parking restrictions on residential streets. Most residential streets in the study area have resident only parking restriction with some streets having 2 hour parking zones and a few having no parking restrictions. Current parking restrictions are shown in **Table 1.0** and **Figure 2.0** below.

**Table 1.0 – Current Parking Restrictions**

ID	Description	Location	Restrictions
1	Lot 1	Blanshard/Topaz	None
2	Lot 2	Glasgow St.	None
3	Lot 3	Finlayson	None
4	Topaz N	Blanshard - Gillie	2 hour Parking Zone
4	Topaz S	Blanshard - Gillie	2 hour Parking Zone
5	Topaz N	Gillie - Quadra	Resident Only Parking
5	Topaz S	Gillie - Quadra	2 hour Parking Zone
6	Glasgow E	Glasgow St. - Lot 2	Resident Only Parking
6	Glasgow W	Glasgow St. - Lot 2	None
7	Spruce N	Quadra - Lot 2	Resident Only Parking
7	Spruce S	Quadra - Lot 2	None
8	Glasgow E	Finlayson - Park	No Parking
8	Glasgow W	Finlayson - Park	None / No Parking
9	Glasgow E	Reed - Finlayson	Resident Only Parking
9	Glasgow W	Reed - Finlayson	Resident Only Parking
10	Reed N	Glasgow - Yew	Resident Only Parking
10	Reed S	Glasgow - Yew	Resident Only Parking
11	Reed N	Yew - Rutledge	Resident Only Parking
11	Reed S	Yew - Rutledge	Resident Only Parking
12	Reed N	Rutledge - Alder	Resident Only Parking
12	Reed S	Rutledge - Alder	Resident Only Parking
13	Alder E	Reed - Finlayson	Resident Only Parking
13	Alder W	Reed - Finlayson	Resident Only Parking
14	Rutledge E	Reed - Finlayson	Resident Only Parking
14	Rutledge W	Reed - Finlayson	Resident Only Parking
15	Yew E	Reed - Finlayson	Resident Only Parking 8 am to 6 pm Mon – Sat
15	Yew W	Reed - Finlayson	Resident Only Parking 8 am to 6 pm Mon – Sat



**Figure 2.0 – Current Parking Restrictions**





## 3.2 Existing Parking Supply

The following section provides an overview of existing parking supply, including all available on-street and off-street parking in the study area (see **Table 2.0** and **Figure 3.0** below).

**Table 2.0 - Existing Parking Supply**

ID	Description	Location	Restrictions	Number of Spaces	Distance	
Off Street						
1	Lot 1	Blanshard/Topaz	None	25	On-site	
2	Lot 2	Glasgow St.	None	58		
3	Lot 3	Finlayson	None	70		
		Total (off-street)		153 spaces		
On Street						
4	Topaz N	Blanshard - Gillie	2 hour Parking Zone	21	5 Minute Walk	
4	Topaz S	Blanshard - Gillie	2 hour Parking Zone	16		
5	Topaz N	Gillie - Quadra	Resident Only Parking	7		
5	Topaz S	Gillie - Quadra	2 hour Parking Zone	11		
6	Glasgow E	Glasglow St. - Lot 2	Resident Only Parking	16		
6	Glasgow W	Glasgow St. - Lot 2	None	18		
7	Spruce N	Quadra - Lot 2	Resident Only Parking	9		
7	Spruce S	Quadra - Lot 2	None	7		
8	Glasgow E	Finlayson - Park	No Parking	0		
8	Glasgow W	Finlayson - Park	None / No Parking	5		
9	Glasgow E	Reed - Finlayson	Resident Only Parking	17		
9	Glasgow W	Reed - Finlayson	Resident Only Parking	16		
10	Reed N	Glasgow - Yew	Resident Only Parking	13		
10	Reed S	Glasgow - Yew	Resident Only Parking	11		
11	Reed N	Yew - Rutledge	Resident Only Parking	14		
11	Reed S	Yew - Rutledge	Resident Only Parking	11		
12	Reed N	Rutledge - Alder	Resident Only Parking	7		
12	Reed S	Rutledge - Alder	Resident Only Parking	9		
13	Alder E	Reed - Finlayson	Resident Only Parking	7		
13	Alder W	Reed - Finlayson	Resident Only Parking	7		
14	Rutledge E	Reed - Finlayson	Resident Only Parking	9		
14	Rutledge W	Reed - Finlayson	Resident Only Parking	6		
15	Yew E	Reed - Finlayson	Resident Only Parking 8 am to 6 pm Mon – Sat	13		
15	Yew W	Reed - Finlayson	Resident Only Parking 8 am to 6 pm Mon – Sat	13		
		Total (on-street) Unrestricted to Public		78 spaces		
		Total (on-street) Resident Only		185 spaces		
		Total (on-street)		263 spaces		



**Figure 3.0 – Parking Locations by ID (see Table 1.0)**



As shown by **Table 2.0** and **Figure 3.0**, the current off-street parking capacity of the Topaz Park site is 153 spaces. The on-street parking can generally be divided into two categories, those parking areas open to the general public (i.e. 2 hour parking or no restrictions) and those that are residential parking only. Within the study area there are 263 on-street parking areas, of which 78 spaces are available for use by the general public and 185 are resident only parking spaces. When the off-street parking lots (153 spaces) are added to the other on-street parking available to the general public (78 spaces) there are approximately 231 public parking spaces in the study area.

It also should be noted that there are several large private parking lots near the study, notably:

- The Church of Jesus Christ of Latter-Day Saints (2290 Quadra Street);
- SJ Willis Educational Centre; and
- Mayfair Shopping Centre.

Moving forward, it is suggested that the City explore a share parking use agreement with these private landowners to potentially use these parking areas during special events and peak periods of park utilization when possible.



### 3.3 Current Parking Demands - Topaz Park Site

The following section provides an analysis of current peak parking demand for Topaz Park based on comparable uses highlighted in the Institute of Transportation Engineers (ITE) Parking Generation, 4th ed. Guide. This provides a high-level estimate of how much parking could be required if every activity and use in the park were fully utilized at one time (e.g. peak parking demand). **Table 3.0** (below) shows the peak parking demand for each type of existing and future use on the Topaz Park site, based on the ITE Parking Generation Guide. These provide an estimate based on previous studies conducted by ITE for how much parking each use could generate during peak periods.

**Table 3.0 - Peak Parking Demand by Land Use – ITE Parking Generation 4<sup>th</sup> Edition**

Current Uses	Peak Demand Parking Required
Soccer or athletic field (weekday)*	38.30 spaces per field or 1 space per 4 spectator seats whichever is greater
Soccer or athletic field (weekend)*	58.80 spaces per field or 1 space per 4 spectator seats whichever is greater
Lacrosse Box*	No ITE Generation for this use – but assumed to be similar to soccer fields as it has 10 players.
Soccer Field / Baseball Diamonds (SW Corner)*	58.80 spaces per field or 1 space per 4 spectator seats whichever is greater
Playground or small park with Picnic area*	2.8 spaces per acre
Dog Walking area*	2.8 spaces per acre
Sports Hub and Fitness Area	3.0 spaces per 1000 sq ft.
Skate Park and bike skills area	20 spaces based on similar park uses (i.e. Mount Pleasant Skate Park Vancouver)
Courts (i.e. Tennis, Pickleball, etc.)*	3.16 spaces per court
Large City Park (25.2 Acres)* with 3 baseball fields, three soccer fields and an outdoor group area	5.10 spaces per acre or 129 total.

\* From Parking Generation, 4th ed.

Using the peak parking demand estimates from the ITE Parking Generation Guide **Table 4.0** (below) shows the peak parking demand for each use currently existing on the Topaz Park site. However it should be noted that generally peak parking demand for each of the uses do not occur simultaneously, but rather as combination of smaller activities and major events occurring at random times throughout the day, week, and year. Further, major events for each facility rarely occur on the same day.

**Table 4.0 - Current Peak Parking Demand**

Current Uses	Estimated Peak Parking Demand
Soccer Fields / 2 short fields	118 spaces
2 Soccer Fields / Baseball Diamonds	118 spaces
Lacrosse Box	59 spaces
Soccer Field / Baseball Diamonds (SW Corner)	59 spaces
Playground, Picnic Area and Dog Walk (est. 4 acres)	11 spaces
3 Tennis Courts*	10 spaces*
<b>Total</b>	<b>365 spaces</b>

\* Tennis courts removed in 2016, not included in total estimated peak parking demand.



In general, the off-street parking supply on the Topaz Park site has been sufficient for the uses on site (listed in **Table 4.0**), and the majority of events taking place. However, as shown by **Table 4.0**, in the unlikely situation that every use in Topaz Park were to be active simultaneously, there would be demand for 365 spaces. In this instance, there would be a shortage of 212 parking spaces on site. As it is unlikely for all of these uses to occur at one time, the “Large City Park (25.2 acres or 10.2 hectares)” measurement in **Table 3.0** is adequate for the majority of the time. This representative peak demand would be approximately 129 spaces.

Over the last several years facility parks staff have indicated that on-site parking is sufficient with the exception of a few weekends a year when multiple small events (i.e. tournaments) or one major event (i.e. highland games) is taking place. Therefore, it is assumed that the average parking demand for the site will often be significantly less than the peak level of demand experienced on the aforementioned events days.

### **3.1.1 Parking Counts**

In order to evaluate the impacts of this expansion of recreational spaces and facilities on the site’s on- and off-street parking, a baseline understanding of current parking demand and occupancy levels was developed. This baseline study was conducted using parking vehicle counts conducted every hour (on the hour) for three separate days. The time-periods selected are representative of different types and levels of usage of Topaz Park. The three data collection periods were:

- 1 weekday: 5 pm -9 pm – Wednesday February 28, 2018
- 1 weekend: 8 am -7 pm – Saturday, March 3, 2018
- 1 tournament: 8 am -7 pm – Saturday, April 7, 2018

Off-street parking data was collected in the three parking lots (Lots 1 - 3 as shown in **Table 2.0**) situated within Topaz Park, along Topaz Avenue (Lot 1), Glasgow Street (Lot 2), and Finlayson Street (Lot 3). The on-street parking data was collected on residential streets in the study area, most of which had resident only parking restrictions (see Table 1.0); with the exception of portions of Topaz Avenue, Spruce Street and Glasgow Street which has some 2-hour parking zones and unrestricted parking areas. In reviewing this data it should be understood that parking occupancies greater than 85% denotes parking scarcity. The findings of the parking counts are summarized on maps, which can be found in **Appendix A**.

#### **Wednesday, February 28<sup>th</sup>, 2018 (5 pm – 9 pm)**

The weekday evening count had a low overall parking occupancy and all parking lots remained well under capacity. There was a small baseball practice near the southern lot (Lot 1 - Topaz Avenue); however, it only generated 4 vehicles in the 26-space parking lot. Additionally, soccer practices in the early evening and a soccer game around 9 pm attracted participants to the northern parking lot (Lot 3 - Finlayson St). Higher vehicle counts along the northern residential streets were also observed on the weekday evening.

- Southern Parking Lot (Lot 1 -Topaz Ave): 15% occupancy
- Central Parking Lot (Lot 2 - Glasgow St): 3% occupancy
- Northern Parking Lot (Lot 3 - Finlayson St): 28.5% occupancy



**Saturday, March 3<sup>rd</sup>, 2018 (8 am – 7 pm)**

The weekend count showed a peak demand in park users during the morning and evening time periods, during which there were soccer practices and games. There were a number of visitors that appeared to use other park facilities near the center of the park (i.e. dog park), a trend that increased throughout the day and into the evening. Despite higher traffic and occupancy rates during the weekend count, parking facilities remained low occupancy and only reached approximately 50 per cent capacity in the northern parking lot (Lot 3) off Finlayson Street.

**Saturday, March 3<sup>rd</sup>, 2018 (8 am – 11 am)**

The weekend count showed a period of peak parking demand in the morning, particularly in the northern parking lot (Lot 3) off Finlayson Street where a soccer game attracted participants and on-lookers. Despite higher traffic in the area, all of parking lots remained well under capacity. There were also a higher number of vehicles parked in the northern residential areas during this time.

- Southern Parking Lot (Lot 1 - Topaz Ave): 4% occupancy
- Central Parking Lot (Lot 2 - Glasgow St): 7% occupancy
- Northern Parking Lot (Lot 3 - Finlayson St): 48.5% occupancy

**Saturday, March 3<sup>rd</sup>, 2018 (12 pm – 3 pm)**

The parking counts on Saturday afternoon showed a lull in traffic compared to morning and evening counts. For the most part, parking lots and residential areas were less occupied. However, higher parking occupancy rates were observed along Glasgow Street between the central parking lot (Lot 2) and Topaz Avenue (72% occupancy). High traffic in the area was likely due to people accessing nearby recreational facilities like the playground and dog park. Although Glasgow Street was busy, the adjacent parking lot remained sparsely used (7 vehicles for 58 spaces).

- Southern Parking Lot (Lot 1 - Topaz Ave): 4% occupancy
- Central Parking Lot (Lot 2 - Glasgow St): 12% occupancy
- Northern Parking Lot (Lot 3 - Finlayson St): 22% occupancy

**Saturday, March 3<sup>rd</sup>, 2018 (4 pm – 7 pm)**

Saturday evening had higher overall parking counts and the most even distribution of parking occupancy throughout the site. The central parking lot (Lot 2) increased throughout the day to a peak high of 14 vehicles (over 58 spaces) in the evening. Residential streets had the highest occupancy during this time and a soccer game at 6 pm attracted a large number participants and on-lookers. Despite the higher traffic than during other periods observed, parking facilities remained significantly below maximum capacity.

- Southern Parking Lot (Lot 1 - Topaz Ave): 8% occupancy
- Central Parking Lot (Lot 2 - Glasgow St): 24% occupancy
- Northern Parking Lot (Lot 3 - Finlayson St): 47% occupancy



**Saturday, April 7<sup>th</sup>, 2018 (8 am – 7 pm)**

The final parking count was conducted during the Bill Drew Memorial SoccerFest 2018, which is an annual recreational soccer tournament. The tournament provided an example of parking demand during a major event when multiple fields are being used simultaneously and fields are scheduled for back to back usage. The counts completed on April 7<sup>th</sup> reflected the highest overall parking demand and provided some valuable insights on overflow parking behaviour in this area. During the afternoon and evening observation periods most of the parking lots and on-street parking areas directly adjacent to Topaz Park had occupancy levels exceeding 85% (occupancy greater than 85% notes parking scarcity); with many areas being fully occupied or overcapacity (occupancies greater than 100% are usually the result of illegal parking).

An additional parking lot was provided for overflow parking at the SJ Willis Educational Centre, located on the south side of Topaz Avenue. Although this lot was advertised on the webpage of the event on the day of the tournament patrons of the park did not use the SJ Willis parking lot even though parking lots in Topaz Park were often near capacity or overcapacity. Instead many park visitors opted to park on-street in areas directly around the park; notably Glasgow Street and Topaz Avenue.

It was also observed that Spruce Street was at full capacity throughout the entire day. However, parking demand on Spruce Street could potentially be the result of overflow parking from an event at the Church of Jesus Christ of the Latter-Day Saints, located on the corner of Spruce Avenue and Quadra Street.

**Saturday, April 7<sup>th</sup>, 2018 (8 am – 11 am)**

The morning of the tournament was moderately busy. The parking counts show that the off- street parking lots on the site were just under 50% occupancy. Although the central parking lot (Lot 2) was only 38% occupied, sections of Glasgow Street and Spruce Street that abut the central lot reached higher occupancies with the south side of Spruce Street being overcapacity. Some residential streets in the surrounding area were moderately busy, including Glasgow St, Yew St, and Rutledge Street. This was not a result of parking demand for Topaz Park.

- Southern Parking Lot (Lot 1 - Topaz Ave): 42% occupancy
- Central Parking Lot (Lot 2 - Glasgow St): 38% occupancy
- Northern Parking Lot (Lot 3 - Finlayson St): 49% occupancy

**Saturday, April 7<sup>th</sup>, 2018 (12 pm – 3 pm)**

The afternoon count during the tournament had the highest parking demand observed compared to any other parking count. The northern parking lot (Lot 3) on Finlayson Street was overcapacity, resulting from illegal parking via the creation of informal parking spaces. Vehicles were parked outside of the designated spaces, adjacent to barriers, reducing space for circulation within the parking lot. Four informal parking spaces were created in the Finlayson parking lot by users, in order to accommodate overflow. It is possible that some people may have parked along Yew Street, which faces the Finlayson Street lot; however, neither side of Yew Street exceeded 85% occupancy. Spruce Street and the section of Glasgow Street between Topaz Avenue and the central parking lot (Lot 2) off Glasgow Street experienced occupancy rates greater than 85%, likely as a direct result of the tournament. The section of Glasgow Street to the north of the site, between Finlayson Street and Reed Street, was relatively high-occupancy (60%). However, it should be



noted that even during this peak period of parking demand there was still a good amount of easily accessible parking available adjacent to Topaz Park, notably on Topaz Avenue, and occasionally in the southern parking lot (Lot 1) off Topaz Avenue, as well as in the overflow lot at the SJ Willis Educational Centre.

- Southern Parking Lot (Lot 1 - Topaz Ave): 85% occupancy
- Central Parking Lot (Lot 2 - Glasgow St): 95% occupancy
- Northern Parking Lot (Lot 3 - Finlayson St): 104% occupancy

### Saturday, April 7<sup>th</sup>, 2018 (4 pm – 7 pm)

As activities associated with the tournament continued throughout the early evening and parking demand remained very high in the northern (Lot 3) and central (Lot 2) parking lots, but began to drop-off in other areas. Although none of the parking lots were overcapacity, vehicles remained parked in informal, make-shift parking spaces in the northern parking lot (Lot 3) of Finlayson Street. The residential streets to the north of the park showed similar patterns to previous parking counts and never reached high occupancy levels.

- Southern Parking Lot (Lot 1 - Topaz Ave): 69% occupancy
- Central Parking Lot (Lot 2 - Glasgow St): 86% occupancy
- Northern Parking Lot (Lot 3 - Finlayson St): 97% occupancy

## 3.4 Modes of Travel

Another key consideration regarding parking and travel demand is the current mode share for people travelling to and from Topaz Park. Given its central urban location it is feasible that many park users would not necessarily travel to the park by personal automobile. Given Victoria's mild climate and that peak periods of utilization for the park are during the warmer months of the years it is fair to assume many users would also walk, cycle and / or take transit to reach Topaz Park. Therefore, data from Statistics Canada was used to determine the mode share of Topaz Park visitors. The mode share for City of Victoria residents for all trips is shown in Table 5.0 below.

**Table 5.0 – City of Victoria Regular Mode of Travel (Working Age Residents)**

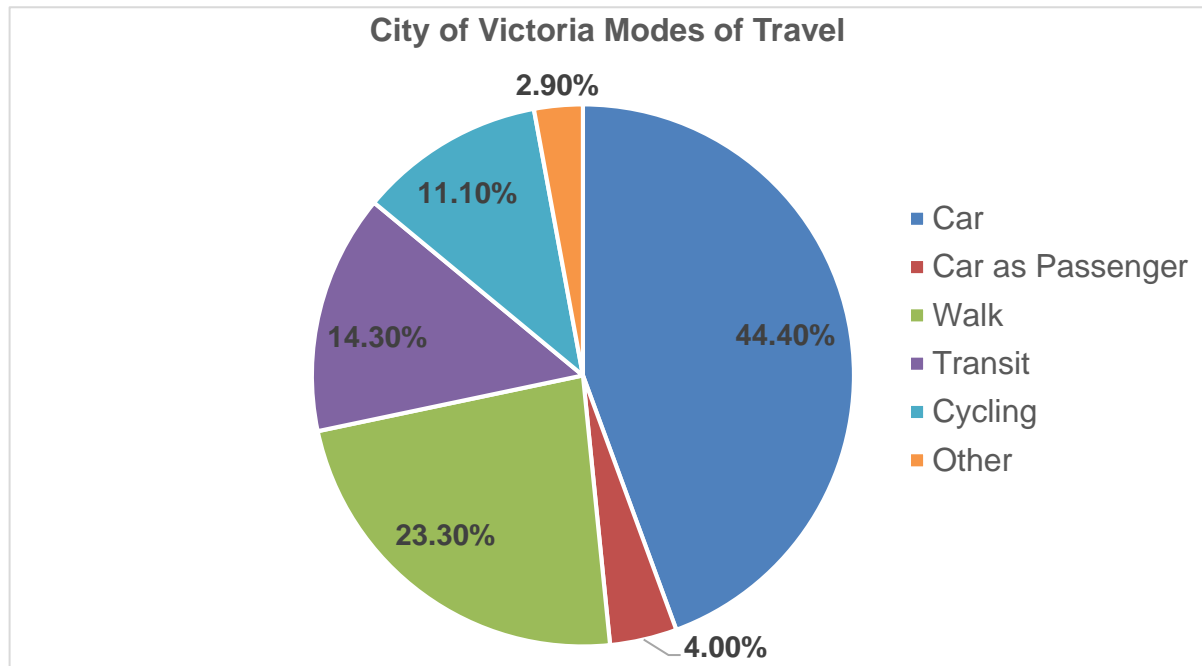
Mode of Travel <sup>1</sup>	Car	Car as Passenger	Walk	Transit	Cycling	Other
City of Victoria	44.4%	4.0%	23.3%	14.3%	11.1%	2.9%

As shown, residents of the City of Victoria are likely to utilize a wide range of transportation modes when accessing a variety of destinations, including Topaz Park, reducing their overall impact on the Topaz Park parking supply. As shown by **Table 5.0**, only 44.4% of working age residents use personal automobile while 23.3% walk, 4.0% carpool, 14.3% take transit, and 11.1% cycle.

<sup>1</sup> Main mode of commuting for the employed labour force aged 15 years and over in private households with a usual place of work or no fixed workplace address - 25% sample data.



This mode share breakdown shows that it is very likely many park users travel to Topaz Parking without a car, which could substantially reduce the demand for parking on site.





## 4.0 PROPOSED IMPROVEMENT CONCEPT

The City of Victoria is working with the community to refine a future plan for Topaz Park. The plan envisions expanding some park facilities and adding new facilities and upgrades, while some areas facilities will remain. The implementation of the proposed Topaz Park Improvements could potentially result in an increased demand for parking in the study area, especially as the increased diversity of activities and variety of uses in the park may draw new user groups contributing to generally higher parking demand. In order to continue to support parking requirements in Topaz Park, including new demand that may emerge from the expansion of facilities, a review of potential future parking demand was conducted using the ITE Parking Generation Guide.

The proposed concept plan being reviewed through this analysis is shown in **Figure 4.0**. As shown by **Figure 4.0** the proposed redevelopment will add a sports hub (est. 2,000 sq. ft.), fitness area (est. 2,000 sq. ft.), picnic area, six pickleball courts and a skateboard / bike skills park.

**Figure 4.0 – Proposed Topaz Park Improvements (Concept Plan)**





Using the peak parking demand estimates from the ITE Parking Generation Guide **Table 6.0** (below) shows the peak parking demand for each existing and proposed future use on the Topaz Park site. Again, it should be noted that generally peak parking demand for each of the uses will not occur simultaneously, but rather as combination of smaller activities and major events occurring at random times throughout the day, week, and year.

**Table 6.0 - Estimated Future Peak Parking Demand – Topaz Park Proposed Concept Plan**

Current Uses	Estimated Peak Parking Demand
2 Soccer Fields (Artificial Turf Field)	118 spaces
2 Soccer Fields / Baseball Diamonds	118 spaces
Lacrosse Box	59 spaces
Sports Hub (est. 2,000 sq. ft.)	6 spaces
Fitness Area (est. 2,000 sq. ft.)	6 spaces
Playground, Picnic Area and Dog Park (est. 3.0 Acres)	9 spaces
6 Pickleball Courts	20 spaces
2 Tennis Courts	6 spaces
Skateboard / Bike Skills Park	20 spaces
<b>Total</b>	<b>360 spaces</b>

As shown by **Table 6.0**, the overall peak parking demand for Topaz Park decreases slightly by 5 spaces to 360 spaces when compared to the peak demand for current uses on the park site (365 spaces) shown in **Table 4.0**. Again, in the unlikely situation that every use in Topaz Park were to be active simultaneously there would be demand of 360 spaces and a general shortage of parking of 207 spaces on site. However, again during the vast majority of times the off-street parking supply on the Topaz Park site will likely remain sufficient for the current and future uses on site and the majority of events taking place. However, given that the proposed concept plan will result in a greater variety of park uses and activities it is suggested that even though the overall peak parking demand may remain similar the average parking demand will likely increase as a wider variety of user groups look to access new activities in the park.



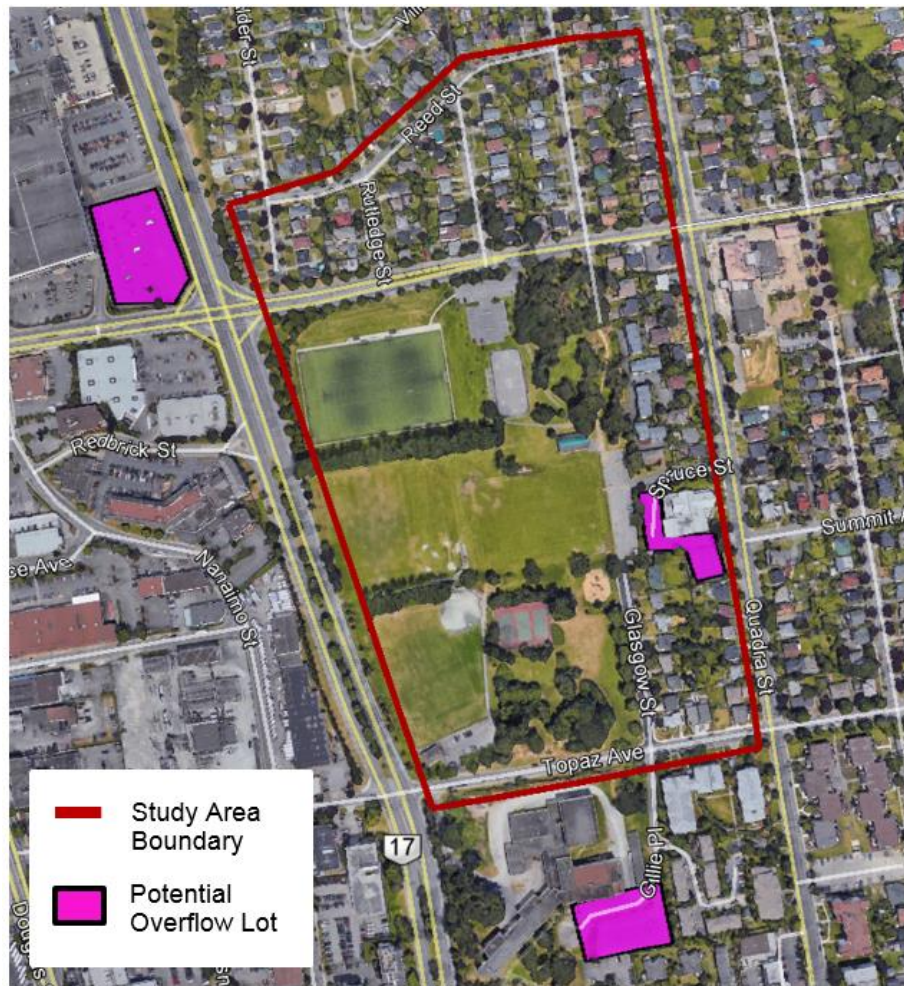
## 5.0 ALTERNATIVE PARKING OPTIONS

On rare occasions when a major events are taking place and over 153 vehicles are accessing facilities at Topaz Park additional parking options may be required. As shown in **Table 7.0**, up to an additional 207 spaces may be required to meet peak demand for the Topaz Park Improvements shown in **Figure 4.0** (Proposed Concept Plan).

There may be an opportunity for the City to meet this demand by entering into shared parking agreements with nearby landowners and institutions to provide overflow parking space in several neighboring lots adjacent to Topaz Park, notably those shown in **Figure 5.0** below:

- The Church of Jesus Christ of Latter-Day Saints (2290 Quadra Street);
- SJ Willis Educational Centre; and
- Mayfair Shopping Centre.

**Figure 5.0 - Potential Overflow Parking Locations**



These private lots which may be underutilized during periods of peak parking demand at Topaz Park could provide an additional parking spaces within a 5 - 10 min walk. As noted in Section 3.3, the SJ Willis



Educational Centre was already identified as an overflow parking area during the Bill Drew Memorial SoccerFest.

Another alternative would be for the City to provide a shuttle service between other City-owned parking lots downtown and Topaz Park to meet the additional parking demand during major events, such as the Highland Games. This shuttle service could be provided for the couple of days and night where the parking capacity of the Topaz Park area is greatly exceeded.

## 6.0 CONCLUSIONS

The overall results of this analysis have shown that there is sufficient parking on-site to support an expansion of recreational facilities at Topaz Park. Though given that the proposed concept plan will result in a greater variety of park uses and activities it is likely that average parking demand will increase as a wider variety of user groups look to access new park facilities. Further, even though parking supply will continue to be exceeded by demand during a very small number of major events it is best practice to base parking requirements on the average parking demand that will be experienced throughout the year. As observed during the Bill Drew Memorial SoccerFest even though the off-street parking lots were mostly full there was still plenty of on-street parking available throughout the day (notably on Topaz Avenue) and in the SJ Willis Educational Centre overflow parking area.

During periods of peak demand, mostly during major events when off-street parking lots are full, additional off-site parking may still be required. This analysis has shown that there are 78 additional on-street public parking spaces within a 5 - 10 min walk. Additionally, there are several other large private and public parking lots adjacent to Topaz Park that could potentially be accessed through shared parking agreements with nearby landowners and institutions. These alternatives to on-site parking have the potential to provide overflow parking space during major events. Further, as shown in **Table 5.0**, the current mode share data for the City of Victoria suggests that many users may be able to access Topaz Park's urban location by walking, cycling or taking transit and this should be further encouraged.

Overall, this demonstrates that even with the addition of the proposed facilities under the proposed concept plan there should be ample parking within the study area even during the busy parts of the year. This represents an opportunity for the City to utilize parking on the site more efficiently (year round) and avoid the development of unnecessary parking space beyond what is required for the vast majority of the year. This aligns with the City's objectives and sustainability goals outlined in the Official Community Plan (OCP).

### 6.1 Recommendations

The following recommendations consider the information presented in this report and provide direction for actions that should be taken to ensure parking is available to support existing and new development on the Topaz Park site.

- ▶ Notify the public about the potential for shortages in parking supply and the major events where they are expected to occur.



- ▶ Explore opportunities to establish shared parking agreements with nearby landowners and institutions to provide overflow parking space during major events.
- ▶ Provide information and communication materials to help direct event attendees to off-site parking locations with excess capacity nearby.
- ▶ Consider implementing a shuttle from downtown parking facilities to Topaz Park during the busiest events.
- ▶ Ensure a high level of transit access to Topaz Park by optimizing transit route connections and the location of bus stops;
- ▶ Encourage more park users to walk, bike and take transit;
- ▶ Encourage event attendees to carpool, walk, bike or take transit to events at Topaz Park; and,
- ▶ Create a space near one of the entrances of Topaz Park (possibly Topaz Avenue) to allow people attending major events to be easily picked-up / dropped-off.
- ▶ Conduct a follow-up study (preferably during the summer) after the changes in the proposed concept plan have been implemented to determine how the addition of new facilities in the park has changed parking demand.

**URBAN SYSTEMS LTD.**



Shaun Heffernan, MCIP, RPP  
Project Leader / Planner



This page is intentionally left blank.



# APPENDIX A

---

## PARKING COUNT MAPS

---



This page is intentionally left blank.

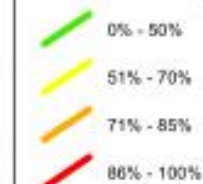


City of Victoria  
Topaz Park Parking Study

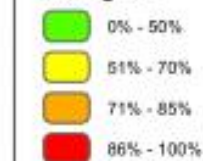
Average Occupancy  
February 28  
5 pm - 9 pm

Legend

**On-street Parking**



**Parking Lot**



The accuracy & completeness of information shown on this drawing is not guaranteed. It will be the responsibility of the user of the information shown on this drawing to locate & establish the precise location of all existing information whether shown or not.



Coordinate System:  
NAD 1983 UTM Zone 10N

Scale:  
1:3,000

**Data Sources:**  
Data provided by:  
Urban Systems Field Workers

Project #:	1325.0068.01
Author:	RB
Checklist:	XX
Status:	- DRAFT -
Revision:	A
Date:	2016 / 3 / 8

**URBAN**  
systems



This page is intentionally left blank.



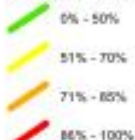


City of Victoria  
Topaz Park Parking Study

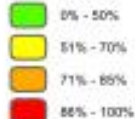
Average Occupancy  
March 3  
8 am - 11 am

Legend

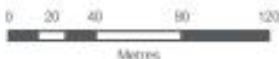
On-street Parking



Parking Lot



The accuracy & completeness of information shown on this drawing is not guaranteed. It will be the responsibility of the user of the information shown on this drawing to locate & establish the precise location of all existing information whether shown or not.



Coordinate System:

NAD 1983 UTM Zone 10N

Scale:

1:3,000

Data Sources:

Data provided by:  
Urban Systems Field Workers

Project #: 1328.0068.01  
Author: RB  
Checked: SH  
Status: - DRAFT -  
Revision: A  
Date: 2018 / 3 / 8





This page is intentionally left blank.





City of Victoria  
Topaz Park Parking Study

Average Occupancy  
March 3  
12 pm - 3 pm

- Legend
- On-street Parking**
- 0% - 50%
  - 51% - 70%
  - 71% - 85%
  - 86% - 100%
- Parking Lot**
- 0% - 50%
  - 51% - 70%
  - 71% - 85%
  - 86% - 100%



The accuracy & completeness of information shown on this drawing is not guaranteed. It will be the responsibility of the user of the information shown on this drawing to locate & establish the precise location of all existing information whether shown or not.



Coordinate System:  
NAD 1983 UTM Zone 10N

Scale:  
1:3,000

Data Sources:  
Data provided by:  
Urban Systems Field Workers

Project #: 1328.0068.01  
Author: RB  
Checked: SH  
Status: - DRAFT -  
Revision: A  
Date: 2018 / 3 / 8





This page is intentionally left blank.



Average Occupancy  
March 3  
4 pm - 7 pm

Lagerfeld

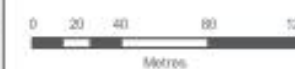
**On-street Parking**



Parking Lot



The accuracy & completeness of information shown on this drawing is not guaranteed. It will be the responsibility of the user of the information shown on this drawing to locate & establish the precise location of all existing information whether shown or not.



Coordinates System:  
NAD 1983 UTM Zone 10N

Scale:  
1:3,000

**Data Sources:**

Data provided by:  
Urban Systems Field Workers

Project #	1325.0068.01
Author	RB
Checked	SH
Status	- DRAFT -
Revision	A
Date	2016 / 3 / 8

**URBAN**  
systems



This page is intentionally left blank.





City of Victoria  
Topaz Park Parking Study

Average Occupancy  
April 7  
8 am - 11 am

Legend

On-street Parking

- 0% - 50%
- 51% - 70%
- 71% - 85%
- 86% - 100%

Parking Lot

- 0% - 50%
- 51% - 70%
- 71% - 85%
- 86% - 100%



The accuracy and completeness of information shown on this drawing is not guaranteed. It will be the responsibility of the user of the information shown on this drawing to locate & establish the precise location of all existing information whether shown or not.



Coordinate System:  
NAD 1983 UTM Zone 10N

Scale:  
1:3,000

Data Sources:  
Data provided by:  
Urban Systems Field Workers

Project #: 1328.0068.01  
Author: RB  
Checked: SH  
Status:  
Revision: A  
Date: 2015 / 4 / 11





This page is intentionally left blank.





City of Victoria  
Topaz Park Parking Study

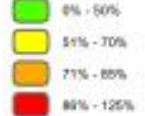
Average Occupancy  
April 7  
12 pm - 3 pm

Legend

On-street Parking



Parking Lot



The accuracy & completeness of information shown on this drawing is not guaranteed. It will be the responsibility of the user of the information shown on this drawing to locate & establish the precise location of all existing information whether shown or not.



Coordinate System: NAD 1983 UTM Zone 10N  
Scale: 1:3,000

Data Sources:  
Data provided by:  
Urban Systems Field Workers

Project #: 1328.0068.01  
Author: RB  
Checked: SH  
Status: **- DRAFT -**  
Revision: A  
Date: 2018 / 4 / 11





This page is intentionally left blank.





City of Victoria  
Topaz Park Parking Study

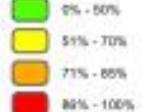
Average Occupancy  
April 7  
4 pm - 7 pm

Legend

On-street Parking



Parking Lot



The accuracy & completeness of information shown on this drawing is not guaranteed. It will be the responsibility of the user of the information shown on this drawing to locate & establish the precise location of all existing information whether shown or not.



Coordinate System:  
NAD 1983 UTM Zone 10N

Scale:  
1:3,000

Data Sources:  
Data provided by:  
Urban Systems Field Workers

Project # 1328 0068.01  
Author: RS  
Checked: SH  
Status: A  
Date: 2018 / 4 / 11





This page is intentionally left blank.



# Appendix C

---

Artificial Turf Feasibility Study



This page is intentionally left blank



# REPORT



## Topaz Park Artificial Turf Field Development Study

May 7, 2018

*Reviewed by:*  
Blair Arbuthnot, MBCSLA  
Division Manager

*Prepared by:*  
Matthew Harbut, MBCSLA  
Landscape Architect

**R.F. BINNIE & ASSOCIATES LTD.**

300 - 4940 Canada Way,  
Burnaby, BC V5G 4M5  
Main: 604-420-1721





## TABLE OF CONTENTS

<b>1</b>	<b>Introduction.....</b>	<b>1</b>
1.1	Overview & Scope of Assignment.....	1
<b>2</b>	<b>Site analysis .....</b>	<b>3</b>
2.1	General Conditions.....	3
2.2	Site Servicing.....	3
2.3	Geotechnical Assessment.....	5
2.4	Tree Assessment.....	7
2.5	Field Lighting Assessment.....	7
<b>3</b>	<b>Design Recommendations.....</b>	<b>8</b>
<b>4</b>	<b>Alternative Artificial Turf In-fill .....</b>	<b>10</b>
<b>5</b>	<b>Estimated Costs .....</b>	<b>13</b>
<b>6</b>	<b>Closing.....</b>	<b>15</b>

## APPENDICES

Appendix A: Geotechnical Report

Appendix B: Lighting Study

Appendix C: Arborist Report



## 1 INTRODUCTION

Topaz Park is an important component of Victoria's park system, providing numerous sports and recreation opportunities. Recently, Parks staff embarked on a master planning process to ensure future development at the park is aligned with public needs and aspirations. The park planning and public engagement process has illuminated the need to enhance the park's all-weather sports field facilities. Victoria's park planners have proposed to expand the footprint of the existing artificial turf field at the north-west corner of the park and in February 2018 engaged R.F. Binnie & Associates to study the technical feasibility of this proposition. The primary objectives of the study included;

- **Optimization of Increased Field Inventory** - A new synthetic field provides considerable new field inventory due to their all-weather playability. This attribute is critical to the overall development at Topaz Park as space is limited. Field sports will need to be consolidated at multi-use facilities to create space for new park amenities.
- **Mitigate the Impact to the Park's Natural Features** – Topaz Park has many mature trees which make positive contributions to the character of the park, and the City's overall urban forestry initiatives. The study explores pros and cons of preserving trees immediately adjacent to the artificial turf development site.
- **Technical Feasibility**- Determining if a site is suitable for developing an artificial turf field involves several technical considerations including favourable soil conditions, provision for sufficiently sized drainage and electrical services, relatively level topography as well as adequate site area for the field, spectator seating, players' benches, pathways, and other standard amenities.
- **Cost Effectiveness**- Achieving 'ideal' conditions for artificial field development can be cost prohibitive however compromise solutions which are affordable may be possible if the risks are well understood.

### 1.1 Overview & Scope of Assignment

Our assignment included provision for the following work program;

1. A site visit to Topaz Park was made on March 1<sup>st</sup> to confirm the existing conditions.
2. We obtained as-built service records from the City's online GIS and base mapping system.
3. Base plans were prepared for the site showing available topographic information, as-built records, property lines and aerial imagery.
4. Geotechnical investigation was performed at the site by our sub-consultant, Ryzuk Geotechnical Engineering & Materials Testing. The geotechnical investigation included a site visit, site history investigation, and review of an existing geotechnical report by Thurber Engineering Ltd.
5. Tree impact study was performed at the site by our sub-consultant, Davey Resource Group. The resulting arborist report identified and assessed existing trees adjacent to the site and made recommendations for preservation and removal.



6. Sports field lighting assessment was performed at the site by our sub-consultant, DMD & Associates Ltd. to determine the current light levels and the viability of re-using the existing lighting infrastructure for an expanded sports field surface.
7. The site was reviewed to determine whether there would be any major servicing issues with respect to storm drainage and water, or any significant utility conflicts.
8. Site space limitations were reviewed with respect to the ability of the site to accommodate two-full size, side-by-side- synthetic fields, including provision for standard amenities such as spectator seating, players' bench areas, pathway connections and grading buffers.
9. We completed a preliminary quantity take-off and prepared a Class C cost estimate for the site.



## 2 SITE ANALYSIS

### 2.1 General Conditions

A site visit was performed by Binnie staff. During our visit we observed the artificial turf condition to be typical of fields of the same age. No obvious areas of differential settlement were noted over the field surface. Furthermore, Parks staff have indicated that since the field was originally constructed in 2005, no repair work has been required to level out areas of differential settlement. Additionally, no complaints have been received from field users with respect to differential settlement related safety concerns, injuries or negative sport performance impacts.

#### 2.1.1 Existing Artificial Turf

The existing artificial turf field at Topaz Park is located at in the north-west corner of the park at the intersection of Blanshard St. and Finlayson St. The overall artificial turf surface is 123m x 80m and accommodates one full sized (105m x 74m) soccer field which is generally oriented along an East-West axis. In addition to the full-sized soccer field, the artificial turf surface has field markings for two 45m x 74m mini soccer fields oriented along the north-south axis. A 15m x 80m warm-up area is located on the west side of the field. The field surface slopes at 1.5% from the south east corner down toward the north west corner. The facility includes a 1.5m wide concrete apron which widens to approximately 6m on the north side of the field to accommodate portable player's benches and spectator bleachers. Perimeter fencing consists of 1.2m tall chain link fencing on 3 sides with tall 4.5 panels along the east end of the field. The field is lit by 4 high mast sports field lights.

The existing field is generally typical of artificial turf field facilities constructed in Southern British Columbia during the same period with some exceptions. The diagonal slope across the field surface is not typical of sports field grading which generally aims to provide a flat or centre crowned surface for high performance fields. When fields must be designed with a cross slope the preference is to have the field slope be in the direction of play or perpendicular to the direction of play. A diagonal cross slope is not a critical flaw and was likely done to limit earthwork and save costs, however, replacement of the field may offer a new opportunity to apply standard grading principles.

### 2.2 Site Servicing

**Stormwater Servicing:** The original grass field dates from the 1980's and had perforated laterals draining North into a 200mm diameter collector. The collector was tied into a Lawn Basin in the North West corner of the park at the bottom of the slope. From the information available, it appears this Lawn Basin ties into the storm drain under the east side of Blanchard Avenue. In 2005 an Artificial Turf Field (ATF) was installed, the perforated laterals underneath the ATF were replaced with a Multiflow system. The Multiflow system ties into the remaining perforated laterals outside the field footprint while the original 1980's collector is still in use today draining into the Lawn Basin. A 9 m wide natural grass area on the south side of the field is drained by perforated laterals. The collector for these laterals flows west and ties into a manhole adjacent to Blanchard Avenue. This area is inside the footprint of the proposed field and surrounding pathway, the perforated pipes will be removed for the construction of the new field.



The existing ATF has an approximate area of 10000 m<sup>2</sup>. The proposed field has an approximate area of 15800 m<sup>2</sup>. The additional 5800m<sup>2</sup> of ATF is replacing natural grass. This change in surfacing has the potential to increase storm runoff by 30%. Our recommendation is to install new laterals and collector to drain the proposed field. A new service connection to the municipal storm drainage system is recommended to provide appropriate drainage for the ATF. This new service connection will replace the existing connection through a Lawn Basin. The new service connection is anticipated to be near the intersection of Blanchard Street and Finlayson Street which is below 14.0 m elevation. The proposed field is to be flat with elevation near 18.4 m. This elevation difference of over 4 m will allow for a new service connection. A potential service connection point is into a 200mm vitrified clay pipe at 5.4% slope which makes its way into the 750 mm diameter storm drain.

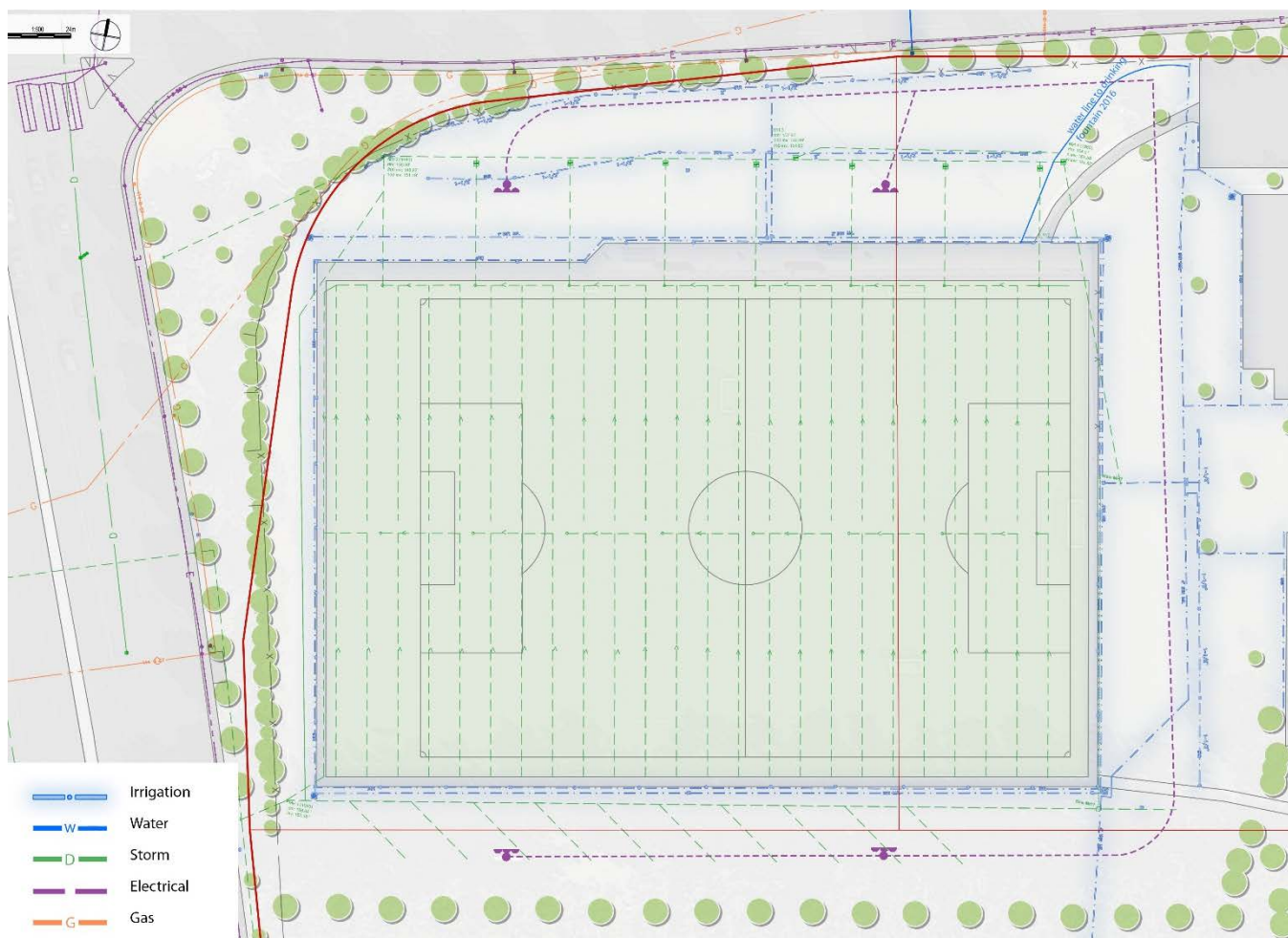
**Water Servicing:** A water fountain exists on the North East corner of the existing ATF. The water fountain will need to be relocated as it will be within the field footprint. This servicing will be adequate for servicing the relocated water fountain.

The grass field currently has an irrigation system installed. The ATF does not require irrigation and it is anticipated the whole irrigation system would be removed. If the surrounding area is required to be irrigated, the existing service will be adequate as the grassed area is reduced.

A weather station/irrigation network antenna exists on the North East side of the field. The station will likely need to be relocated to accommodate an expanded artificial turf field.

**Sanitary Servicing:** The existing ATF does not have a sanitary connection. A sanitary connection is not required for the proposed ATF facility.





Existing Utilities Plan

## 2.3 Geotechnical Assessment

Geotechnical Consultants, Ryzuk Geotechnical Engineering & Materials Testing, visited the site to assess the condition of the existing site as it relates to the proposed expansion of the artificial turf field. A subsurface investigation was not completed as the original geotechnical report produced by Thurber Engineering Ltd. provides adequate information for the purposes of this report and more detailed investigations would require costly disturbance of the existing ATF. Ryzuk's review of Thurber's test-hole results suggest that much of the existing ATF is underlain by clay fill which appears to increase in depth from east to west. Some test holes uncovered traces of wood and brick which is indicative of the site's former use as a clay quarry and brickyard. The fill materials were likely not properly compacted and can typically be expected to be prone to differential settlement. Ryzuk considers the proposed expansion of the ATF to be feasible from a geotechnical perspective but cautions that settlement mitigation should be carefully considered do to the nature of the subsurface fill materials. Settlement mitigation techniques included complete removal of the or the clay fills and replacement with structural engineered fill or placement of preload fill which would be removed once measurement equipment indicates settlement rates have decreased to within a predetermined threshold. Both techniques can



be prohibitively expensive so in many cases the risk of some settlement is accepted, and fields are constructed over the unaltered condition.

### **2.3.1 Settlement Implications – Understanding the Risks**

The primary concern in constructing a synthetic turf field on non-uniform fill is differential settlement. While total settlement is an issue for transition zones, namely areas where settlement occurs and does not occur, generally total settlement is not problematic if it occurs uniformly across the sports surface.

Conversely, differential settlement, which manifests as ‘hills and valleys’ over a surface, can be very damaging, requiring costly repairs. With fill sites, differential settlement is not uncommon, due in part to the variability of the underlying fills and the corresponding different rates of compression and decomposition.

Differential settlement has the ability to negatively impact the typical components of a synthetic turf field in the following ways:

- Drainage piping can become broken due to abrupt changes in grade. Pipe flow can slow or cease to drain due to grade changes over a longer distance (slopes can become flattened, or even reversed).
- Fence panels can tilt, sink and/or heave.
- Sports light poles can tilt, sink and/or heave.
- Electrical conduit can become broken due to abrupt changes in grade.
- Water lines can become broken due to abrupt changes in grade.
- Concrete used for edge anchor curbs, pathways and concrete pads, and which is not a flexible pavement material, can crack, sink and/or heave.
- The synthetic turf surfacing (and underlying permeable aggregates) can experience reflective dips and valleys. This is a concern for ball roll, ball bounce, footing and player safety.
- Sinkholes can develop, especially over perforated drainage lines, which can lead to large cavities under the turf.
- Asphalt pavement used for pathways and pads, can crack, sink and/or heave. Note that asphalt is a flexible pavement material and as such can tolerate a certain degree of differential settlement without breaking.

For a new synthetic field constructed over a typical stable site with little to no settlement expected, we would design for a maximum of 10 mm of differential settlement over 3 m, based on a 10 year period. On sites where ground conditions are not ideal, we typically design for a maximum of 25 mm of differential settlement over 3 m. On a few selected sites with poor soils, a maximum of 150 mm of differential settlement over 3 m has been the design objective, over a 10 year period. The aforementioned is assuming standard synthetic field construction methods utilizing perforated drainage pipes, high mast field lighting, concrete edge anchor, etc.

### **Recommendation**

There is little evidence of significant differential settlement to the existing ATF suggesting much of the settlement has already occurred and the future field would perform in a similar fashion provided the



new field does not increase the loading on the underlying materials. The finished surface elevation of the new ATF should be set at or below the elevation of the existing field to ensure no additional loading is applied to the underlying fills. Once the existing artificial turf has been removed the subgrade materials should be inspected by a geotechnical engineer to more accurately forecast differential settlement and tailor the field design for the actual site conditions.

## 2.4 Tree Assessment

Davey Resource Group's ISA certified Arborist, Russell Friesen visited the site to conduct an assessment of the trees adjacent to the existing artificial turf field at Topaz Park. The consultant's report documents all the existing trees in the vicinity of the proposed ATF expansion however the focus is on the potential impact to a row of mature Black Cottonwood trees which border the south side of the development site. The 20 Black Cottonwoods are over 30m tall with trunk diameters at 1.4m ht. ranging from 70 to 109cm. 12 of the Cottonwoods are over 80cm and protected by City of Victoria bylaw. All but one of the cottonwoods appear to be in fair health with an expected remaining useful life of greater than 5 years and possibly 10 or more years.

### Recommendation

Reasonable efforts should be made to preserve and protect the existing Black Cottonwood trees to be consistent with City of Victoria urban forestry objectives as well as public sentiment toward general tree preservation. 'Reasonable effort' is defined as a field expansion solution which provides two full sized soccer fields outside of the trees' protected root zone and within permitted property limits.

## 2.5 Field Lighting Assessment

DMD & Associates Ltd. visited the site to measure light levels at the existing artificial turf soccer field and assess the feasibility of re-using the existing sports field lighting equipment for the expanded ATF facility. The average light levels recorded at the Topaz Park ATF meet the class IV standard as set by Illuminating Engineering Society RP-6 (*facilities with limited or no provision for spectators*). However, light uniformity requirements were not met which may be due to three burnt-out luminaires. Typically, new artificial turf soccer field lighting systems are designed to deliver Class III light levels (300 Lux) or better, exceeding the levels recorded at the existing field by a considerable margin. DMD also determined that the existing poles would need to be relocated to suit the proposed side-by-side field configuration. With the new field configuration the existing lights would be behind the goals areas which has a negative impact on playability. A six-pole configuration would be required to adequately light the proposed field surface.

### Recommendation

Relocate the 4 existing light poles and add two additional poles to achieve a minimum Class III specification for light level and uniformity. Due to the higher light levels DMD also recommends an upgrade to LED luminaires to reduce light spill and power consumption.



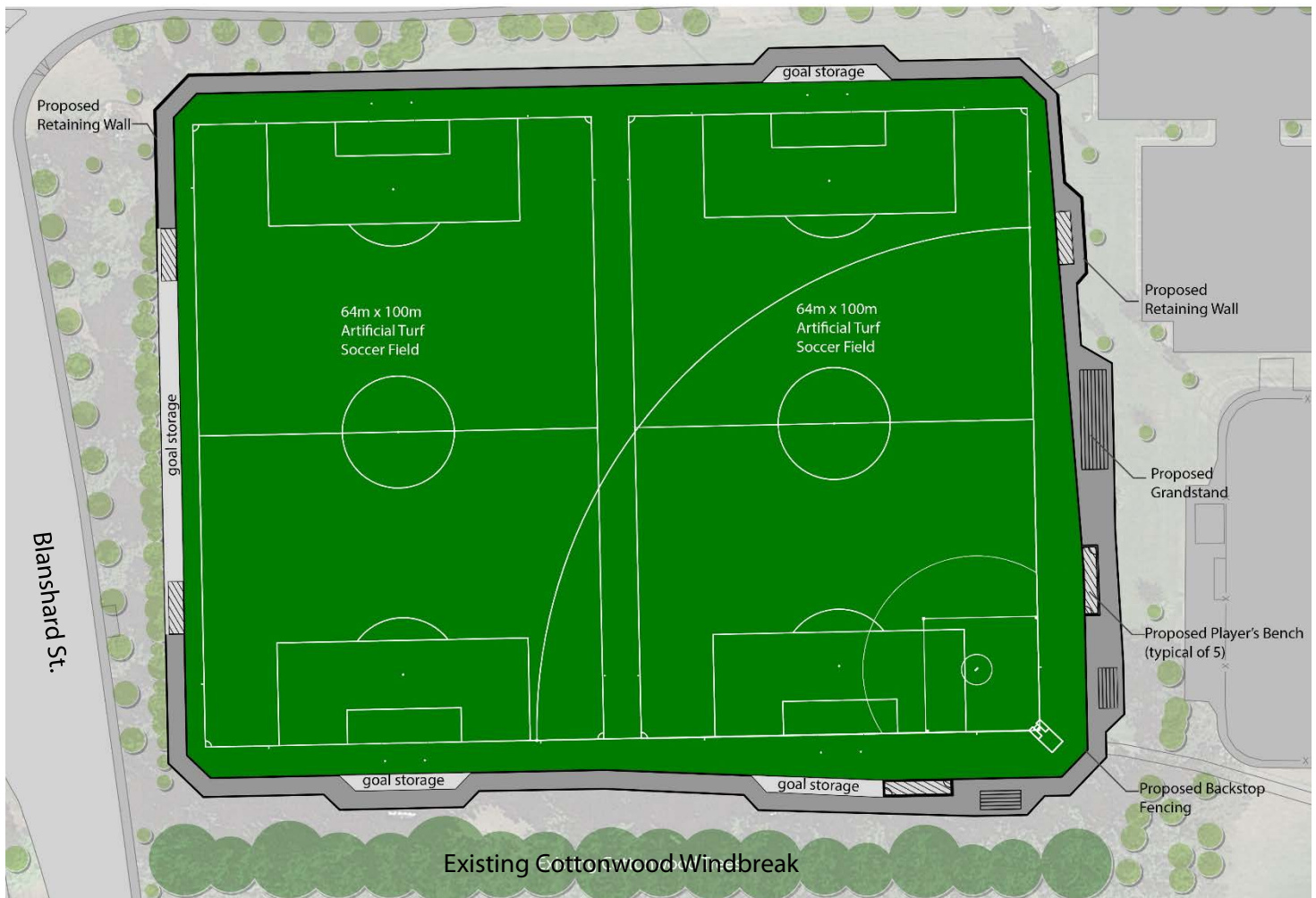
### 3 DESIGN RECOMMENDATIONS

#### Facility Components

- Field located as close to the Finlayson St. property line as possible to provide adequate separating from the existing Cottonwoods
- Square the north-west corner of the park property (extending the park boundary north-west into the existing ROW) to allow the new ATF footprint extend north
- Create a retaining wall at the corner of the Blanshard St. and Finlayson St. to support the north west corner of the new field. The wall offers an opportunity to create a monumental park sign to enhance park identity and a sense of arrival.
- Two (2) Full size soccer field dimensions: 64 x 100m
- Four (4) Small sided fields overlain on the full-size soccer field
- One (1) Multi-use ball diamond overlain on the full-size soccer field including a full size backstop and dugouts
- Flat graded surface
- Off-field goal storage for 4 full size soccer goals and 8 mini soccer goals (min.)
- Covered and rainscreen protected players shelters
- Spectator grandstand located on the east side of the field- built into the existing slope. The structure should be designed to incorporate pedestrian access from the parking area down to the field level.
- Include adequate ball control fencing to prevent balls from leaving the fields
- LED sports field lighting system to IES RP-6 Class III standard (min.)



Finlayson St.



## Recommended Field Layout



## 4 ALTERNATIVE ARTIFICIAL TURF IN-FILL

Crumb Rubber (SBR) is the most common type of artificial turf infill, often mixed with sand to provide ballast. It is derived predominantly from used tires which are recycled by shredding or cryogenic (freezing) process. As a recycled product, crumb rubber is readily available and offers the advantage of reducing the volume of used tires sent to landfills. It also has a smaller carbon footprint than producing virgin products for the same use. A key disadvantages of crumb rubber is its effect on field surface temperature. Artificial turf fields with crumb rubber infill produce higher surface temperatures than natural grass or organic infills. Another often cited disadvantage is the initial odour produced as the material off-gasses. These odours as well as reports in the media that crumb rubber may pose health concerns have fueled negative public perceptions of the product and artificial turf systems in general. While clinical research conducted to date does not link crumb rubber with elevated risk to human health or environmental safety<sup>1</sup>, some field owners and operators have opted to utilize alternative infill products in their artificial turf field systems. The following table provides some of the pros and cons for each of the available infill alternatives.



Infill	Description	*Price Increase	Advantages	Disadvantages
Crumb Rubber (SBR incl. coated)	Ground-up car and truck tires. Coated SBR rubber-encapsulated with a crosslinkable, UV resistant coating	70/30 Coated SBR / Sand +\$182,000 \$11.50 sq/m	<ul style="list-style-type: none"> <li>Highly resilient—Excellent shock absorption</li> <li>Low cost</li> <li>Post-consumer recycled product removes tires from waste stream</li> <li>Optional light colour selections absorbs less visible light to reduce surface temperature</li> </ul>	<ul style="list-style-type: none"> <li>Post-consumer recycled product—material source variable</li> <li>Public perception of potential health impact</li> <li>Has new tire odor</li> </ul>
TPE (Thermoplastic Elastomer)	A group of rubber type block copolymers having physical cross-links between soft and hard segments. (used at BC Place Stadium)	70/30 TPE / Sand +\$600,000 \$38.00 sq/m	<ul style="list-style-type: none"> <li>Can have high resiliency—good shock absorption, minimal 'spray'</li> <li>Virgin material—raw materials can be controlled – contains no cancer-causing PAH's or heavy metals</li> <li>Can be melted so they can be recycled after use</li> <li>Can be colored: <ul style="list-style-type: none"> <li>Match to turf application</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>High cost; limited availability results in high transportation costs</li> <li>Extruded particles: <ul style="list-style-type: none"> <li>All particles are the same size—do not settle together</li> <li>Round particles can create slipping problems on sidewalks or tracks</li> </ul> </li> </ul>

<sup>1</sup> Synthetic Turf Council News Release titled. "Synthetic Turf Council Releases Guidelines for Testing Infill in Synthetic Turf Fields", August 17, 2015.



Infill	Description	*Price Increase	Advantages	Disadvantages
			<ul style="list-style-type: none"> <li>▪ Potential reduction in turf surface temperature</li> </ul>	<ul style="list-style-type: none"> <li>▪ Improper formulation can lead to premature aging issues</li> </ul>
EPDM (Ethylene Propylene Diene Monomer)	A copolymer of ethylene and propylene having diene linkages that can be crosslinked with peroxides or sulfur.	70/30 EPDM / Sand + <b>\$610,000</b> \$38.50 sq/m	<ul style="list-style-type: none"> <li>• Virgin material—control of raw materials</li> <li>• High to medium resiliency depending on filler level</li> <li>• Crumb form—settles like crumb rubber</li> <li>• Can be colored</li> </ul>	<ul style="list-style-type: none"> <li>• High cost</li> <li>• Limited availability results in high transportation costs</li> <li>• High filler level results in chalking, degradation of materials</li> <li>• Improper crosslinking can lead to premature aging</li> </ul>
Rounded Silica Sand	Large particle-sized, highly-rounded sand can provide a synthetic turf infill that does not compact in the way the smaller, more angular sand tends to compact.	100% EnviroSand + <b>\$530,000</b> \$33.50 sq/m	<ul style="list-style-type: none"> <li>• Relatively low cost (per lbs)</li> <li>• Inorganic material—can be cleaned to have low impurities</li> <li>• Can be coated to give it color</li> </ul>	<ul style="list-style-type: none"> <li>• No resiliency—low shock absorption</li> <li>• Requires a pad</li> <li>• High transportation costs due to weight</li> <li>• High number of pounds required to infill the system (high cost)</li> </ul>
Organic (Coconut Husks)	Primarily coconut husk and coconut peat. <i>(Bowen Island has a coconut fiber/ cork infill field.)</i>	83/17 Organic/Sand + <b>\$405,000</b> \$25.50 sq/m	<ul style="list-style-type: none"> <li>• Natural product—not chemically produced</li> <li>• Provides playing characteristics similar to natural turf</li> <li>• Light color absorbs less visible light to reduce surface temperature</li> <li>• Retains water for evaporative cooling</li> </ul>	<ul style="list-style-type: none"> <li>• Higher costs than SBR crumb rubber</li> <li>• Requires more maintenance and refreshing than crumb rubber fields</li> <li>• Limited resilience—requires a pad</li> <li>• Requires a watering system to maintain playability</li> <li>• Susceptible to freezing due to low water permeability.</li> </ul>
Organic (Cork)	Ground-up bark from the cork tree. <i>(Port Coquitlam has a Cork infill field)</i>	83/17 Organic/Sand + <b>\$277,000</b> \$17.50 sq/m	<ul style="list-style-type: none"> <li>• Natural product—not chemically produced</li> <li>• Light color absorbs less visible light to reduce surface temperature</li> <li>• Low density decreases the weight needed to fill the turf</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate resilience will require a pad or combination with SBR</li> <li>• Low density allows material to float, cling to fibers with static charge</li> <li>• May require watering system to remove static charges</li> <li>• Susceptible to freezing due to low water permeability.</li> <li>• Limited availability</li> </ul>



Infill	Description	*Price Increase	Advantages	Disadvantages
Organic (Walnut Shells)	Ground-up walnut shells.	83/17 Organic/Sand + <b>N/A</b>	<ul style="list-style-type: none"> <li>• Cool infill during summer</li> <li>• No concern with floating/ice</li> <li>• Used in New York</li> <li>• Very slow to bio-degrade</li> </ul>	<ul style="list-style-type: none"> <li>• Brand new 2017 technology</li> <li>• Slightly more abrasive</li> <li>• Limited availability</li> </ul>
Nike Grind	Ground-up soles from athletic shoes.	70/30 Nike Grind / Sand + <b>\$270,000</b> Unknown control over source of supply \$17.00 sq/m	<ul style="list-style-type: none"> <li>• Has good resilience and shock absorption</li> <li>• Has less public perception of health risks</li> <li>• Post-consumer recycled material</li> </ul>	<ul style="list-style-type: none"> <li>• Limited supply</li> <li>• Non-natural color</li> <li>• Unknown control over source of supply</li> </ul>

Table is adapted from an alternative Infill Comparison by Shaw Sport Turf.

\*Costs are based on estimates and will vary by geographic region. Costs shown are the estimated increase over standard crumb rubber infill for a 15,822 m<sup>2</sup> field (*as per Topaz Park recommended Concept*) consisting of a turf system of 50mm fiber with a 70/30 rubber sand mix.



## 5 ESTIMATED COSTS

We have developed a cost estimate for the site using the methodology outlined below.

### Methodology

- A quantity takeoff was completed for major items of work assuming standard soccer field dimensions – 64 m by 100 m with 3 m sideline and 5 m endline safety zones (overall size of 70 m by 110 m).
- We allowed for common amenities including covered players shelters, fencing, pathway connections, boot brushes, lighting (existing lighting was assumed to be insufficient), new drainage system and installation of infilled synthetic turf with a shock pad.
- We have allowed for the installation of new storm drainage connections.
- The stripping depths correspond to the thickness of the proposed field structure (Infill turf, shock pad, and permeable aggregates).
- We have estimated the savings that could potentially be achieved by constructing a sloping field versus a flat field profile. The savings represent cost of the reduction in excavation and backfill associated with a sloping field (maximum 1%, longitudinally), which would better match the existing ground topography.
- Unit prices are based on average 2017 tendered prices for similar work and our extensive experience with synthetic field construction in British Columbia's Lower Mainland.
- We have applied a contingency factor of 15%.
- An allowance for design, testing and project management has not been included.
- The replacement of unsuitable subgrade materials discovered during construction has not been included.

**Note:** It is important to be aware that synthetic turf prices are heavily impacted by Canadian and US dollar exchange rate and any changes will have an impact on future costs.



**Cost Estimate for the Recommended ATF Layout**

ITEM	DESCRIPTION	AMOUNT
<b>Section 1 - Site Preparation, Demolition, Sediment Control</b>		
2.01	Mobilization, Site Preparation, Demolition, ESC	\$75,000
2.02	Turf Removal	\$55,000
2.02	Turf Recycling	\$100,000
	Subtotal:	<b>\$230,000</b>
<b>Section 2 - Earthworks</b>		
2.01	Stripping with Offsite Disposal	\$300,000
2.02	*Imported Structural Fill	\$55,000
	Subtotal:	<b>\$355,000</b>
<b>Section 3 - Hardscape</b>		
3.01	Asphalt Walkways	\$65,000
3.02	Concrete Paving	\$25,000
3.03	Retaining Walls	\$175,000
	Subtotal:	<b>\$265,000</b>
<b>Section 4 - ATF Field Structures and Amenities</b>		
4.03	Ball Control Fencing	\$300,000
4.04	Player's Shelters (5)	\$100,000
4.05	Concrete Grandstand	\$175,000
	Subtotal:	<b>\$575,000</b>
<b>Section 5 - ATF Fields</b>		
5.01	Painted Lines and Markings	\$5,000
5.02	Concrete Edge Anchor	\$75,000
5.03	Supply and Installation of Infilled Synthetic Turf	\$775,000
5.04	Supply and Installation of Shock Pad	\$255,000
5.05	Permeable Aggregate Surface (200mm Deep)	\$335,000
5.06	19 minus Crushed Base Aggregate (50mm Deep)	\$63,000
	Subtotal:	<b>\$1,508,000</b>
<b>Section 6 - Drainage</b>		
	Subtotal:	<b>\$490,000</b>
<b>Section 7 – Sports Field Lighting System</b>		
7.01	Relocate Existing Poles (4) & add (2) New Pole	\$300,000
	Subtotal:	<b>\$300,000</b>
<b>Subtotal Construction Costs:</b>		<b>3,723,000</b>
<b>Contingency Allowance (15%):</b>		<b>558,450</b>
<b>Total Estimated Construction Cost:</b>		<b>4,281,450</b>

**\*Import Structural Fill:** The estimate assumes the existing subgrade is suitable and does not need over excavation and replacement with imported structural fill. Therefore, this is the minimum amount.



## 6 CLOSING

We trust you find the above suitable for your needs. Should you have any questions or comments on the information contained herein, please do not hesitate to contact the Project Manager.

***Prepared by:***



---

**Matthew Harbut, MBCSLA**  
Landscape Architect

***Reviewed by:***



---

**Blair Arbuthnot, MBCSLA**  
Division Manager



# APPENDIX A

## GEOTECHNICAL REPORT



## **RYZUK GEOTECHNICAL**

Engineering & Materials Testing

28 Crease Avenue, Victoria, BC, V8Z 1S3 Tel: 250-475-3131 Fax: 250-475-3611 www.ryzuk.com

March 16, 2018  
File No: 8-8775-1

RF Binnie & Associates  
205-4946 Canada Way  
Burnaby, BC  
V5G 4H7

Attention: Blair Arbuthnot  
(by email: [barbuthnot@binnie.com](mailto:barbuthnot@binnie.com))

Re: Topaz Park Artificial Field Expansion  
Topaz Park, Victoria, BC

As requested, we have completed a geotechnical assessment at the referenced site as it relates to the proposed development. Our observations, comments, and recommendations are summarized below. Our work in this regard has been completed in accordance with, and is subject to, the attached Terms of Engagement.

### **PROPOSED DEVELOPMENT**

Topaz Park, located at the southeast corner of the intersection of Blanshard Street and Finlayson Street, is currently home to a number of natural grass and artificial turf playing fields. Located within the northwest corner of the park, the artificial turf field was originally constructed in 2005. In its current configuration, the field contains one oversize soccer pitch measuring roughly 105 m (east-west) by 74 m (north-south). We understand that the City of Victoria is looking to replace and expand the field to include two soccer pitches as well as a slow-pitch infield diamond. The soccer pitches are expected to be orientated in the north-south direction with each measuring up to 100 m in length (north-south) by 64 m in width (east-west).

Based on preliminary discussions, we understand that the new field would consist of an extension of the existing field footprint. To accommodate the roughly 100 m length requirement, the new field would extent north and south to roughly the location of the existing field lighting lamp standards. The western edge of the existing field is located near the western property line, as such, to accommodate the roughly 130 m width requirement, the new field would be extended to the east. An estimate of the extents of the field expansion can be seen in Figure 1.





**Figure 1: Estimated extents of proposed field expansion**

A typical field cross section provided by Binnie & Associates suggests that the proposed field would be constructed with a minimum 50 mm top course aggregate atop a 200 mm aggregate base course. Above the aggregate a shock pad would be placed, with the synthetic turf placed at surface.

Prior to our assessment, we were provided with a Thurber Engineering Ltd. report, *Topaz Park All-Weather Sports Field Geotechnical Investigation*, dated January 24, 2002 (Thurber Report). The report summarizes the results of a subsurface investigation conducted prior to construction of the existing artificial turf field. As such, a subsurface investigation was not completed as part of this assessment.

## SURFACE AND SUBSURFACE CONDITIONS

From Blanshard Street to the west, the terrain slopes up to the existing turf field grade at an average slope gradient of about 15 to 20% over a horizontal distance of between 10 and 20 m. The top of this slope is located roughly along the park property line, with the western edge of the existing turf field offset a further 3 to 4 m to the east. As expected, the field area itself is relatively flat with little to no grade change. From the eastern edge of the field, the terrain again rises to the east at an average slope gradient of about 15 to 20% over a horizontal distance of about 15 m. Atop this eastern slope is a paved parking area and lacrosse box.



Test-hole results retrieved from the Thurber Report suggest that much of the area of the proposed field is underlain by varying depths of clay fill. A test-hole advanced within the western area of the field encountered stiff silty clay fills that became soft with depth. Within the same hole, traces of wood and brick were found within the clay down to refusal on inferred rock or glacial till at 6.3 m below existing grade. As second test-hole, advanced within the center of the field encountered similar soils with refusal at 3.7 m below existing grade. Finally, a third test-hole, advanced at the east end of the field encountered 1.2 m of silty clay fill atop native firm to stiff grey silty clay with refusal at 4.4 m below existing grade.

Historically, areas of the park and the surrounding area were part of a clay quarry and brickyard. Aerial photographs suggest that much of the existing fill material was placed after 1964, with additional fill placed prior to 1986 for field grading.

## GEOTECHNICAL ASSESSMENT AND RECOMMENDATIONS

On the basis of our assessment we consider the proposed development to be feasible from a geotechnical perspective; however, careful consideration with regard to settlement mitigation will be required.

### Settlements in Fill Materials

Quantifying the degree of consolidation of clay fills is difficult without long term monitoring or information regarding the methods in which they were placed. As the test-holes from the Thurber Report indicate that the silty clay fills have an unnatural pattern of stiffness, it could be presumed that they were not properly compacted during placement and were most likely end dumped. Fills of this type are expected to be prone to settlement due to increased loadings associated with additional fill placement, with the rates of settlement decreasing over time. Furthermore, any settlement could be differential in nature. While native soils can generally be expected to be similarly consolidated within a relatively small footprint, the degree of consolidation of uncompacted fill materials can vary greatly throughout the same area. As a result, when exposed to increased loading, the different areas could settle at uneven rates.

Localized depressions may also develop in these fills as they often include materials that may degrade over time, most notably organics. As these materials degrade they may create voids. When the soils migrate into the voids, depressions can develop at the surface. The potential size and extent of these depressions are also difficult to quantify, again due to the generally unknown composition of the fills.

### Settlements in Native Materials

Within the eastern portion of the proposed expansion, fill atop native firm to stiff silty clay was encountered. Experience in the Victoria area suggests that these native firm to stiff clays at depth are considered near normally consolidated. Like the fills to the west, the native firm to stiff clays soils are prone to settlement due to increased loadings associated additional fill placement. However, consolidation of these native materials is much more predictable. Much of the significant



consolidation of such tends to occur within the first six months to a year following fill placement. Some secondary or long term settlement could also be expected; however, this would be considered minimal in relation the short term settlements.

### Settlements Mitigation

A number of measures may be implemented to mitigate against future settlements. In general, the costs associated with settlement mitigation will increase with the amount of risk reduced. For example, to completely reduce the risk of settlement, all fill materials within and slightly beyond the field footprint would require removal and replacement with an engineered fill.

Alternatively, a significant depth of fill (preload) could be placed above the proposed field grade. Settlement gauges within the preload would be monitored until the consolidation rate of underlying fills and native materials were at acceptable levels. At this stage the preload could be removed and the field installed. Mitigation of this type however could take 6 months to a year and possibly longer to accomplish and would not necessarily eliminate the risk of localized settlement due to organic degradation. Prevention against localized settlement may be possible with the installation of a thicker subbase layer and biaxial geogrid below the field structure. While this would not necessarily prevent localized differential settlement, it could reduce it to serviceable levels.

Finally, and perhaps the most practical option would be to construct the field as is. While some limited localized settlement was noted at a number of locations around the perimeter, the existing field has generally remained serviceable since 2005. Provided the new field does not increase the loading on the underlying materials, we expect that the new field would perform in the same fashion. During construction, following site stripping and removal of the existing field, we would recommend that the subgrade materials be inspected. Where poor conditions are noted, they could be addressed on a case by case basis.

While likely the most cost effective, we must emphasize that there is risk associated with this option. Due to the unknown nature of the fill materials, settlement could still occur via any of the mechanisms described previously. However, as noted above, past performance of the existing field suggests that much of the settlement has already occurred and as long as loading is not increased by fill placement or new structures across the site, we expect the new field to perform similar to the existing field.

### Retaining Walls

Expansion towards the east will require excavation into a slope. As a result, to stabilize the slope, a retaining wall will likely need to be constructed. Preliminary estimates suggest that the wall would need an effective height of in the range of 2.0 m and would be required throughout much of the eastern edge of the proposed field footprint. Further details on retaining wall construction can be provided once layouts have been finalized.



March 16, 2018

## CLOSURE

We trust the preceding is suitable for your purposes at present. Please do not hesitate to contact our office if we can be of further assistance.

Kind regards,  
Ryzuk Geotechnical



Jeff Ferraby, EIT  
Junior Engineer



Matt Mueller, P.Eng.  
Project Engineer

Attachments - Terms of Engagement



## TERMS OF ENGAGEMENT

### GENERAL

Ryzuk Geotechnical (the Consultant) shall render the Services, as specified in the agreed Scope of Services, to the Client for this Project in accordance with the following terms of engagement. The Services, and any other associated documents, records or data, shall be carried out and/or prepared in accordance with generally accepted engineering practices in the location where the Services were performed. No other warranty, expressed or implied is made. The Consultant may, at its discretion and at any stage, engage sub-consultants to perform all or any part of the Services.

Ryzuk Geotechnical is a wholly owned subsidiary of C. N. Ryzuk & Associates Ltd.

### COMPENSATION

All charges will be payable in Canadian Dollars. Invoices will be due and payable by the Client on receipt of the invoice without hold back. Interest on overdue accounts is 24% per annum.

### REPRESENTATIVES

Each party shall designate a representative who is authorized to act on behalf of that party and receive notices under this Agreement.

### TERMINATION

Either party may terminate this engagement without cause upon thirty (30) days' notice in writing. On termination by either party under this paragraph, the Client shall forthwith pay to the Consultant its Charges for the Services performed, including all expenses and other charges incurred by the Consultant for this Project.

If either party breaches this engagement, the non-defaulting party may terminate this engagement after giving seven (7) days' notice to remedy the breach. On termination by the Consultant under this paragraph, the Client shall forthwith pay to the Consultant its Charges for the Services performed to the date of termination, including all fees and charges for this Project.

### ENVIRONMENTAL

The Consultant's field investigation, laboratory testing and engineering recommendations will not address or evaluate pollution of soil or pollution of groundwater. The Consultant will cooperate with the Client's environmental consultant during the field work phase of the investigation.

### PROFESSIONAL RESPONSIBILITY

In performing the Services, the Consultant will provide and exercise the standard of care, skill and diligence required by customarily accepted professional practices and procedures normally provided in the performance of the Services contemplated in this engagement at the time when and the location in which the Services were performed.

### INSURANCE

Ryzuk Geotechnical is covered by Professional Indemnity Insurance as follows:

1. \$ 2,000,000 each and every claim
2. \$ 4,000,000 aggregate
3. \$ 5,000,000 commercial/general liability coverage

### LIMITATION OF LIABILITY

The Consultant shall not be responsible for:

1. the failure of a contractor, retained by the Client, to perform the work required for the Project in accordance with the applicable contract documents;
2. the design of or defects in equipment supplied or provided by the Client for incorporation into the Project;
3. any cross-contamination resulting from subsurface investigations;
4. any Project decisions made by the Client if the decisions were made without the advice of the Consultant or contrary to or inconsistent with the Consultant's advice;
5. any consequential loss, injury or damages suffered by the Client, including but not limited to loss of use, earnings and business interruption;
6. the unauthorized distribution of any confidential document or report prepared by or on behalf of the consultant for the exclusive use of the Client
7. Subsurface structures and utilities



The Consultant will make all reasonable efforts prior to and during subsurface site investigations to minimize the risk of damaging any subsurface utilities/mains. If, in the unlikely event that damage is incurred where utilities were unmarked and/or undetected, the Consultant will not be held responsible for damages to the site or surrounding areas, utilities/mains or drilling equipment or the cost of any repairs.

The total amount of all claims the Client may have against the Consultant or any present or former partner, executive officer, director, stockholder or employee thereof under this engagement, including but not limited to claims for negligence, negligent misrepresentation and breach of contract, shall be strictly limited to the amount of any professional liability insurance the Consultant may have available for such claims.

No claim may be brought against the Consultant in contract or tort more than two (2) years after the date of discovery of such defect.

## **DOCUMENTS AND REPORTING**

All of the documents prepared by the Consultant or on behalf of the Consultant in connection with the Project are instruments of service for the execution of the Project. The Consultant retains the property and copyright in these documents, whether the Project is executed or not. These documents may not be used on any other project without the prior written agreement of the Consultant.

The documents have been prepared specifically for the Project, and are applicable only in the case where there has been no physical alteration to, or deviation from any of the information provided to the Consultant by the Client or agents of the Client. The Client may, in light of such alterations or deviations, request that the Consultant review and revise these documents.

The identification and classification as to the extent, properties or type of soils or other materials at the Project site has been based upon investigation and interpretation consistent with the accepted standard of care in the engineering consulting practice in the location where the Services were performed. Due to the nature of geotechnical engineering, there is an inherent risk that some conditions will not be detected at the Project site, and that actual subsurface conditions may vary considerably from investigation points. The Client must be aware of, and accept this risk, as must any other party making use of any documents prepared by the Consultant regarding the Project.

Any conclusions and recommendations provided within any document prepared by the Consultant for the Client has been based on the investigative information undertaken by the Consultant, and any additional information provided to the Consultant by the Client or agents of the Client. The Consultant accepts no responsibility for any associated deficiency or inaccuracy as the result of a miss-statement or receipt of fraudulent information.

## **JOBSITE SAFETY AND CONTROL**

The Client acknowledges that control of the jobsite lies solely with the Client, his agents or contractors. The presence of the Consultant's personnel on the site does not relieve the Client, his agents or contractors from their responsibilities for site safety. Accordingly, the Client must endeavor to inform the Consultant of all hazardous or otherwise dangerous conditions at the Project site of which the Client is aware.

The client must acknowledge that during the course of a geotechnical investigation, it is possible that a previously unknown hazard may be discovered. In this event, the Client recognizes that such a hazard may result in the necessity to undertake procedures which ensure the safety and protection of personnel and/or the environment. The Client shall be responsible for payment of any additional expenses incurred as a result of such discoveries, and recognizes that under certain circumstances, discovery of hazardous conditions or elements requires that regulatory agencies must be informed. The Client shall not bring about any action or dispute against the Consultant as a result of such notification.

## **FIELD SERVICES**

Where applicable, field services recommended for the Project are the minimum necessary, in the sole discretion of the Consultant, to observe whether the work or a contractor retained by the Client is being carried out in general conformity with the intent of the Services. Any reduction from the level of services recommended will result in the Consultant providing qualified certifications for the work.

## **DISPUTE RESOLUTION**

If requested in writing by either the Client or the Consultant, the Client and the Consultant shall attempt to resolve any dispute between them arising out of or in connection with this Agreement by entering into structured non-binding negotiations with the assistance of a mediator on a without prejudice basis. The mediator shall be appointed by agreement of the parties. If a dispute cannot be settled within a period of thirty (30) calendar days with the mediator, the dispute shall be referred to and finally resolved by arbitration under the rules of the arbitrator appointed by agreement of the parties or by reference to a Judge of the British Columbia Court.



# APPENDIX B

## LIGHTING STUDY



604/589-9010  
Fax 604/589-9012

Diagram illustrating the placement of spill light measurement points on a basketball court. The diagram shows two basketball courts side-by-side, with green areas representing the court floor and white lines representing the court boundaries. Red dots indicate the locations of spill light measurement points. The diagram is labeled with the following text:

- SPORTS LIGHT POLE (TYPICAL)
- VERTICAL SPILL LIGHT MEASUREMENT POINT (TYPICAL)

www.dmdeng.com





(poles shown in red). A rough order of magnitude cost to relocate and add the additional poles, conduit and wiring would be in the range of \$250K assuming the service could accommodate any additional electrical load.

The City may also consider upgrading the existing luminaires to LED to improve lighting and reduce power consumption. An example of a recent LED sports lighting project is shown in the image right. The cost to convert to LED would need to be confirmed with the supplier, Musco Lighting.



If you have any questions please call.

Yours sincerely,

A handwritten signature in black ink that reads "Don McLean".

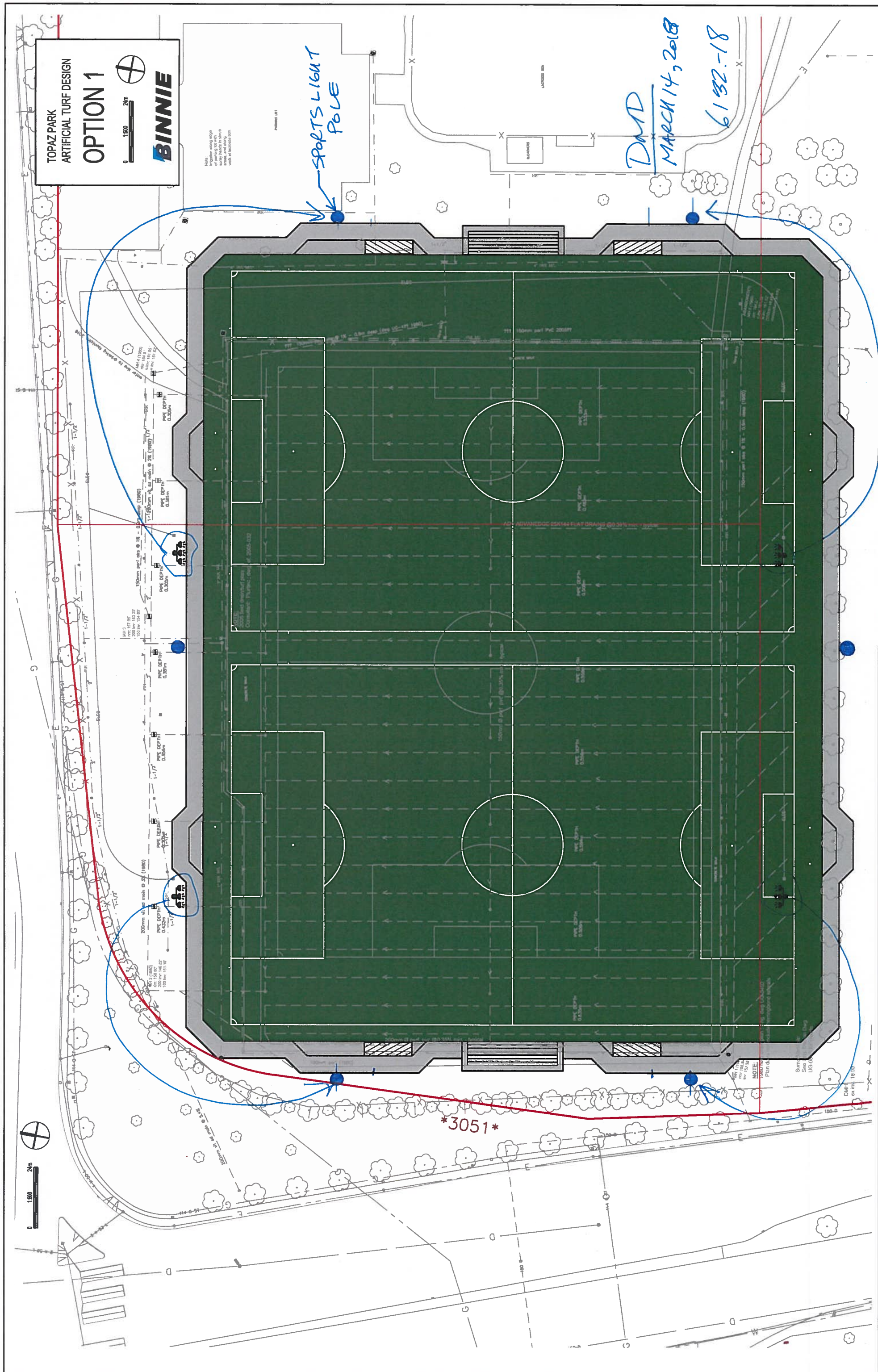
Don McLean

e-mail: [don@dmdeng.com](mailto:don@dmdeng.com)











# APPENDIX C

## ARBORIST REPORT





**Arborist's Report**  
**Topaz Park Improvement Plan**  
**Potential Tree Impacts from Expansion of Artificial Turf**  
**Victoria, BC.**

**March 14, 2018**

**Prepared for**  
R.F. Binnie & Associates Ltd.  
300-4940 Canada Way  
Burnaby, BC. V5G 4M5

**Prepared by**  
Russell Friesen Consultant  
ISA Certified Arborist PR-0399AM  
P: 604-340-3113  
[russell.friesen@davey.com](mailto:russell.friesen@davey.com)

©2017 Davey Resource Group, a Division of Davey Tree Expert Co. of Canada, Limited.  
All rights reserved. This document must be used in whole with all pages and in conjunction with all  
other support documents and plans.



## Summary

This report documents the findings of a Tree and Site Assessment undertaken by a Certified Arborist at the direction of R.F. Binnie and Associates and studies the potential impact of the expansion of the Topaz Park artificial turf soccer field on nearby trees. The study focuses on expansion's impact to a row of Black Cottonwood trees.

## The Key Issues

- Topaz Park Improvement Plan Concept #1 calls for the artificial turf area in the north east corner of the park to be expanded to accommodate two half size soccer fields.
- Concept #1 shows:
  - The removal of a line of trees directly south of the expanded field
  - The placement of bleachers east of the expanded field
  - New pathways and trails

## The Key Findings

- There are approximately 86 trees impacted by artificial turf expansion as shown in Concept 1.
- The artificial turf expansion may require the removal of approximately 20 Black Cottonwood (*Populus balsamifera 'trichocarpa'*) trees.
- The eastward expansion and placement of bleachers approaches a grove of approximately 20 Garry Oak (*Quercus garryana*) trees.
- The expansion may require the removal of non-protected species of trees under 80 cm in diameter.
- The trees around the west and north perimeter are in conflict with the chain link security fence.
- The City of Victoria requires the minimum protected root zone radius around each tree impacted by development equal to 18 times the diameter.
- The City of Victoria protects:
  - Garry Oak
  - Arbutus
  - Pacific Yew over 50 cm in height
  - Pacific Dogwood
  - Douglas Fir over 60 cm diameter
  - Western Red Cedar over 60 cm diameter
  - Big Leaf Maple over 60 cm diameter
  - Significant trees so identified in community consultations
  - Any tree over 80 cm in diameter
- The City of Victoria requires permits to remove, prune or alter a protected tree.
- The City of Victoria requires 2 trees to be planted for each tree removed and a \$350.00 security per replacement tree.
- Tree attributes and the minimum Protected Root Zone radii are listed Appendix 1.
- The Black Cottonwoods appear be generally, in fair health, some showing suckering on the lower trunks. The exception is tree #23737 which has a poor structure primarily because



of a decaying cavity. The other Cottonwoods likely have a remaining useful life greater than 5 years.

- The Garry oaks are in fair to good health
- The improvements as shown in Concept 1 are likely to encroach into the Protected Root Zone of the Black Cottonwoods and the grove of Garry oaks.
- Black Cottonwoods' reproductive strategies include the production of new shoots from root suckers.

### **The Key Recommendations**

- Identify and remove trees as maybe required for construction purposes.
- If the 20 Black Cottonwood trees are removed for construction purposes, strip or comb soil within a 30 m radius to remove the bulk of potentially suckering roots.
- Protect all trees to be retained by:
- Realigning the placement of any planned features such as: the artificial turf fields, pathways, bleachers, visitor conveniences, fences, irrigation, lighting or other utilities that require excavation, grade changes or soil disturbance to avoid encroaching into Protected Root Zones.
- Aerating, fertilizing and irrigating at least one growing season (preferably two) prior to redevelopment.
- Erecting Tree Protection Fence minimally aligned with the limits of the Protected Root Zone radii as shown in Appendix 1, and under the control of Project Arborist.
- Ensure that any excavation or soil disturbance with the Protected Root Zone is supervised by a qualified, Certified Arborist.
- Prior to excavation outside the Protected Root Zone, ensure that roots are pruned at the excavation wall to a depth of 20-30 cm.
- Prior to excavation within the Protected Root Zone, ensure that roots are: exposed by employing low impact methods of excavation, selectively and cleanly pruned, prevented from desiccating by a curtain of moist burlap and wire mesh, and backfilled with the originally excavated soil.
- Ensuring that underground utilities and irrigation that encroach into or cross the Protected Root Zone are installed using trenchless technologies and/or low impact methods of excavation.
- Prune tree canopies to a minimum height of 2.5 meters for pedestrians and cyclists, 4.0 meters over vehicle carriage ways and as required for construction clearance.
- Aerating, fertilizing, and irrigating during construction and at least one post construction growing season (preferably two growing seasons).
- A Certified Arborist with Tree Risk Assessor Qualification is to assess the trees immediately after root pruning to determine if any of the trees are destabilized and must be immediately removed.
- Prune to elevate west and north perimeter trees to alleviate security fence conflicts
- Remove Tree 23840, a False Cypress for reasons of tree health (dead top).
- Plant two new replacement trees for each tree removed.
- Select species other than Deodar Cedars which are prone to top failure
- A Qualified Tree Risk Assessor with the foreknowledge of the excavation work and root pruning should inspect the private trees annually and after extreme weather such as



high winds, heavy rains, flooding, etc.

## Assignment

On March 1, 2018, R.F. Binnie and Associates of Burnaby, BC. (the Client) retained Davey Resource Group to assess trees and provide an Arborist's Report on trees impacted by potential impacts from an expansion of an artificial turf sports field located in the northwest corner of Topaz Park, in the city of Victoria.

The report is to examine two scenarios was based on Concept 1 park improvement.

1. Limiting the field expansion to the existing field lights (no tree impacts)
2. Expanding the fields beyond the existing lights toward the hedgerow of Cottonwoods.

Finally, the report was estimate the remaining lifespan of the Cottonwood trees.

## Limitations of the Assignment

The recommendations in this report are based on observations and data collection reflective of the current state of the subject trees at the time of the site inspection. The Client should incorporate the information and recommendations provided in this report into their future tree care plans, in a reasonable manner. This arborist report is based on the project scope and details provided in discussions with the Client.

## Methods

- The tree assessment was completed by Russell Friesen, ISA Cert# PR-0399, the author of this report.
- Trees were visually assessed.
- No level of ISA Tree Risk Assessment was performed
- Photos were enhanced by digitally adjusting brightness and contrast.

## Observations

- Field observations were made, and photos were taken on March 10, 2018 by Russell Friesen, Certified Arborist (PR0399AM).
- Tree numbers and species are derived from City of Victoria TreeKeeper inventory.
- Tree attributes are listed in Appendix 1 and tree locations are shown in the maps accompanying this report.
- Eighty-six trees were assessed, and their attributes updated. There are:
  - 20 Black Cottonwood Trees, 12 of which are over 80 cm diameter and are protected.
  - 10 Garry Oak Trees, which is a protected species
  - 24 Hornbeam Trees
  - 8 Deodar Cedar Trees
  - 24 Other species
- The Cottonwoods appear to be in good to fair health, except for tree #23737 which has a decaying cavity arising from a stem tear out. The Cottonwoods appear to have healthy buds and generally exhibit twig elongation of 5-8 cm per year over the past three years. However, some of the trees exhibit new branches on the



lower trunks and suckering shoots arising from the roots. Additionally, the Cottonwoods appear to frequently shed twigs and small branches.

- The Garry Oaks appear to be in good to fair health. Other than competition in the canopies for light, there appear to be no significant issues.
- The 24 Hornbeams appear to be in good to fair health, however the multi-stem examples show branch crowding and included bark. Additionally, the Hornbeam outside the perimeter fence on the west side of the subject area are growing through the chain link.
- The 8 Deodar Cedars are in good health, but are structurally poor, each having lost one or more co-dominant tops.
- The 24 other trees do not exhibit any obvious health or structural issues of concern other than routine maintenance.

## Discussion

This report as stated in the report assignment the lifespan of the Cottonwoods and impacts of the expansion of the artificial turf to the trees in each of two scenarios is to be studied.

During redevelopment, The City of Victoria requires a Protected Root Zone radius from the trunk of each tree equal to 18 times the trunk diameter as measured at 1.4 meters above grade. Any excavation, open trenching or grade change work to prepare site for the expanded artificial turf new pathways, sidewalks, lights, fixed bleachers, fences, irrigation or utilities within the root protection zone is likely to cause some degree of damage to root systems.

Generally, the Cottonwoods with the noted exception of one tree (#23737) are in fair to good condition. These trees are adding 5-8 cm of twig elongation each year and the buds appear normal healthy. There are no obvious signs of Cytospora, fungal canker disease of the bark, that tend to infect trees lacking vigour. Given these observations it is likely that left undisturbed the Cottonwood have a least 5 years and possibly 10 or more year of usefully life. The exception to this statement is tree #23737, that presents a decaying cavity, likely arising from the loss of a codominant stem. Tree #23737 should be removed when deemed unsafe or prior to any park improvements. Additionally, it should be noted that damaged Cottonwoods will send up new shoots from the root system as a survival mechanism.

Scenario 1 - Expand the artificial turf to the line defined by the existing flood lights:

In this scenario, the Cottonwoods are unlikely to be impacted by excavation directly associated with expansion of the artificial turf. However, the trees could still sustain root damage from open trench installation of underground electrical lines required to support new lighting and a new irrigation pipes to support the adjacent natural turf. Any damage to the Cottonwoods' roots can result in new shoots that could disrupt playing surfaces and damage mowing equipment.

Scenario 2 – Expand the artificial turf past the line defined by the existing flood lights:

In this scenario, the artificial turf and lighting would encroach into the Cottonwoods Protected Root Zones. Excavation, trenching and grade changes would be closer to the trees and therefore more likely to damage root systems, hence the probability of shoots from the roots would increase. Determining any lifespan limiting impacts to the individual trees requires further information regarding limits of excavation, grade changes and routing of utilities within the Protected Root Zones.



Irrespective of each scenario and an additional scenario in which the trees are removed, the greatest playability risks to sports fields are new shoots arising from root. There are three ways to avoid playability issues.

1. Treat the trees with a non-selective herbicide to kill the tops and roots prior to Tree Removal  
Pro – Effective; Con – Kills tree, uses a herbicide, most effective just prior to leaf drop, trees may readily shed small branches and twigs.
2. Remove the trees immediately after leaf-out in the spring  
Pro – Tree roots at lowest energy level therefore fewer root shoots; Con - not 100% effective, shoot could continue for 2 or 3 years,
3. Strip soil or comb to remove roots to a distance equal to the height of the trees (30 m radius) from the trunks.  
Pro – Physically removes most potentially suckering roots; Con – Large area of soil disturbance, equipment intensive, may destroy roots of nearby non-target trees (such as the Garry Oaks)

### **General Tree Protection and Preservation**

Tree preservation start at the development's planning stage and follows through demolition, excavation, construction, grading, landscaping, acceptance and into post construction. The over all goal is that each retained tree remains a long-term asset to the community.

One key strategy to achieve this goal is minimizing damage and disturbance to the above ground tree and its underground roots. The objectives of this strategy are to protect:

- Tree roots from:
  - Ripping/Tearing
  - Suffocation
  - Drought and desiccation
- Tree trunks from:
  - Vascular and structural damage
- Tree branches from:
  - Breakage and tearing;
- Tree buds and leaves from:
  - Scorching and desiccation

Another key strategy to attain the goal is to direct tree protection funds where it will do the most good. The objectives of this strategy are to:

- Preserve the healthiest, most structural sound trees.
- Protect the species the most tolerant of construction disturbance.
- Maintain or mimic natural process need for tree health.
- Provide the best growing conditions for replacement trees.
- Educate site workers.



### **Tree Protection Zone**

Best practices for Tree Protection call for the establishment of a Tree Protection Zone (TPZ). The Tree Protection Zone is a volume of above and below ground space that is to be left undisturbed. This volume is primarily defined by a Tree Protection Zone Barrier (TPZB) placed at a calculated distance from the trunk. The area within the barrier fence is referred to as the “Minimum Tree Protection Zone (MTPZ).” Typically, an on-site project arborist will layout tree protection barriers. No excavation, soil disturbance, storage, parking, crane or construction work is to take place within the volume defined by the barriers unless approved by the Project Arborist.

However, the nature of the proposed work calls for encroachment into the MTPZ of 77 private trees. Therefore, steps must be taken to mitigate damage to subject trees and their roots.

### **Tree Protection Zone Barriers**

Tree Protection Zone Barriers, typically construction or safety fence, is used on construction sites to ensure that damage to the tree and its root zone is prevented. This distance is typically located by the MTPZ. However, it must be understood that sometimes this distance is not achievable due to infrastructure being too close. It must be further understood the barrier distance sometimes must accommodate a larger TPZ (than the typical MTPZ distance) due to a limited root growing area/volume (this area is typically defined by the project arborist.) TPZ Barrier locations should be field marked by the project arborist, and fence installation done by the site contractor. The fence must be installed to the alignment as laid out by the project arborist as per the Protected Root Zone calculations shown in Appendix 1.

### **Tree Protection Signage**

It is recommended for the Applicant to post Tree Protection Signs at various locations along the fencing. Signage informs the public and reminds the contractors the significance of the TPZs and the efforts put forward by the Client in tree preservation. The signage should be of a durable material that will last the length of the project.

### **Excavation within the Protected Root Zone**

Excavation work within the Protected Root Zone must be undertaken with care to minimize damage to tree roots.

Generally, a tree’s root system is a tangled network extending out two or three times its height. Roots grow as deep as impervious layers such as bed rock and available soil oxygen allows. Typically, for a tree growing in deep soils, 90% of the roots are found in the first 30 cm of top soil, and 99% within the first one meter. The roots growing beyond the canopy are fine hair like collectors of moisture, and nutrients metabolizing photosynthate and oxygen. Roots under the canopy transport moisture towards the trunk and photosynthate to the fine roots beyond the canopy. In addition to their role in moisture, photosynthate and nutrients transport, the roots within 3-4 meters of the trunk are structurally important to hold the tree upright. These structural roots are an integral part of the tree’s dampening of wind force energy. Structural roots are important to preserve as they transfer wind force



energy into the roots under the canopy. The roots under the canopy, in turn transfer the wind force energy to the fine hair line roots, which transfers the energy via friction with individual soil particles.

Excavation, trenching and cut work within the Protected Root Zone of any tree could cause serious root injury and could leave a tree with a potential for structural failure or serious decline. Tree friendly excavation techniques are required supersonic air excavation or hydrovac are required to expose the trees roots most at risk of damage. Exposed roots are to be draped with moist burlap to help prevent root desiccation. As possible work should be adjusted to avoid structurally important roots. Work may have to shifted away from the structural roots and gaps left in formwork. Only, prune roots as necessary to accomplish the work. Avoid pruning or otherwise damaging roots greater than 5 cm in diameter. As required roots are to be pruned to the edge of the excavation. The edge of the excavation is also to be draped with moist burlap.

### **Root Pruning Protocol**

Two techniques of root pruning are recommended for the work. The first method is to use supersonic air or hydrovac to expose and allow for the selective pruning of roots. The second method uses a mechanical root pruner that non-selectively cuts the roots.

The first technique of root excavation and pruning is not a common skill set and should be performed by a qualified arborist familiar with the practice. Tree's roots are underground and are otherwise not detectible without physical exploration – i.e., using a Supersonic Air Tool (SSAT) such as an AirSpade® or Daylighting vehicle (Hydro-Vac with pressure not to exceed 500 psi inside any TPZ). Root pruning trenches must be at least the depth of the deepest root (usually 30-60 cm) and about 15 cm wide. Roots are assessed by the arborist regarding the effects construction may have on the tree, and then either pruned with a sharp tool, possibly recommended for removal, or a design change may be needed on-site to accommodate. The use of a rotary saw is not acceptable to prune the roots of trees.

The second method of root pruning uses a specially toothed wheel that cuts a narrow trench and chips away roots therein. This method does not allow for the selection of individual roots. Wheel style root pruners should only be used for small or low risk trees unlikely to have to have significant structural roots within the work.



**Table 2. Pros and Cons of Different Root Pruning Techniques**

Excavation Technique	Pro	Con
Backhoe	Fast, Common Equipment, lowest cost, easy to load trucks. Can use excavated material as backfill	Rips roots, may cause lateral root fracturing beyond the excavation wall. Can use excavated material as backfill
Wheel Root Pruner	Fast, Cuts line for excavator to follow, Chips through roots, does not rasp or tear roots. Excellent for protection of sidewalks, playing surfaces and for installation of root barriers.	Not common equipment, non-selective pruning, depth limited by wheel diameter.
Hand Excavation	Labour intensive, may need equipment to haul material to awaiting trucks. Can use excavated material as backfill	Slow, shoveling damages roots, some roots too big to cut with shovel. Stones can slow process
HydroVac	Fast, clean and precise, common equipment	Most expensive, Maximum operating pressure 500 psi, Limited tank capacity for excavated materials Cannot use excavated material as backfill
Supersonic Air	4 times faster than hand excavation, does no or little damage to roots and impervious material. Maybe able to use excavated material as backfill	Moderate cost, not common equipment, can be very dusty, needs dry-vacuum for dust control and when working over 30 cm deep.

### **Arborist's Tree and Root Monitoring**

Roots are buried, out-of-site and unpredictable. It is possible that even the best application of Tree Friendly excavation techniques can still damage a tree to the point of destabilization. During excavation within the Protected Root Zone a Certified Arborist, with Tree Risk Assessment Qualifications should be present on site to monitor the stability and safety of protected trees. If excavation risks destabilizing the tree the arborist may stop the work and advise on possible risk mitigation techniques including tree removal.

### **Branch Pruning**

Tree branches should be selectively pruned under the supervision of a Certified Arborist to facilitate construction clearances. Typically, a minimum clearance of 2.5 m is required for site workers and 4.5 m is required for the passage of highway vehicles (trucks and trailers). However, clearance pruning heights may need to be increased depending on the use of cranes, back hoes, loaders, or high-working-height equipment. The project arborist and the construction contractor should work together to determine necessary construction clearances.

### **Staging Areas**

All staging areas are understood to be outside the Protected Root Zone At no time are spoils, materials, vehicles, traffic or debris to be stacked, staged, or piled inside the Tree Protection Fencing. At this site it is presumed that all staging, vehicles and equipment will remain on hard surfaces such as the road or sidewalk.

### **Working in Proximity to Shallow Underground Utilities**

Work in proximity to underground utilities should follow the directives and acceptable practice as laid out by the utility owner. It is not uncommon for an underground utility owner to require that their lines are hand exposed prior to mechanised excavation. Often



supersonic air and hydrovac excavation are acceptable methods of exposing lines. Additionally, underground utility owner's may place weight restrictions for vehicle and equipment operation on or near their lines. The most tree friendly of the utility owner's practices should be used on this project.

**Vehicle Idling**

Vehicle and equipment exhaust has been measured by the US Forest Service to be as hot as 368 degrees C. (695 deg F.<sup>7</sup>) Tender tree parts such as leaves, and buds can scorch and/or desiccate if exposed to prolonged exhaust gases. Therefore, idling the engines of vertically piped vehicles such as heavy trucks and equipment such as compressors or excavators is prohibited under tree canopies.

**Post Construction Care**

Trees adjacent to excavation require supplementary care to help mitigate the damage. Three activities are required, vertical mulching, deep root fertilization, and supplementary watering.

- Vertical Mulching -- Employing air excavation techniques to create vertical tube-like holes in the soil to improve aeration.
- Deep Root Fertilization – Injecting high pressure water and dissolved fertilizer into the rootzone.
- Supplementary Water – Adding irrigation water as required to ensure that root zone is at field capacity.


The stewards of Topaz Park should be provided post construction care instructions for trees impacted by the redevelopment. The generally the trees should be routinely monitored for changes in future years by a Qualified Tree Risk Assessor. Additionally, the stewards of Topaz Park should be instructed to routinely monitor the trees for changes after extreme wind and or rain events.

---

<sup>7</sup> USDA Diesel Exhaust Emission System Temperature Test. 2008:  
<https://www.fs.fed.us/eng/pubs/pdf/08511816.pdf>



Appendix 1 - Tree Attributes and Radius of Protected Root Zone

<div>  </div>		Tree Number	CommonName	Botanical Name	Diameter At 1.4 m (cm)	Height (m)	Width (m)	Radius of Protected Root Zone (m)
		23837	Beech	<i>Fagus sylvatica 'Atropunicea'</i>	23	10	5	4.14
		8461	Black-gum	<i>Nyssa sylvatica</i>	7	4	2	1.26
		8462	Black-gum	<i>Nyssa sylvatica</i>	8	5	2	1.44
		8464	Black-gum	<i>Nyssa sylvatica</i>	13	6	4	2.34
		10570	Black-gum	<i>Nyssa sylvatica</i>	5	4	2	0.90
		10707	Deodar cedar	<i>Cedrus deodara</i>	43	12	8	7.74
		10708	Deodar cedar	<i>Cedrus deodara</i>	42	13	7	7.56
		10709	Deodar cedar	<i>Cedrus deodara</i>	39	10	8	7.02
		11550	Deodar cedar	<i>Cedrus deodara</i>	32	10	6	5.76
		11551	Deodar cedar	<i>Cedrus deodara</i>	42	10	6	7.56
		11552	Deodar cedar	<i>Cedrus deodara</i>	40	14	12	7.20
		11553	Deodar cedar	<i>Cedrus deodara</i>	42	14	12	7.56
		11554	Deodar cedar	<i>Cedrus deodara</i>	34	10	5	6.12
		23832	False Cypress	<i>Chameacyparis species</i>	21	8	3	3.78
		23839	False Cypress	<i>Chameacyparis species</i>	31	12	3	5.58
		23840	False Cypress	<i>Chameacyparis species</i>	18	6	3	3.24
		6150	Garry oak	<i>Quercus garryana</i>	35	12	6	6.30
		9437	Garry oak	<i>Quercus garryana</i>	40	13	11	7.20
		9438	Garry oak	<i>Quercus garryana</i>	28	12	5	5.04
		9439	Garry oak	<i>Quercus garryana</i>	20	12	10	3.60
		9440	Garry oak	<i>Quercus garryana</i>	23	5	4	4.14





Tree Number	CommonName	Botanical Name	Diameter At 1.4 m (cm)	Height (m)	Width (m)	Radius of Protected Root Zone (m)
9441	Garry oak	<i>Quercus garryana</i>	27	8	8	4.86
9442	Garry oak	<i>Quercus garryana</i>	19	10	6	3.42
10568	Garry oak	<i>Quercus garryana</i>	53	12	12	9.54
10569	Garry oak	<i>Quercus garryana</i>	58	14	15	10.44
11472	Garry oak	<i>Quercus garryana</i>	29	12	6	5.22
23750	Hawthorn	<i>Crataegus oxyacantha</i>	50	10	6	9.00
23751	Hawthorn	<i>Crataegus oxyacantha</i>	29	10	6	5.22
22611	Hornbeam	<i>Carpinus betulus</i>	52	9	6	9.36
23124	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	31	7	5	5.58
23833	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	31	10	6	5.58
23838	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	51	10	7	9.18
23841	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	48	11	10	8.64
23842	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	38	11	10	6.84
23843	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	33	10	5	5.94
23844	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	37	10	5	6.66
23845	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	44	10	6	7.92
23846	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	41	10	6	7.38
23847	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	64	12	8	11.52
23848	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	68	12	7	12.24
23849	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	52	10	7	9.36
23850	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	43	12	6	7.74






Tree Number	CommonName	Botanical Name	Diameter At 1.4 m (cm)	Height (m)	Width (m)	Radius of Protected Root Zone (m)
23851	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	68	12	7	12.24
23852	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	65	10	7	11.70
23853	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	63	10	7	11.34
23854	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	52	10	8	9.36
23855	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	59	10	8	10.62
23856	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	52	10	6	9.36
23857	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	42	10	6	7.56
23858	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	50	12	9	9.00
23859	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	41	9	5	7.38
23860	Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>	42	9	5	7.56
9898	Japanese flowering cherry	<i>Prunus serrulata</i>	21	5	5	3.78
10710	Japanese flowering cherry	<i>Prunus serrulata</i>	22	5	5	3.96
10711	Japanese flowering cherry	<i>Prunus serrulata</i>	17	4	4	3.06
10712	Japanese flowering cherry	<i>Prunus serrulata</i>	19	5	5	3.24
10713	Japanese flowering cherry	<i>Prunus serrulata</i>	16	5	3	2.88
10714	Japanese flowering cherry	<i>Prunus serrulata</i>	20	5	6	3.60
10715	Japanese flowering cherry	<i>Prunus serrulata</i>	16	5	4	2.88
10567	Japanese zelkova	<i>Zelkova serrata</i>	8	5	2	1.44
10566	Norway maple	<i>Acer platanoides</i>	11	7	4	1.98
21796	Poplar	<i>Populus balsamifera 'trichocarpa'</i>	87	30	10	15.66
23120	Poplar	<i>Populus balsamifera 'trichocarpa'</i>	81			14.58





Tree Number	CommonName	Botanical Name	Diameter At 1.4 m (cm)	Height (m)	Width (m)	Radius of Protected Root Zone (m)
23735	Poplar	<i>populus balsamifera 'trichocarpa'</i>	10	6	2	1.80
23736	Poplar	<i>Populus balsamifera 'trichocarpa'</i>	77	30	14	13.86
23737	Poplar	<i>Populus balsamifera 'trichocarpa'</i>	85	30	12	15.30
23738	Poplar	<i>Populus balsamifera 'trichocarpa'</i>	82	30	12	14.76
23739	Poplar	<i>Populus balsamifera 'trichocarpa'</i>	109	30	12	19.62
23740	Poplar	<i>Populus balsamifera 'trichocarpa'</i>	98	30	12	17.64
23741	Poplar	<i>Populus balsamifera 'trichocarpa'</i>	83	30	9	14.94
23742	Poplar	<i>Populus balsamifera 'trichocarpa'</i>	84	30	9	15.12
23743	Poplar	<i>Populus balsamifera 'trichocarpa'</i>	84	30	9	15.12
23744	Poplar	<i>Populus balsamifera 'trichocarpa'</i>	78	30	12	14.04
23745	Poplar	<i>Populus balsamifera 'trichocarpa'</i>	73	30	10	13.14
23746	Poplar	<i>Populus balsamifera 'trichocarpa'</i>	71	30	10	12.78
23747	Poplar	<i>Populus balsamifera 'trichocarpa'</i>	70	30	10	12.60
23748	Poplar	<i>Populus balsamifera 'trichocarpa'</i>	70	30	10	12.70
23749	Poplar	<i>Populus balsamifera 'trichocarpa'</i>	88	30	14	15.84
23752	Poplar	<i>Populus balsamifera 'trichocarpa'</i>	77	30	10	13.86
23753	Poplar	<i>Populus balsamifera 'trichocarpa'</i>	91	30	14	16.38
23753	Poplar	<i>Populus balsamifera 'trichocarpa'</i>	95	30	14	17.10
8463	Red maple	<i>Acer rubrum</i>	8	5	2	1.44
10571	Sycamore maple	<i>Acer pseudoplatanus</i>	13	6	2	2.34
10572	Sycamore maple	<i>Acer pseudoplatanus</i>	6	5	1	1.08



		Radius of Protected Root Zone (m)							
Tree Number		CommonName		Botanical Name		Diameter At 1.4 m (cm)	Height (m)	Width (m)	
10573	Sycamore maple			<i>Acer pseudoplatanus</i>		10	6	2	1.80
10574	Sycamore maple			<i>Acer pseudoplatanus</i>		10	6	2	1.80



## Appendix 2 - Conditions of Assessment Agreement

This Conditions of Assessment Agreement is made pursuant to and as a provision of Davey Resource Group, a division of The Davey Tree Expert Co. of Canada, Limited ("Davey"), providing tree assessment services as agreed to between the parties, the terms and substance of which are incorporated in and made a part of this Agreement (collectively the "Services").

Trees are living organisms that are subject to stress and conditions and which inherently impose some degree or level of risk. Unless a tree is removed, the risk cannot be eliminated entirely. Tree conditions may also change over time even if there is no external evidence or manifestation. In that Davey provides the Services at a point in time utilizing applicable standard industry practices, any conclusions and recommendations provided are relevant only to the facts and conditions at the time the Services are performed. Given that Davey cannot predict or otherwise determine subsequent developments, Davey will not be liable for any such developments, acts, or conditions that occur including, but not limited to, decay, deterioration, or damage from any cause, insect infestation, acts of god or nature or otherwise.

Unless otherwise stated in writing, assessments are performed visually from the ground on the above-ground portions of the tree(s). However, the outward appearance of trees may conceal defects. Therefore, to the extent permitted by law, Davey does not make and expressly disclaims any warranties or representations of any kind, express or implied, with respect to completeness or accuracy of the information contained in the reports or findings resulting from the Services beyond that expressly contracted for by Davey in writing, including, but not limited to, performing diagnosis or identifying hazards or conditions not within the scope of the Services or not readily discoverable using the methods applied pursuant to applicable standard industry practices. Further, Davey's liability for any claim, damage or loss caused by or related to the Services shall be limited to the work expressly contracted for.

In performing the Services, Davey may have reviewed publicly available or other third-party records or conducted interviews and has assumed the genuineness of such documents and statements. Davey disclaims any liability for errors, omissions, or inaccuracies resulting from or contained in any information obtained from any third-party or publicly available source.

Except as agreed to between the parties prior to the Services being performed, the reports and recommendations resulting from the Services may not be used by any other party or for any other purpose. The undersigned also agrees, to the extent permitted by law, to protect, indemnify, defend and hold Davey harmless from and against any and all claims, demands, actions, rights and causes of action of every kind and nature, including actions for contribution or indemnity, that may hereafter at any time be asserted against Davey or another party, including, but not limited to, bodily injury or death or property damage arising in any manner from or in any way related to any disclaimers or limitations in this Agreement.

By accepting or using the Services, the customer will be deemed to have agreed to the terms of this Agreement, even if it is not signed.

Acknowledged by:

Name of Customer: \_\_\_\_\_



This page is intentionally left blank



# Appendix D

---

Accessibility Baseline Study



This page is intentionally left blank





# **Topaz Park Improvement Plan Baseline Accessibility Assessment Report**



## Contents

1	Introduction .....	5
2	Scope of Assessment.....	6
3	Vehicular Access .....	7
3.1	Parking.....	7
3.1.1	Topaz Avenue Parking Lot .....	7
3.1.2	Glasgow Street Parking Lot.....	10
3.1.3	Finlayson Street Parking Lot .....	12
4	Paved Pathways and Trails.....	13
4.1	Paved Pathways.....	13
4.1.1	Topaz Avenue Lot to Southern Baseball Diamond .....	14
4.1.2	Finlayson Street Lot to Glasgow Washroom .....	15
4.1.3	Finlayson Street Parking Lot to Finlayson Turf .....	17
4.1.4	Glasgow Washroom to Finlayson Turf.....	17
4.2	Trails .....	17
4.2.1	Topaz Field Ball Diamond to Outdoor Gym and Playground .....	18
4.2.2	Glasgow Washroom Facility to North Glasgow Street Access.....	18
4.3	Playing Fields .....	19
4.3.1	Topaz Field.....	19
4.3.2	Blanshard Field .....	20
4.3.3	Finlayson Turf .....	21



## **Copley Consulting**

4.3.4	Exterior Stairs .....	24
4.4	Amenities .....	26
4.4.1	Playground .....	26
4.4.2	Outdoor Gym.....	27
4.4.3	Lacrosse Box .....	28
4.4.4	Wayfinding, Signage and Information .....	28
5	Washrooms.....	29
5.1	Topaz Ave Washrooms .....	29
5.1.1	Men's.....	29
5.2	Glasgow St. Washrooms.....	34
5.2.1	Men's.....	34
5.2.2	Women's .....	35
6	Summary.....	37



## **Topaz Park Layout**





### 1 Introduction

The application of universal design principles are seen as a fundamental part of the development process for Topaz Park, in addition to any specific and separate requirements for people with disabilities.

Access for “people with disabilities” has been an increasingly important part of the design and operation of public facilities over the years; yet efforts have been applied inconsistently and based on varying standards as well as differing levels of commitment to meaningful access. The result has been at best an inconsistent level of access being provided throughout the built environment and public use facilities in general. Now, compounding the need for real access is the sheer number of the aging population – or ‘Silver Tsunami’ as it is known. “Accessibility” no longer refers to a narrow scope of remedies for people with mobility impairments. Accessible design is the application of universal design principles that improve the safety, convenience and service levels for all users of the built environment.

This document sets out the *baseline of current conditions*, and seeks to draw attention to the key areas of success and the key areas in need of improvement.

It is recognized that some of the requirements established here may go beyond minimum building code and/or existing regulatory requirements. This is done in an effort to respond to the increased use of public facilities by older adults, seniors and other people with disabilities. It is also recognized that there are practical limitations to the level of access that can be achieved in any given park or facility. Where these requirements cannot be fully met by planners and program delivery staff, the intent of the guidelines is expected to be met by other means acceptable to the City of Victoria.

This document was prepared for the City of Victoria using the principles conceptualized by the Rick Hansen Foundation Accessibility Certification Program and the author, a RHFAC Accredited Access Professional. It takes a best practices approach after considering regulations and recommendations from existing standards including the ADA, ANSI, CSA and the B.C. Building



## Copley Consulting

Code along with the practical experience of the assessor. It should be noted that the findings of this report were observations made on the day of the assessment, and *does not* take into account conditions that might exist at different times of the year that introduce different variables such as precipitation, snow and ice. The scope of this report, as it is a baseline or “overview” assessment, does not speak to the impact that every attribute of the park has on every one of the ten distinct groups of people with disabilities. Rather it provides a balanced view of what the Assessor deems are the greatest areas of need.

## 2 Scope of Assessment

The purpose of this report is to assist the City of Victoria to achieve its strategic goals and vision for Topaz Park. The vision is for Topaz Park to be a destination park for outdoor recreation and sport, offering a wide variety of activity spaces that contribute to the health and wellness of residents of all ages and abilities.

The scope of this assessment is to determine the degree of meaningful access to Topaz Park located in the Hillside Quadra neighbourhood between Topaz Avenue and Finlayson Street along Blanshard Street.

In preparation for the planned improvement project, this document outlines the *baseline* or *current conditions* of the three parking lots, the two washroom facilities, paved pathways and trails, playing fields, playground, outdoor gym and lacrosse box.



## 3 Vehicular Access

### 3.1 Parking

#### 3.1.1 Topaz Avenue Parking Lot



*Figure 1 Topaz Parking Lot*

It should be noted that Topaz Avenue parking lot has no corresponding sidewalk that leads up to the parking lot entrance that doesn't require the user to cross the street. There is only a sidewalk on the south side of Topaz Avenue. The parking lot provides 27 spaces, 2 of which have been designated as accessible spaces. This is a good ratio of general use parking spaces to accessible parking spaces.

The first of the two spaces are located within one parking space of the access to the washroom facilities and access path to the park. This spot is 480 cm in length and 338 cm in width.

Although the dimensions of this space are acceptable, the location and lack of an access aisle to the pedestrian pathway is problematic. Anyone using this space must cross the path of travel of the space between it and the washroom access path.



## Copley Consulting

This is a hazard, particularly for those travelling in a seated position, (i.e.-wheeled mobility device users). In addition, there is a 3.9% slope leading to the drain opening, which can be a hardship and potential falling hazard to those with mobility or balance limitations, such as older adults and seniors.

Furthermore, the gaps between the concrete parking blocks, which could provide safe access to the pedestrian pathway, are limited by the painted lines of the space, as they pass through the middle of the available clear width. In this way, this alternative is unreliable as a consistent safe means of accessing the pedestrian path. *See figure 2*



*Figure 2 Restricted pedestrian path access*

The second parking space is located on the Topaz Avenue side of the parking lot and is below universal design requirements in terms of clear space. Although it has useful signage in terms of designation, it has a running slope of 4.3% and a cross slope and a minimal cross-slope, and presents up to a 6.2% slope as the user crosses the parking lot. This is not ideal as the slope and cross slope can be challenging to those with mobility limitations, or when the lack of the ability to balance one's self is a consideration. It also lacks a protected, marked path that takes the user out of the path of travel of cars using the parking lot.



## Copley Consulting

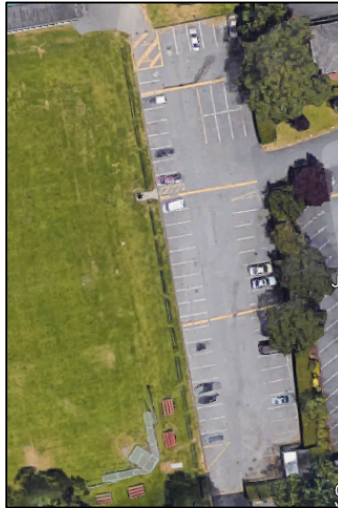
Any future design considerations to this parking lot could include the elimination of the space closest to Topaz Avenue. The utilization instead of the two to three closest spaces to the washroom facilities to create two universally designed parking spaces with a shared access aisle would be ideal in terms of safe access. The addition of upright signage in clear sightline of users of the parking lot would be of benefit as well. *See figure 3*



*Figure 3 Perpendicular Parking with Shared Access Aisle (not to be used as a design template)*



### 3.1.2 Glasgow Street Parking Lot



*Figure 4 Glasgow Street Parking Lot*

The Glasgow Street parking lot has two designated accessible spaces out of 66 which flank the shared access aisle that leads to the Glasgow Street washroom facilities. This is an adequate number of spaces for this lot.

The parking lot access,

- ✓ Provides a generous, shared access aisle that services both accessible spaces,
- ✓ Is in close proximity to the beginning of the path to the washroom facilities, nature trail and the path to the lacrosse box and Finlayson Turf.
- ✓ Presents the user with a manageable slope heading into the park itself.
- ✓ Has a curb cut leading into the park that has approximately 125 cm clear width.





*Figure 5 Accessible spaces with shared access aisle*

The accessible spaces in the Glasgow parking lot lead directly to the entrance of the park. Initially there is uneven ground with a gentle slope. This then leads to a curb cut into the park that has an abrupt slope 14.2%. This is a tripping hazard to older adults and seniors, and those with vision or mobility limitations. *See figure 5*

Although the spaces are functional, it is always best to ensure that any accessible parking spaces be on a surface that is level, stable and slip-resistant.

Although the accessible parking spaces have clear large pictograms painted on the ground, the addition of high contrast wayfinding signage at the entrance to the lot, and upright signage in front of the spaces would aid in their location.



## Copley Consulting

### 3.1.3 Finlayson Street Parking Lot

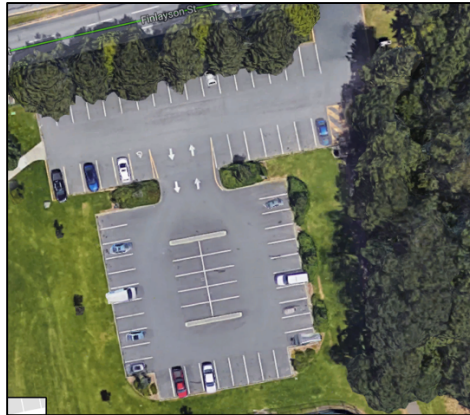


Figure 6 Finlayson Street Parking Lot

Finlayson parking lot provides one accessibly dimensioned space out of a total of 71. It would be recommended that at least two be provided that are close to the park access path. Efforts should be made to ensure the accessible parking spaces are firm, level and slip-resistant. See *figure 7*



Figure 7 Slope and distance to park access

#### Finlayson parking lot

- ✓ Has an accessible parking space with an adequate width of 3.57 M.
- ✓ Has a painted pictogram on the surface of the space that aids somewhat in the location of this space.



## **Copley Consulting**

### **Finlayson parking lot**

- Has a 5.6% slope that runs down east to west across the width of the parking lot.
- Accessible parking space has a 3.6% slope and a 4.5% cross slope.
- Accessible space has no protected access aisle.
- Requires the user of the accessible space to travel 42.3 M to reach the entrance to the paved path leading to the Glasgow washroom facilities. This can be challenging for some to travel that far up a continuous slope, particularly those who use manual wheelchairs, or older adults and seniors.
- Has no designated, clearly marked protected path leading from the accessible space to the entrance of the park.
- Has a curb cut leading to the paved access path with a lip of 30 mm and some limitations in clear width.
- Outside of the fading, painted pictogram on the surface of the parking lot, there is no high contrast, upright signage to aid in its location.

It is recommended that Finlayson parking lot provide at least two accessible spaces that are on a firm, level and slip resistant surface and located in an area that is close to the access path to the Glasgow washroom facilities. If the close proximity to the path access is not possible, a designated and clearly marked protected pathway and crossing should be provided to keep the user out of the path of travel of the cars utilizing the parking lot.

## **4 Paved Pathways and Trails**

### **4.1 Paved Pathways**

Any future considerations to the pathways of the park as a whole could include a tapping rail around the circumference of the outside edge of all the pathways. This would provide context to those with partial vision or to those who are blind and use white canes.



## Copley Consulting

### 4.1.1 Topaz Avenue Lot to Southern Baseball Diamond

This paved section of pathway is 300 cm wide. This is more than adequate width to allow two larger wheeled mobility devices to pass each other safely. However, the slope just inside the park path is 8.8%. This exceeds the recommended universally designed guidelines. There is a very slight cross slope but it was not a concern. The asphalt at the initial access is cracking and lifting, which is a tripping hazard to those with vision limitations, and the public in general. *See figure 8* The length of this paved section of path that ends at the dugouts of the baseball diamond is 84.66 M. It would be of benefit to add accessible seating halfway along this stretch of path.



*Figure 8 Cracked and lifting asphalt*

The Topaz paved access path transitions to gravel by the Topaz baseball diamond. The gravel then transitions into the start of the wood chipped trail that leads to the Outdoor Gym and the Playground. The transition from the gravel section to the wood chipped trail presents a tripping hazard, and steps should be taken to bring both the gravel and wood chips flush with the plastic divider that crosses the clear width. *See figure 9*





*Figure 9 Path transition tripping hazard*

This access path of hard-packed gravel also provides some degree of access to the bleachers that serve the Topaz field baseball diamond. The stretch of gravel path that meets up with the wood chipped path to the playground is approximately 230 cm wide. This is adequate enough in terms of clear width to allow two larger wheeled mobility devices to pass each other safely. The crushed gravel path travels 21.65 M before it transitions into bark chips.

#### 4.1.2 Finlayson Street Lot to Glasgow Washroom



*Figure 10 Excessive lip to curb cut*

The curb cut has approximately 100 cm of clear width and there is a 3 cm high lip. See *figure 10* .

It is recommended that a protected path be established for people accessing the park from the bus stop to keep them out of the path of



## Copley Consulting

The Path from Finlayson lot to Glasgow street washroom facilities is 157 M in length:

- ✓ Is of adequate width (206 cm) to allow wheeled mobility devices to safely pass each other.
- ✓ Has a manageable slope of no more than 4.5% leading up to the intersection of the access paths to Finlayson Turf, the Glasgow washroom facilities and parking lot, and the nature path.
- ✓ There is no more than a 3% cross-slope.

There are two wooden benches with no arm rests along the route that offer opportunities to rest for older adults and seniors, people with limited mobility and the public in general.

Please note that these benches are not accessible for people who have mobility limitations, as they are not joined to the path by an accessible route. The seating could also benefit from the addition of at least one armrest per bench.

Although this main stretch of path is functional, the path approach after the intersection of the aforementioned path leading to the Glasgow washroom facilities is a hazard due to excessive slope and cross-slope. *See figure 11*



*Figure 11 Slope and cross slope to Glasgow washroom entrance*



## **Copley Consulting**

### **4.1.3 Finlayson Street Parking Lot to Finlayson Turf**

The path from Finlayson Street parking lot to access Finlayson Turf is not deemed accessible in terms of meaningful access. Although the path width is serviceable, the grade of this path is excessive, which is dangerous to those with mobility impairments, such as older adults and seniors, and those using wheeled mobility devices, such as walkers and manually powered wheelchairs.

### **4.1.4 Glasgow Washroom to Finlayson Turf**

This stretch of the paved pathway that accesses Finlayson Field from the Glasgow washroom facilities travels a significant distance without offering any seating for opportunities to rest. It is sufficient in clear width; however, the path presents a hazardous and steep grade that is not safe for those who use wheeled mobility devices, particularly walkers and manual wheelchairs.

## **4.2 Trails**

The trails should be accessible to all user groups and provide:

- Adequate width.
- Accessible grades to any changes in elevation.
- Surfaces that are firm, stable and slip-resistant.
- Seating areas at strategic points where trails have long stretches that may require the user to rest.
- Clear wayfinding and well-designed signage.



## **Copley Consulting**

### **4.2.1 Topaz Field Ball Diamond to Outdoor Gym and Playground**

There is 113 M of wood-chipped trail before it exits out to the curb cut on the south end of Glasgow Street. The wood-chipped path is 180 cm wide. It slopes down from the baseball diamonds at a grade of approximately 5%, which is manageable for those with mobility impairments. Any seating along this route should be easily accessible from the path itself and offer at least one armrest and provide at least one seat with back support.

There is one other path to speak briefly to that runs south towards Topaz Avenue from between the playground and the Outdoor Gym. This path is not clearly developed and travels uphill approximately 60 M before disappearing into overgrown grass. Any intention of using this path as a developed public trail would require further planning and design recommendations to ascertain what improvements it would need to make it inclusive to the whole demographic that seeks to use it.

### **4.2.2 Glasgow Washroom Facility to North Glasgow Street Access**



*Figure 12 Nature Trail to North Glasgow Street Access*



## Copley Consulting

The initial slope, (12.3%) to this nature path from the Glasgow washroom facilities to the North Glasgow street access point is beyond what could be considered as useable for those who use wheeled mobility devices, those who struggle with chronic pain, or those with a lack of adequate muscle mass, such as older adults and seniors. *See figure 12*

The path width fluctuates and is between 160 cm and 170 cm. It does narrow significantly to 100 cm in a few locations, and there are depressions and bumps that may be a hindrance to those using wheeled mobility devices, as well as those who rely on level and firm surfaces for safe travel.

The length of the path is 86.84 M before it exits onto the northern most stretch of Glasgow Street. Taking into consideration the steady slope that begins when accessing the path that exits the park, it would be of use to have accessible seating placed in at least one location along the way, preferably at the half way point. The transition from the wood chips to the asphalt at the end of the nature trail is abrupt. It measures approximately 1 to 3 cm in height. This is not only a potential tripping hazard, but is a hardship to those who have mobility impairments.

### 4.3 Playing Fields

#### 4.3.1 Topaz Field

Topaz Field is an all grass field located in the south-west corner of the park. It was noted that there was some degree of access to the field, but given different weather conditions, whether or not the access would be meaningful would come into question. Although the playing surface itself is less than ideal in terms of meaningful access for wheeled mobility devices, there is an opportunity to improve the spectator experience on the fields perimeter.





Figure 13 Falling Hazard

The area behind the bleachers nearest the stairs to Blanshard Field when coming from Topaz Field has a retaining wall that is unprotected from having people fall off. The addition of a guardrail would greatly reduce this hazard. *See figure 13*

### 4.3.1.1 Dugouts

The entrance to the dugout is wide at more than 107 cm. There is enough room for maneuvering which allows access to most patrons. Although there is some degree of access to Topaz field and its dugouts, the degree of access is not meaningful. The ground is not hard packed or level in all areas due to excessive wear. The dugout bench could benefit from having the addition of arm and back rests for support.

### 4.3.2 Blanshard Field

The field does not provide meaningful access to those with mobility disabilities. However, in dry conditions, some degree of access is possible. Adequate drainage is required to maximize its accessibility, particularly in the wet seasons. Ensuring that any spectator areas provide level, firm and slip-resistant pathways is crucial. Furthermore, ensuring that there are accessible seating options for people of varying abilities is important. These considerations for inclusion are in the best interest of the community in terms of the group experience, and directly contribute to the social well-being of the community as a whole.



## **Copley Consulting**

### **4.3.3 Finlayson Turf**

The paths leading from Finlayson lot and from the Glasgow washroom facilities have steep slopes that do not meet accessibility standards. However, the path that travels around the perimeter of the Turf is of acceptable width and is level, firm and slip resistant.

There were several obstructions on the perimeter pathway of the turf. They were,

- Cleat brushes.
- Low contrast bleachers
- Low contrast garbage cans (which is intensified when viewed with the like-coloured bleachers behind).
- The fence around the players bench enters the path of travel and though it is cane detectable some contrast would be of benefit to people with low vision.

As the bleachers are excellent for the patrons viewing a game, the addition of one or two benches on the opposite side could be considered, not only as possible spectator seating, but an opportunity for those with mobility impairments to rest as well.

It could be that by rotating the cleat brushes a full 90 degrees and remounting them flush to the exterior fence of the Turf would reduce the likelihood of a potential tripping hazard.

Finlayson Field has an excellent surface that could open up opportunities for inclusive events such as wheelchair rugby, to name one example.

If the player seating boxes are ever to be addressed in terms of access, providing clear space for the possibility of accommodating a wheelchair user would be of benefit. Providing more than one opportunity for this accommodation would be ideal.



## **Copley Consulting**

### *4.3.3.1 Watering Station*

The drinking fountain and bottle filling station associated with Finlayson Turf

- ✓ Has a button height of the drinking fountain at 90 cm. This is within acceptable tolerances as it is reachable from a seated position.
- ✓ Has an operational access height of 107 cm. The location of this feature is ideal.
- ✓ The button height of the bottle fill is at 75 cm. This is reachable to those who are short of stature and those using wheeled mobility devices, as well as the public in general.
- ✓ The operational height of the bottle fill is optimal at 945 mm.
- ✓ The bottle filling station and drinking fountain have adequate colour contrast from their surroundings.
- ✓ There is 69 cm of knee space under the bottle filling portion of the fountain. This is ideal for those approaching from a seated position

### *4.3.3.2 Bleachers and Participant Seating Areas*

The pre-existing bleachers that are in the park could be improved from their current state by:

- Creating kick-space for the floor boards by extending them beyond the leading edge of the above seating plank on a minimum of 20% of the available seating. This is a reasonable number to anticipate the coming additions to the population of older adults and seniors.
- Install graspable handrails to the bleachers that are circular or oval in design and that terminate or make a return loop to the ground or to the handrail itself.
- Ensure that the aforementioned handrails are high contrast in colour from their surroundings.
- Maximize the space where they occur side by side to create opportunities for people using wheelchairs to sit next to a friend or family member in the front row. This would be dependent upon the existence of adequately wide, accessible pathways leading up to the front rows. The outside edges could have this process repeated. Consideration



## Copley Consulting

should be given to ensure it is wide enough to provide safe passage past the activities on the inside edges of the bleachers that flank the access path.

- The addition of non-slip surfaces where the finish displays the potential to be slippery when wet.
- Ensure there is adequate clear space in front of the bleachers to facilitate safe passage of at least one wheeled mobility device. This could include walkers and larger scooters.
- Colour the walking planks a contrasting colour from their mounting frames. A 70% difference in contrast between colours is ideal.
- Ensure that the path of travel between the fence and the first seat of the bleachers has adequate clear width for safe passage.



Figure 14 - Pre-existing bleachers

*Kick-space is the ability to draw your feet under your shoulders to stand up efficiently. This becomes important Kick-space for the demographic of older adults and seniors in allowing them to stand up with more confidence and stability*





*Figure 15 - Example of Inclusive Bleachers. Image for descriptive purposes only*

#### 4.3.4 Exterior Stairs

The Stairs to Blanshard field from Topaz Field have:

- ✓ A clear width of is 150 cm. This is sufficient to allow two average sized people to pass each other under reasonable circumstances.
- ✓ Graspable handrails (approximately 45 mm in diameter) that have a top reach of 100 cm.
- ✓ Have a rise 18 cm and a run of 31 cm, which is ideal in terms of the current standard that is expected to be seen.
- ✓ Abrupt undersides that measure approximately 25 mm. However, they are tapered up towards the nosing of the stairs. The tapering of the undersides mitigates the potential risk of a tripping hazard; however, abrupt undersides should be avoided when possible.





*Figure 16 Stairs to Blanshard Field from Topaz Field*

The Stairs to Blanshard field from Topaz Field:

- Lack tactile indicators at the top and bottom.
- Do not have adequate contrast that would aid those with partial vision in negotiating them safely. The addition of contrasting strips and / or non-slip treatments to the stair nosing's would be of benefit. The contrasting strips to each step should be no wider than 5 cm.
- The handrails are not terminated or returned correctly and subsequently pose a hooking hazard. Purse straps or white cane straps can be vulnerable to hooking on non-terminated handrails.
- The handrails lack adequate colour contrast to set them apart visually from the concrete wall they are mounted to.
- The addition of designated illumination to the steps would be of benefit, as there is none to aid users in negotiating them safely.
- The top of the stairs where the concrete meets the gravel pathway should be flush. This reduces tripping hazards at the tops of the flights. *See figure 16*



## Copley Consulting

### 4.3.4.1 *Blanshard Field Western Ball Diamond Access Stairs*

After inspecting the stairs leading to the western Blanshard Field dugouts, it was determined that the hazards were too great to warrant the recommendation to retain them. The replacement of these stairs at both dugouts would be the ideal solution.

If there is an intention on the part of the City of Victoria to keep these in place for any length of time, there would be a need for a more in-depth assessment to determine whether or not the stairs could be upgraded to a state that would be in keeping with accessibility standards and public safety.

## 4.4 Amenities

### 4.4.1 Playground

There is as much as a 70 mm drop from the paved pathway where the park benches are to the playground down to the wood chips. Recommend Dash always scale up the wood chips or whatever surface preferably that compressed foam or rubber flush with the pathway.

**Recommend** playground should be flush with path. Playground should have far more interactive low to the ground features. Sensory apparatus is best to engage those with developmental or cognitive disabilities and those with more mobility limitations.

Park benches should take a page from the book of BC parks in there type two park benches.

Ground level activities

Consider including a variety of ground level activities. There should be a balance of 'easier' more accessible play elements along with those that are more challenging. If there are not enough play elements that provide challenge, some children will go elsewhere to play, making the playground less inclusive or they will create their own challenge, making the playground more dangerous.



## Copley Consulting

### 4.4.2 Outdoor Gym

The Outdoor Gym provides some very durable and useful equipment that contributes directly to the well-being of the community. The presence of the accommodating public bench in front of the Outdoor Gym is the most ideal seating in the park due to the fact that it facilitates users that require an arm rest for support to lower or raise themselves, and unarmored access for users that need a clear transition from a seated position. (i.e. wheelchair users)

The Outdoor Gym, however, does not allow for access and enjoyment for those with a variety of abilities, particularly those who use wheeled mobility devices. The bark mulch surface is loose and would be unusable to people who use wheeled mobility devices. *See figure 17*



*Figure 17 Outdoor Gym Access*



## Copley Consulting

The Outdoor Gym would benefit from,

- Offering level access into the Outdoor Gym area in order to provide access for all.
- Replace the Outdoor Gym with rubberized surfacing to allow unhindered circulation to all locations.
- Add accessible gym equipment in the Outdoor Gym that would involve the entire demographic of people who would like to utilize this amenity. This would usually involve equipment that is located at a lower height and is easily transferable.
- Ensure the pathway can access the armed bench, regardless of ability. In its current condition, it is as much as 10 cm above the height of the bark mulch path.

### 4.4.3 Lacrosse Box

The lacrosse box is not a structure that is conducive with accessibility, either in utilization or for spectators.

- Although there is a firm, level and slip-resistant concrete pad to accommodate the bleachers, there is no clear line of sight for those spectating from a seated position.
- The exterior perimeter pathway is cracked and lifted, and does not provide adequate clear space for wheeled mobility devices to pass safely.
- Although there is some access in terms of entering the box, it is not meaningful, and not all the features can be utilized by those with mobility limitations due to excessive thresholds. (the player and penalty boxes)

It could be recommended to provide meaningful access from the Finlayson parking lot, and provide a raised section of pad that would facilitate a clear line of sight for those who use wheeled mobility devices.

### 4.4.4 Wayfinding, Signage and Information

Wayfinding is particularly important in complex environments. Without it, people can become disoriented and frustrated. “All strategies for wayfinding should communicate effectively to the



## Copley Consulting

broadest group possible including people with a wide range of sensory abilities, intellectual abilities, literacy levels, languages and physical statures.”



Figure 18 Example of high contrast, colour-coded directional signage

## 5 Washrooms

### 5.1 Topaz Ave Washrooms

#### 5.1.1 Men's

- ✓ There is adequate clear space for maneuvering and transferring in this stall.
- ✓ The handle to the open the plate steel doors to the stall is a graspable D handle, which is useful to those with limitations of dexterity. The door slide-latch is oversized in design, which makes it more graspable to those with limitations of dexterity.
- ✓ The toilet flushing mechanism is automated, which is ideal. When designing washrooms, a “hands free” approach is best.
- ✓ The sinks provide clear space for approach, but could be improved to allow for more knee-space for individuals accessing them from a seated position.

There are a number of issues that warrant attention:



## **Copley Consulting**

- There is a need for well-placed, well-designed blade signage to aid in the location of the entrance. The signage on the door contains pictograms, which are useful in communicating the location of the washroom facilities, including to those who speak different languages.
- There is 84 cm of clear width to the entrance of the men's room. Increasing this clear width would allow unrestricted access to those with more space requirements.
- There is only one stall to the men's washroom. The addition of a general use stall would be of benefit.
- The plate steel door to the stall is far too heavy in weight and poses a significant risk of injury as the door's swing path exceeds the length of the protective wall by 119 mm.
- It should be noted that the partition screen wall just inside the washroom entrance has been loosened by the plate steel stall door. It is recommended that this should be inspected to ensure that it is sufficiently secured to the exterior wall and the floor. The addition of a door-stop could reduce risk of wall damage and the potential for injury
- The colour contrast to this washroom is lacking and would benefit from the selection of more contrasting colours and wayfinding enhancement. This is especially helpful for those with partial vision, such as older adults and seniors.
- The urinal lacks adequate colour contrast from its mounting wall. Colour contrast provides those with vision limitations with context as to where the urinal is. There is also a need to provide two urinals that are of differing heights to accommodate people who are short of stature.
- The urinal has no contrast from the backing wall. If the City was considering renovating this facility, the addition of vertical grab bars to one of the two recommended urinals would be of benefit. This is helpful for those with limitations of balance, such as those with vertigo, or older adults and seniors.
- There is no angled grab bar on the sidewall of the stall, only a horizontal one. This is less than ideal for those with reduced strength as it is more difficult for them to lower themselves down or draw themselves up. It also effects the degree of success that those



## **Copley Consulting**

with spinal cord injuries have in transferring to and from the toilet. The sidewall grab bar is mounted at an accessible height, and located at an acceptable distance from the backing wall.

- The toilet paper dispenser, although mounted at an appropriate distance AFF, is much too far from the toilet for those with a significant lack of core strength to reach.

### **Women's**

- ✓ The door pull force to the washroom is not a factor as the door is locked in the open position when the washroom facilities are available for public use.
- ✓ Pictograms are used on the doors in both the Men's and Women's washrooms. The standard man and woman symbol with an additional accessible symbol are both present on the door. The pictograms are of adequate size and dimension to support ease of location for those with vision loss, and to the public in general. The door signage is a good example of adequate contrast between the text and its backing colour.
- ✓ There is adequate clear space for maneuvering in the stall, for transferring, and for approaching the sink area and other features of the washroom.
- ✓ The toilets are automatic flush, which is ideal.
- ✓ The operating height of the safety needle disposal is at 110 cm. This is of acceptable height.
- ✓ The operational height of the air blade is 97 cm, and is ideal both in design and location.

There are a number of issues that warrant attention:

- The entrance to the Topaz Avenue Women's washroom facilities had a clear width of 83 cm. This could present a challenge for those using larger wheeled mobility devices.
- There is a need for supplemental blade signage to aid in the location of the washroom from the parking lot and access path.



## **Copley Consulting**

- There is no angled grab bar on the sidewall of the stall, only a horizontal one. This is less than ideal for those with reduced strength as it is more difficult for them to lower themselves down or draw themselves up. It also effects the degree of success that those with spinal cord injuries have in transferring to and from the toilet. Both of the grab bars were mounted at acceptable heights above the finished floor.
- The toilet paper dispenser is open roll in design, which is optimal. However, the distance from the toilet is too great to allow safe access for some with mobility limitations.
- The sinks in the women's washroom provide some degree of accessibility, however, it should be noted that the clear space for knees is somewhat restricted. The depression-style taps could be replaced with more universally designed mechanisms, such as automated or levered designs. It is also recommended that the set water flow timing to these taps be increased to allow more time for users to adequately clean their hands. In a perfect situation, the stall itself would have a sink beside the toilet.

Some further recommendations would be,

- Increase the clear entrance width to the accessible stall.
- Create more contrast between the main entrance door and the brick wall that accommodates it.
- Create colour contrast between the sinks and their mounting wall.
- Eliminate the ability of the heavy plate steel door of the accessible stall to swing out into someone accessing the general use stall.
- Remount at least one of the sinks so that it does not require legs that infringe upon the clear width for knee space for those accessing from a seated position. A well-placed, wall-mounted sink would eliminate the restrictions that the current legs present and would allow access to more users.



## Copley Consulting

- Ensure that there is adequate colour contrast between the plate steel stall dividers, the floor and the walls of the washroom. This aids those with partial vision in wayfinding and provides context as to where key areas of the washroom are.
- The opening handle to the accessible stall is an acceptably sized D handle.
- The slide latch inside the stall is large enough to be usable to those with reduced dexterity.



Figure 19 Topaz Women's washroom accessible stall

*The location of toilet paper in terms of their distance from the backing wall is important. If it is too far away to access safely for those with limited or no core strength, such as those with quadriplegia, there is a risk of falling. People who do not have adequate core strength are at risk of toppling over if they lean beyond the point of balance.*

*Open roll toilet paper dispensers are ideal for those with limitations of dexterity, such as some quadriplegics, or those with arthritis, as it is easier to unspool.*



### 5.2 Glasgow St. Washrooms

#### 5.2.1 Men's

- ✓ The top side of the sink counter top is at 81 cm, which is accessible in height.
- ✓ The operational height of the air dryer is at 100 cm. This is acceptable in terms of location above finished floor.
- ✓ The angled and backing horizontal grab bars are at 855 mm AFF to the top of the bars, which is ideal.
- ✓ The toilet paper dispensers are open roll in design and are 65 cm AFF to the middle of the roll. They are adequately mounted in terms of location, and ideal because they are open roll in design. Open roll dispensers are ideal in design because they are easier to grasp for those with limited dexterity, such as those with arthritis or quadriplegia.
- ✓ The open roll toilet paper dispensers are within reach of the toilet. This is important as some people with mobility limitations lack adequate core strength, such as those with quadriplegia.

#### Items warranting attention:

- The main entrance has a clear width of 805 mm, taking into account the protruding locking mechanisms of the men's washroom facilities. This is less than ideal, as it presents a collision hazard.
- The sinks are rounded taps, not automated or accessible lever styles.
- There is functional knee space for those utilizing the sink from a seated position. There would be a benefit to redesigning this sink area to allow for more access.
- The angled grab bar is 40 cm from the backing wall. This exceeds the recommended distance.
- The flushing mechanisms are push button in design. Automated water-access mechanisms would be more universal in design.



## Copley Consulting

- There is 87 cm of transfer space to this stall. This is a reasonable amount of clear space, as 90 cm is the standard that is sought.
- This stall has insufficient clear space for maneuvering.
- It is 89 cm to the middle of the push-button to flush the toilet. Automated flush would be best.
- The door hardware to the stall is insufficient in size, and not graspable for those with low dexterity or those with arthritis.
- 605 mm and 665 mm are the two operational heights of the urinals. They have some degree of colour contrast, though there is room for improvement. Universal design recommendations dictate offering urinals of varying height, however, the difference in height to these two urinals is negligible and should be increased.
- The needle disposal box is mounted with an operational height that is accessible.

### 5.2.2 Women's

- ✓ The elevated entrance threshold has been mitigated by a skim coat of asphalt that transitions the rise of said threshold. Level thresholds are ideal in terms of best practices.
- ✓ There is adequately designed high contrast signage above the door and on the door itself. The addition of well-designed blade to locate individual washrooms from the path and Glasgow parking lot would be of use.
- ✓ The location of the grab bars above the finished floor is adequate.
- ✓ The clear width to enter the women's washroom is 850 mm which is less than ideal.
- ✓ The open-rolled toilet paper dispenser is well located.
- ✓ The operational height of the safety needle disposal box is within recommended tolerances.



## **Copley Consulting**

Issues warranting attention include:

- The clear width to enter the accessible stall is 85 cm and expanding the entrance would be of benefit. This applies as well to the general use stall, as its clear entry width is 57 cm. Expanding the clear entrance width takes into consideration the population of larger adults.
- There are limitations in terms of clear width to the amount of transfer space (80 cm) in the accessible stall itself, and to the washroom as a whole. The amount of clear space for maneuvering in the stall is not adequate to allow for safe utilization for those using wheeled mobility devices.
- The sink counters provide some degree of access, but would benefit from a universal design professional's input if renovations were to occur.
- Although the sink-taps are adequately located in terms of reach, the rounded taps are not accessible to all and should be replaced by automated or levered mechanisms.
- The angled grab bar is located too far from the backing wall of the toilet to provide the full benefit of this feature.
- The operational height of the flush button, at 89 cm, is acceptable. The location could be more accessible. The addition of automated features would be optimal.
- The accessible stall door latch is less than ideal in its design.
- 123 cm is the width of the path around the washrooms. Not wide enough for two wheeled mobility devices to pass each other unobstructed.



## 6 Summary

This section provides a general summary of the issues identified in the various sections above.

- Relocate the accessible parking spaces in Topaz Avenue Parking Lot to provide access that is meaningful and safe, both when utilizing the lot, and when accessing the path to the park itself.
- Adapt the layout, location and number of accessible spaces to Finlayson Street Parking Lot to improve accessible parking options for those with disabilities, and to ensure best practices are applied to provide safe and efficient access to the pedestrian path of Topaz Park.
- Improve the visibility, safety, kick-space and arrangement of the bleachers in the park to accommodate those with varying abilities.
- Mitigate the excessive slopes to the two paved access paths leading to Finlayson Turf to provide an option that is safe for all users.
- Provide edge protection to all the paths and trails by bringing the ground flanking them flush to the paths and trails themselves. Ensure that the paths and trails are firm, level or low gradient slope, and that they are slip-resistant.
- Consideration should be given to replace the wood-chipped paths with sufficiently tamped, (compressed) small, crushed gravel. The existing crushed gravel path that runs between the Topaz Southern Baseball Diamond and the beginning of the wood-chipped path to the Outdoor Gym and Playground is a reasonable example.
- Reduce the grade to the nature paths in the park or develop low impact options for those with varying abilities.
- Ensure any exterior stairs that are to be retained are upgraded to be more in keeping with accessibility standards. Many of the potential upgrades are not costly and improve access greatly.



## **Copley Consulting**

- Apply best practices to upgrade the parks bleachers and take advantage of innovative ways of creating accessible spectator areas that are inclusive.
- Provide inclusive access to the Outdoor Gym and ensure it has equipment that can be utilized by all.
- Create opportunities for people of all abilities, particularly children, (and those who have children) to access and utilize the playground. Install interactive, sensory based features that are low to the ground. The addition of accessible level changes and / or interactive play areas that bring children of all abilities together would be exemplary.
- Create inclusive, direct lines of sight into the Lacrosse Box for those viewing from a seated position.
- Create a standardized, cohesive network of high-visibility signage throughout the park.
- Alter the interior layout of both the Topaz Avenue and Glasgow Street washroom facilities to allow for increased access and create opportunities for simple and intuitive use.