



# DRAFT 2:

## HILLCREST LOCAL IMPROVEMENT PROJECT INFRASTRUCTURE PRE-DESIGN REPORT Summary Document

*For discussion purposes.*

*Best viewed at full-screen.*

*Working document, periodically updated.*

*Last revised: August 24, 2016*

More information available at [www.whitehorse.ca/liprojects](http://www.whitehorse.ca/liprojects)



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Hillcrest Dr facing east

Cover photo: Alistair Maitland Photography  
 Photos on pages 8, 26, and 37: Google Images  
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# Project Overview

## Introduction

Discussion on local improvements for the Hillcrest neighbourhood has been ongoing since the early 1990s. In 2011, the City's Engineering Services Departments began a detailed investigation of potential upgrades to water, sewer, and road infrastructure. The project is referred to as the **Hillcrest Local Improvement (LI) Project**. The goals are to:

- Eliminate residential water services that bleed
- Renew aging water and sewer infrastructure
- Update road infrastructure to meet new standards for safety and universal accessibility
- Enhance pedestrian infrastructure, especially in areas serviced by Transit buses
- Enhance cycling connections
- Implement traffic calming

Recommendations for upgrades are described in the document titled: **Hillcrest Infrastructure Renewal Project Pre-Design Report**. The report is now in its second draft (Draft 2). The full report is available on the project website. In the following pages you will find a summary of the recommendations and a street-by-street description of proposed improvements.

Pre-design recommendations have been informed by the following inputs:

- **LI questionnaire:** In January 2012, a questionnaire was sent to Hillcrest property owners and residents to identify issues, concerns, and preliminary preferences for infrastructure design. A total of 122 questionnaires were completed; a summary of the results is available online.
- **Infrastructure investigation:** In spring and summer 2012, Engineering Services conducted pressure testing of water mains and camera footage of 3 km of sewer mains.
- **National and municipal standards:** Upgrades of infrastructure are required to follow the Transportation Association of Canada (TAC) guidelines for traffic safety and accessibility, as well as requirements specified in the City's Traffic Bylaw and Water & Sewer Bylaw.
- **Agency consultation:** Dialogue is on-going with City departments including Planning, Transit, Bylaw, Water & Waste, Operations, and Parks & Trails. Yukon Government (YG) Highways & Public Works, Atco Electric, and NorthwTel are also being consulted.
- **Meetings with residents and property owners:** Draft 1 of the Pre-design Report was released online and discussed with residents in 2013 during consultation for the *Hillcrest Neighbourhood Plan* (adopted by City Council in 2014).

## Public Meetings on Draft 2

The **next step** in the LI process will be to discuss Draft 2 of the Pre-design report at public meetings. The City will invite residents and property owners to attend one of three meetings to discuss their specific area of residence/ownership. The meetings will be grouped as follows:

- Roundel Rd, Sunset Dr N, Summit Rd
- Chalet Cr, Kluane Cr, Sunset Dr S
- Hillcrest Dr, Dalton Tr, Park Ln E/W

**Event details will be mailed** to residents and property owners when a schedule is confirmed. Information will also be posted on the project website. Edits to the Pre-design report may result from input collected at the meetings.

## Property Owner Vote

Once a design is finalized for the neighbourhood, the City will schedule a **property owner vote**. A vote is required to gauge support for the LI Project before it can advance to the 'Detailed Design' phase.

When a vote is scheduled, a **ballot will be mailed** to each property owner (one per property). Tenants are not eligible to vote, but are welcome to attend public meetings and provide input on neighbourhood design.



Roundel Rd facing west

The Hillcrest LI Project will either proceed or be defeated at the neighbourhood-level and not on a street-by-street basis. During the vote, an **un-returned ballot** will be counted as being neither in favour nor opposed to the project. For the project to not proceed, the total of all negative votes submitted must be at least 50%, plus 1 vote.

## Process

The following diagram indicates the steps involved in the Hillcrest LI Project process:



# Summary of Recommendations

## Improvement Area

Draft 2 of the Pre-design Report recommends upgrades for all areas of Hillcrest with the exception of the western portion of Sunset Dr N, from #34 and 80 Sunset Dr N to the Park Ln E/W intersection.

## Road Improvements

**Road realignments** are proposed on:

- Dalton Tr – to make the road more perpendicular to Hillcrest Dr
- Sunset Dr N at Summit Rd – to make a single T-intersection
- Park Ln E/W at Sunset Dr N – to add curvature to the intersection

Three **landscaped medians** are proposed on Hillcrest Dr between Summit Rd and Kluane Cr (east intersection).

**Raised intersections** are proposed on:

- Hillcrest Dr – at Summit Rd, Chalet Cr (both intersections), and Kluane Cr (east intersection)
- Roundel Rd – at Summit Rd
- Park Ln E/W – at Sunset Dr N

Painted **bicycle logos and chevrons** that indicate “shared lane” are proposed on both sides of:

- Hillcrest Dr – from Alaska Hwy to Dalton Tr
- Roundel Rd – from Alaska Hwy to Summit Rd

## Sidewalks and Paths

**Paved multi-use (pedestrian/bike) paths** are proposed:

- Next to Hillcrest Dr on south side – from Alaska Hwy to Dalton Tr
- Next to Hillcrest Dr on north side – from Dalton Tr to Park Ln E
- In the green space next to Park Ln E – leading to the paved path that goes to Elijah Smith School

The addition of **sidewalks** is proposed along:

- Hillcrest Dr on south side – from Dalton Tr to Park Ln W
- Roundel Rd on south side – from Alaska Hwy to Summit Rd
- Burns Rd west side
- Summit Rd on west side – from Roundel Rd to Sunset Dr N
- Sunset Dr N on south side – from Summit Rd to Roundel Rd
- Park Ln E on west side

**Accessible ramps** are proposed at:

- Terminus of each sidewalk
- Intersections with other sidewalks
- Walkways where street access is warranted

## Drainage

A combination of ditches, bio-swales, and piped storm drainage is proposed for Hillcrest.

**Along minor roads**, the continued use of existing ditches, bio-swales, and exfiltration catchments is generally proposed. New bio-swales may also be created. Where retained, it is recommended that improvements be made such as deepening and widening swales and installing and repairing culverts under driveways. Some repaving of driveways will likely be required to complete this work.

Curb and gutter drainage is proposed for the following minor roads:

- Summit Rd on west side – between Roundel Rd and Sunset Dr N
- Sunset Dr N on both sides – between Summit Rd and Roundel Rd
- Park Ln E on west side – between Hillcrest Dr and Sunset Dr N
- Burns Rd on both sides – between Hillcrest Dr and Roundel Rd

**On collector roads** (Hillcrest Dr and Roundel Rd) a piped drainage system is proposed, with a few exception areas where bio-swales are recommended. Along Hillcrest Dr, new storm sewers with catch basins would be installed at intersections connecting to minor roads. The installation of culverts under roads would be used to help direct storm run-off towards green spaces and away from low lying areas. Measures would be required to prevent erosion at the outlets of piping.



Bio-swale on Park Ln W

## Residential Water Services

For most **single detached residences** in the Hillcrest improvement area, the City is recommending that water services be replaced to remove systems that “bleed” water for frost protection. The practice consumes a vast amount of water that is costly and energy intensive for the City to treat to potable standards, heat, and circulate. The practice also leads to dilution of the sanitary lagoon, which inhibits its proper functioning. In most cases, bleeders would be replaced with a recirculating design for improved efficiency.



Steelox residences on Park Ln E

For **Steelox residences**, Draft 1 of the pre-design report recommended that bleeding water services should be replaced and proposed the option of installing separate services for each side of the duplexes. This has been changed for Draft 2, following the investigation of sample residences. It was determined that there is insufficient space under the flooring of Steelox buildings to accommodate new services and allow for installation work to occur without resulting in significant costs and disruption to properties.

The revised proposal in Draft 2 is to install recirculating service lines that connect to the water main and end short of residences. The existing water service of each Steelox would be connected to one portion of the recirculating service – the return portion would be capped for potential future use. Homeowners who redevelop their properties after the LI construction is complete will be able to connect their new services to those installed, completing the recirculating design at the time of redevelopment.

## Residential Sewer Services

Where water services are replaced, the City is recommending that sewer services also be replaced to capitalize on the trench work carried out and paid for by the City.

# Project Costs

## Total Project Cost

The total estimated cost of the Hillcrest LI Project is \$17,050,000 (not including GST).

## City Contribution

If the project advances to the construction phase, **the City will pay** for the following:

- Upgrade of “subsurface works” (water and sewer mains) within the right-of-way (ROW)
- Connection of water services from mains up to residences
- Connection of sewer services from mains to property line, where owners elect to upgrade their service
- Upgrade of “surface works” (pavement, sidewalks, curbs, gutters, etc.), excluding the contribution of LI Charge
- Replacement of driveways, walkways, and lawns in the ROW, provided that features meet Bylaw requirements
- Relocation of trees, depending on size

The **City will not be responsible** for the replacement of garages, sheds, or decks located within the ROW. Reasonable care will be taken to minimized impact to these features.

## Property Owner Contribution

**Property owners will be responsible for:**

- LI Charge, which covers a portion of the average cost determined annually for urban surface works, applied on a per metre basis to lot frontage (see the City’s LI Rules Bylaw for frontage calculation method). Government owners pay the full frontage rate, commercial properties pay 2/3 of the rate, and residential properties pay 1/3 of the rate.
- Internal plumbing retrofits and re-circulating pump (approximately \$2,000, based on past LI Projects and depending on internal finishings)
- Sewer service replacement, which is recommended but not required (approximately \$100 per metre)

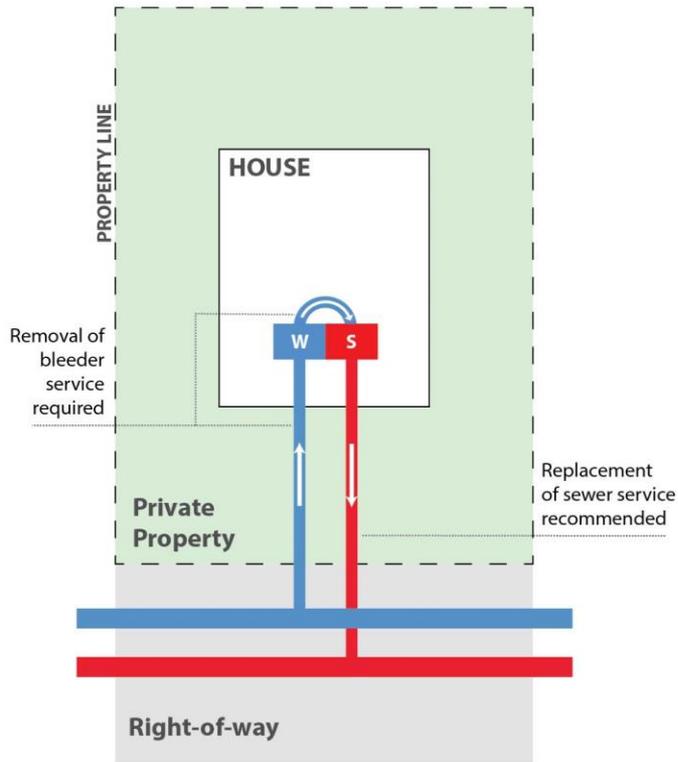
The **estimated residential LI Charge** for the project is between \$600 to \$700 per linear metre of frontage (based on recent projects, such as the Ogilvie St LI Project which had an LI Charge of \$600/metre). The LI charge would apply once the construction phase of each street is complete.

The City offers **two payment options** for the LI Charge:

- A one time, lump-sum payment; OR
- Payment over 15 years (amortized), collected through the municipal tax bill

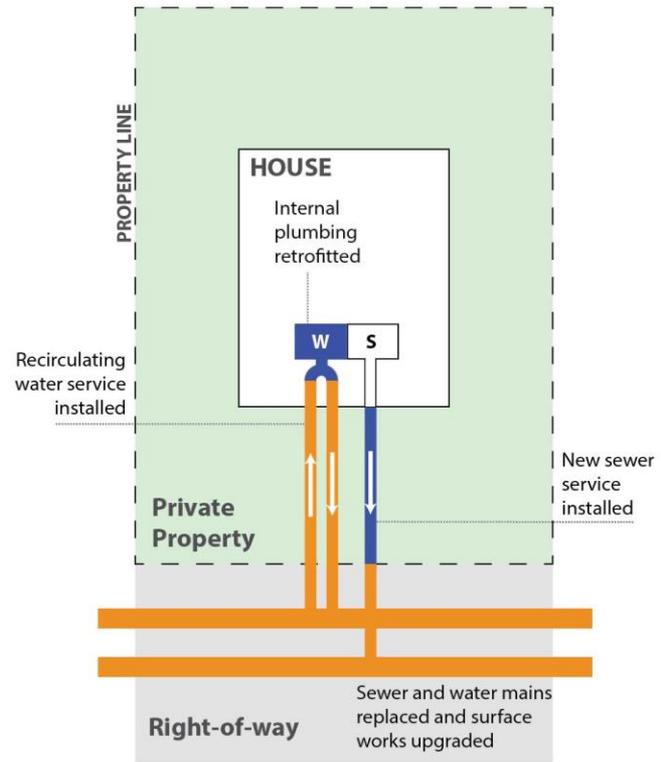
The following diagram indicates the cost responsibilities associated with **single detached residences** in the Hillcrest improvement area.

**EXISTING SERVICES:**



- Water
- Sewer
- Roads, boulevards, and sidewalks

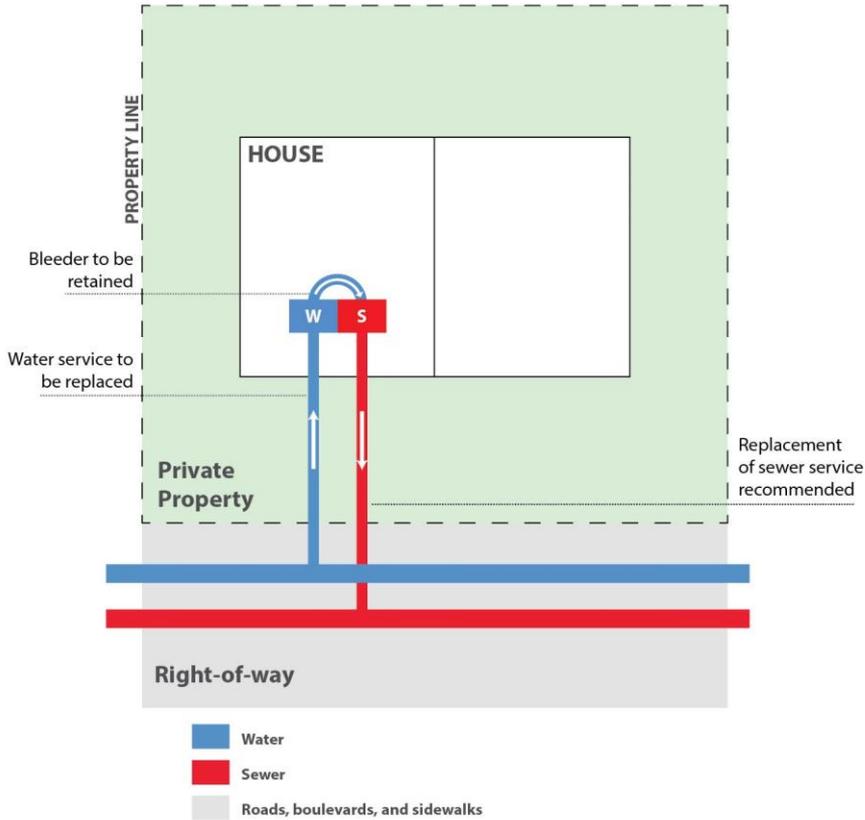
**IMPROVEMENT COST RESPONSIBILITY:**



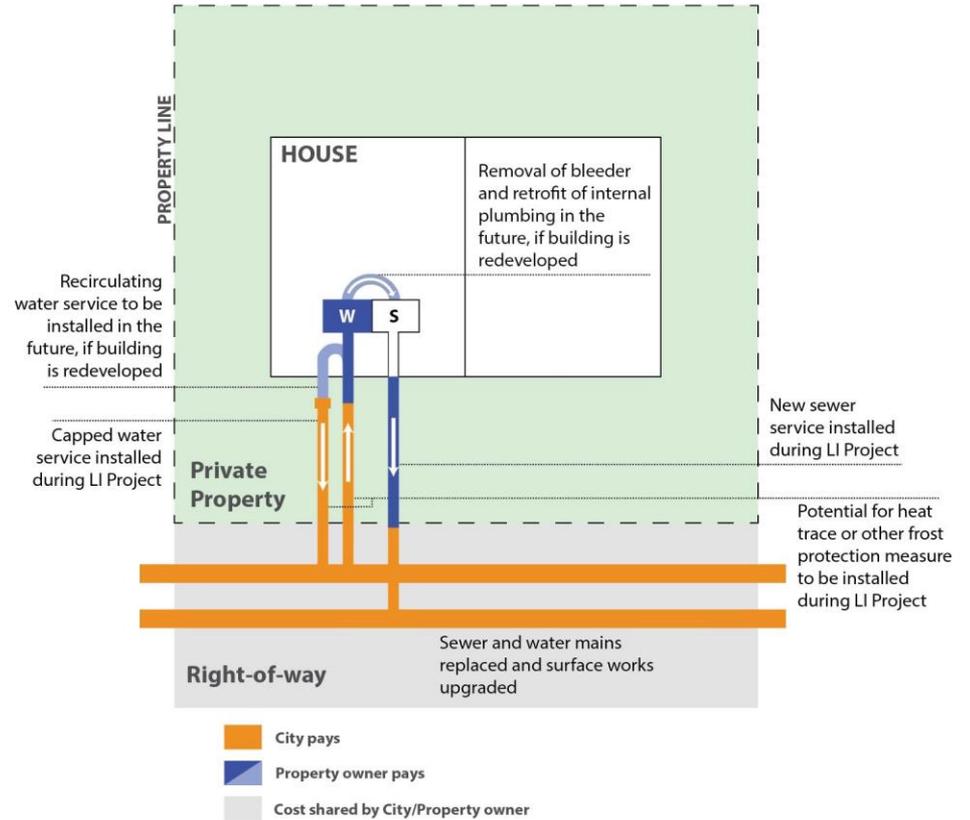
- City pays
- Property owner pays
- Cost shared by City/Property owner

The following diagram indicates the cost responsibilities associated with **Steelox duplex residences** in the Hillcrest improvement area.

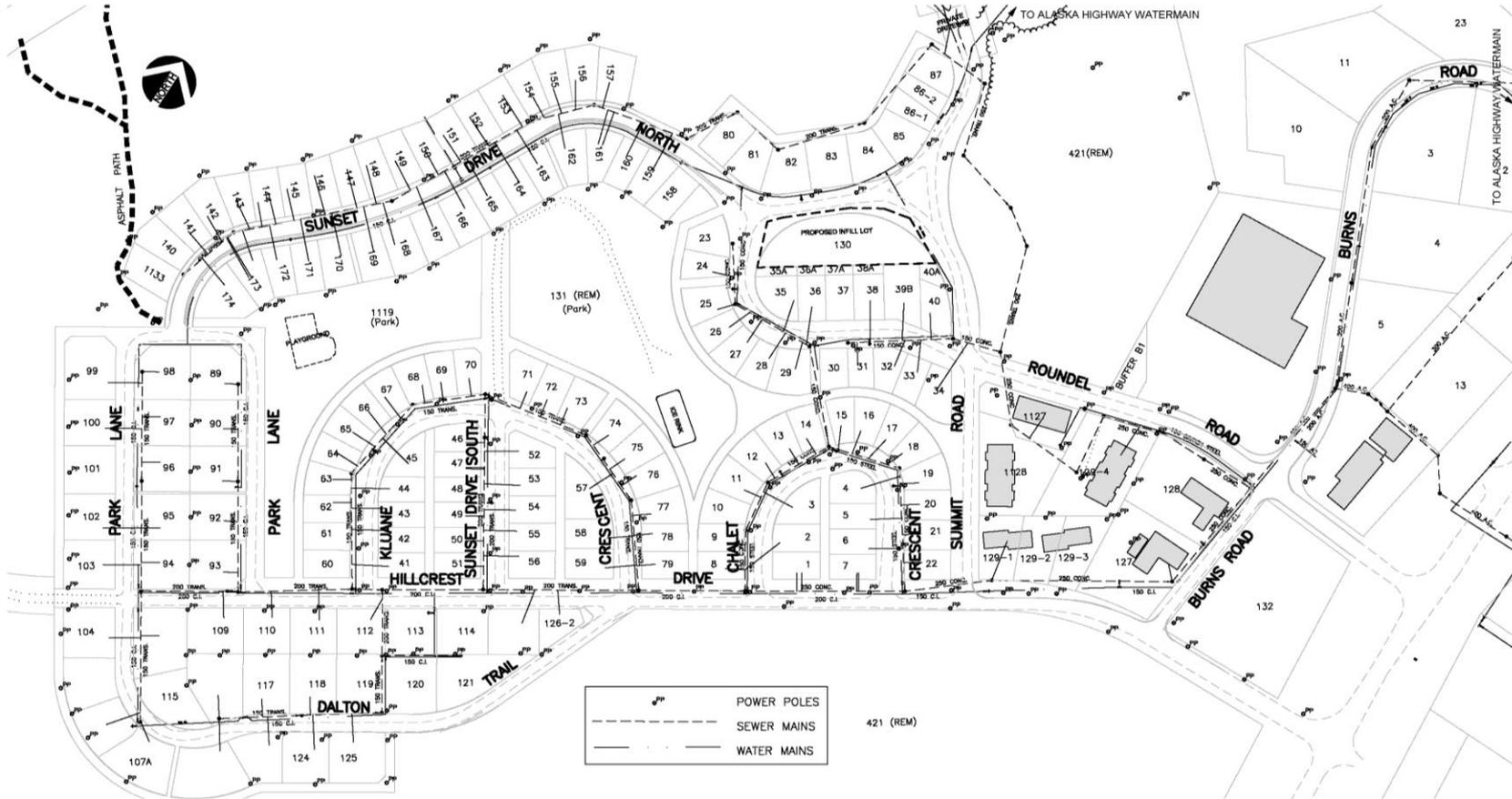
**EXISTING SERVICES:**



**IMPROVEMENT COST RESPONSIBILITY:**

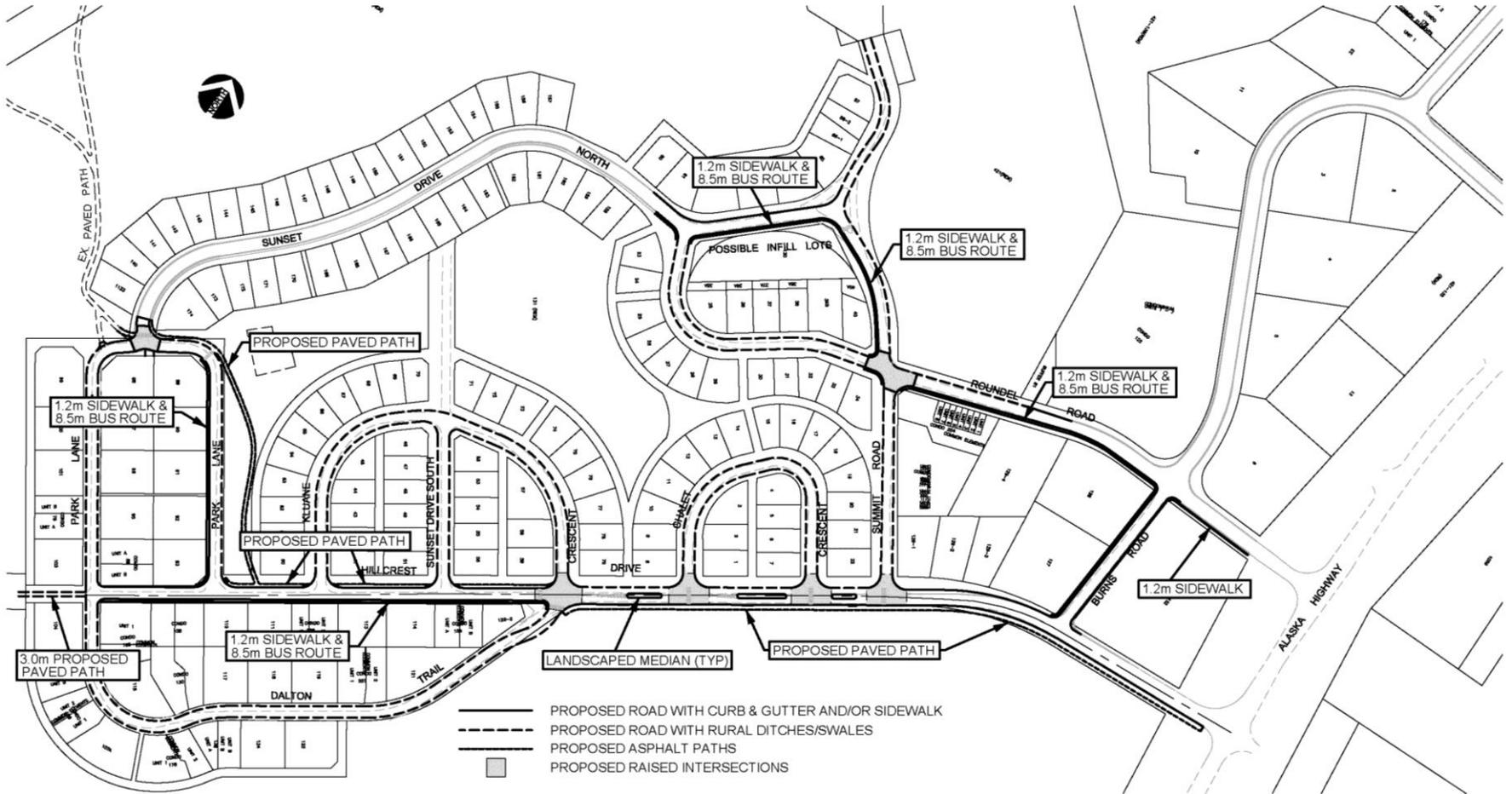


# Existing Utilities



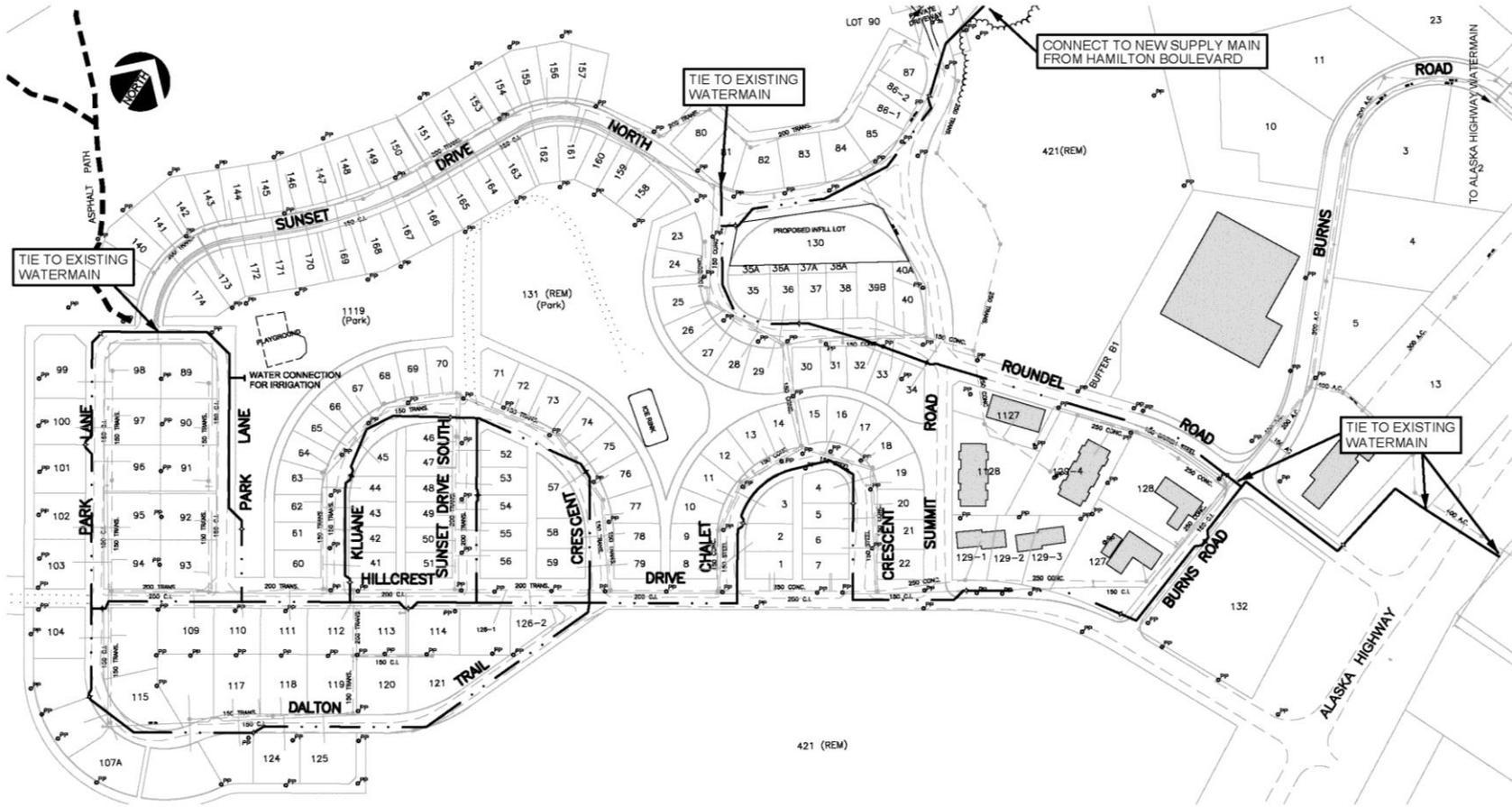
The City's service records for Hillcrest are incomplete. Missing information will need to be collected through consultation with property owners and site visits during the Detailed Design phase of the project.

# Proposed Road Network



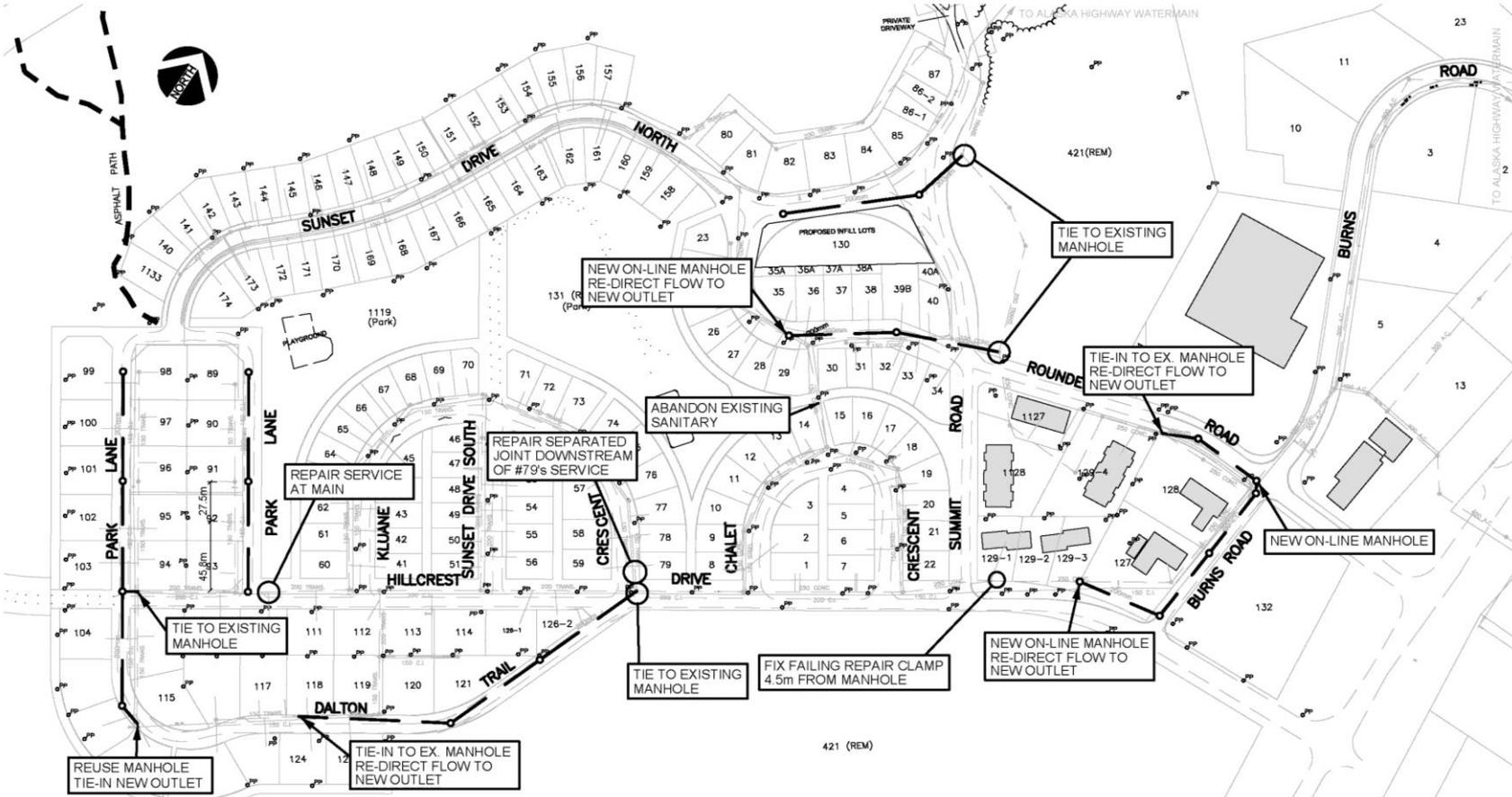


# Proposed Water Network



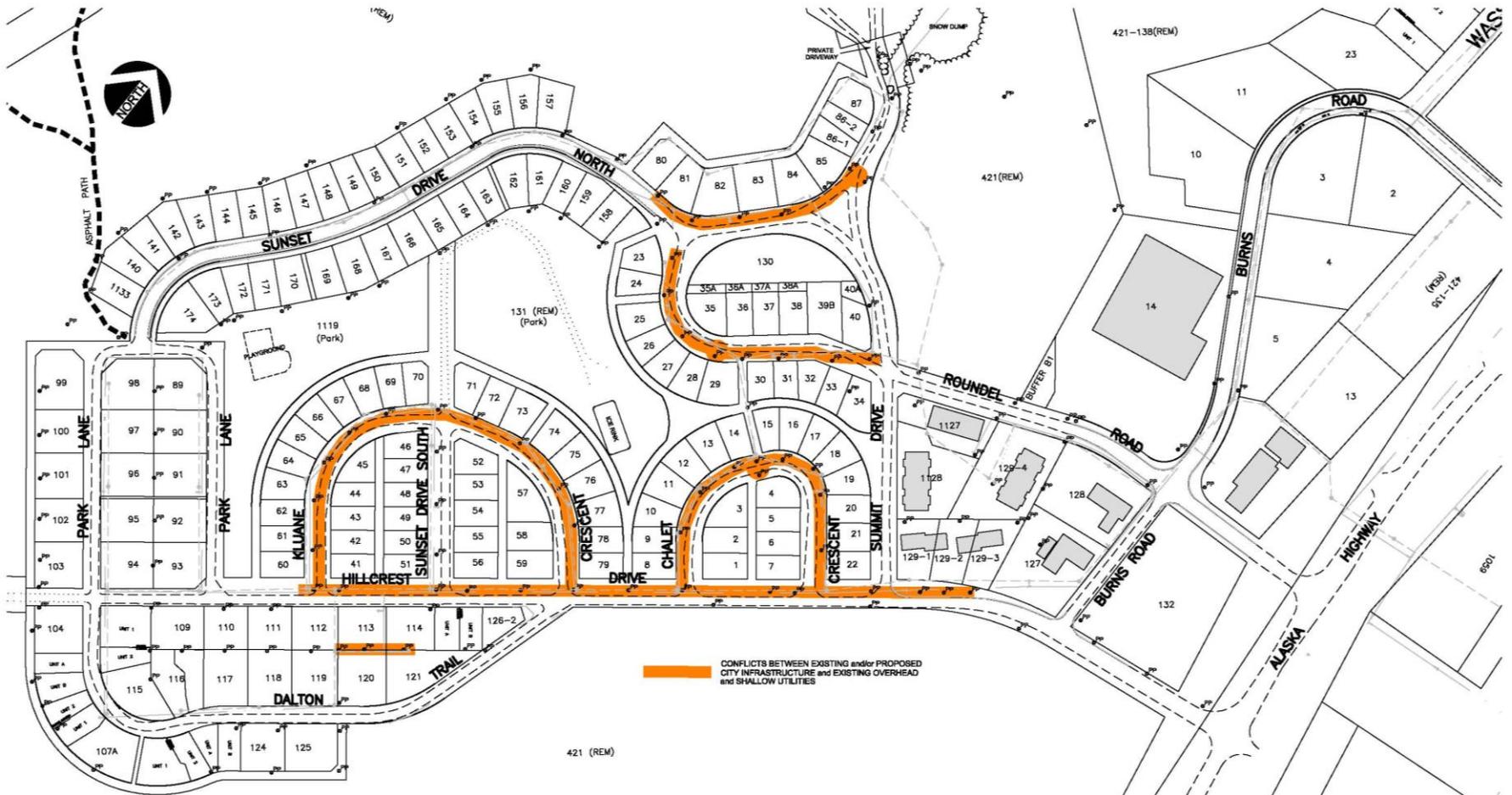
The replacement of water mains in the improvement area is recommended to ensure the continued safety and quality of water supplied to residents.

# Proposed Sanitary Network



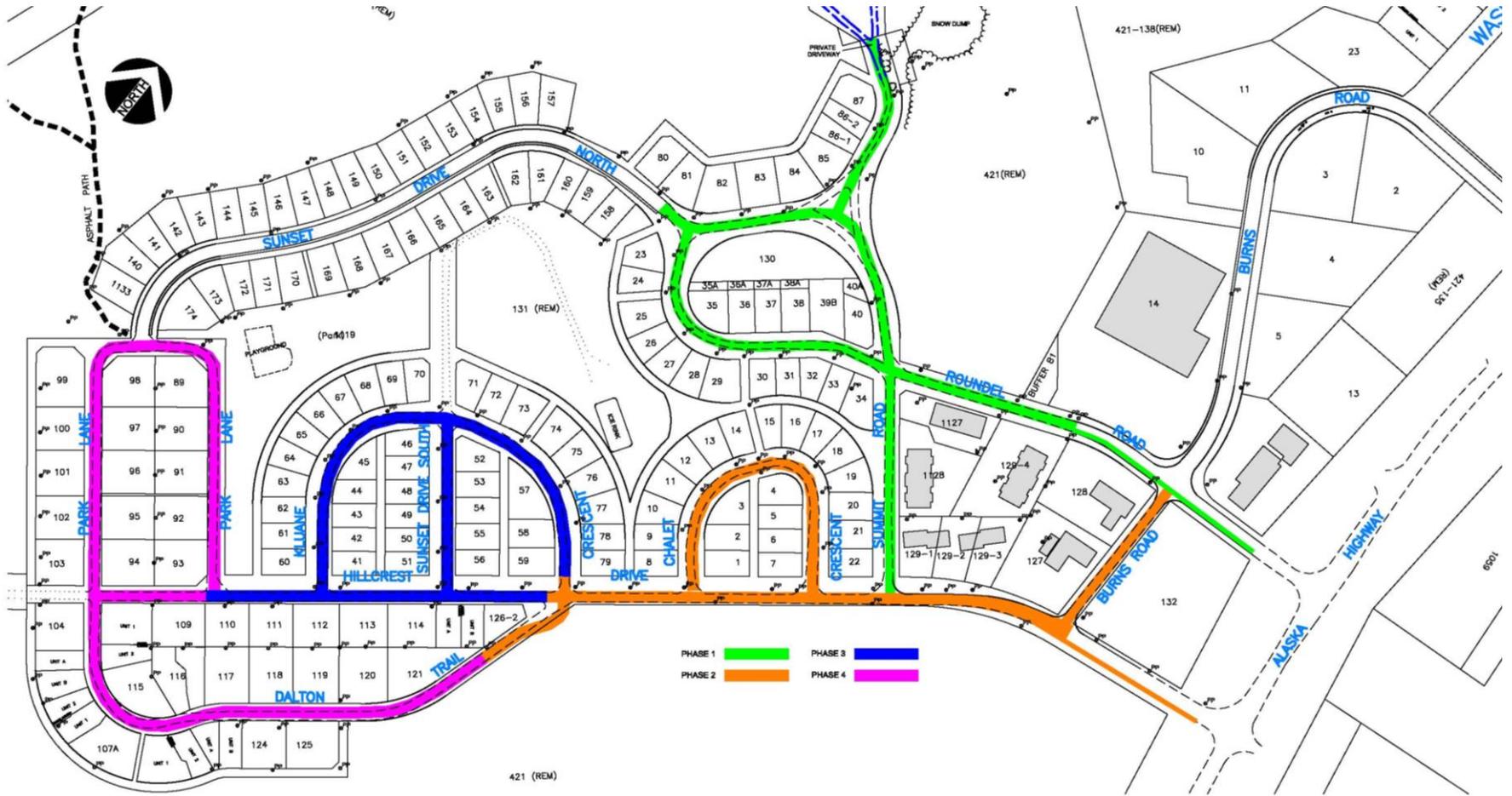
Camera investigation in spring and summer of 2012 identified that many sewer mains in Hillcrest remain in good to very good condition. The investigation also revealed some problem locations where replacement is required.

# Conflicts with Utility Poles



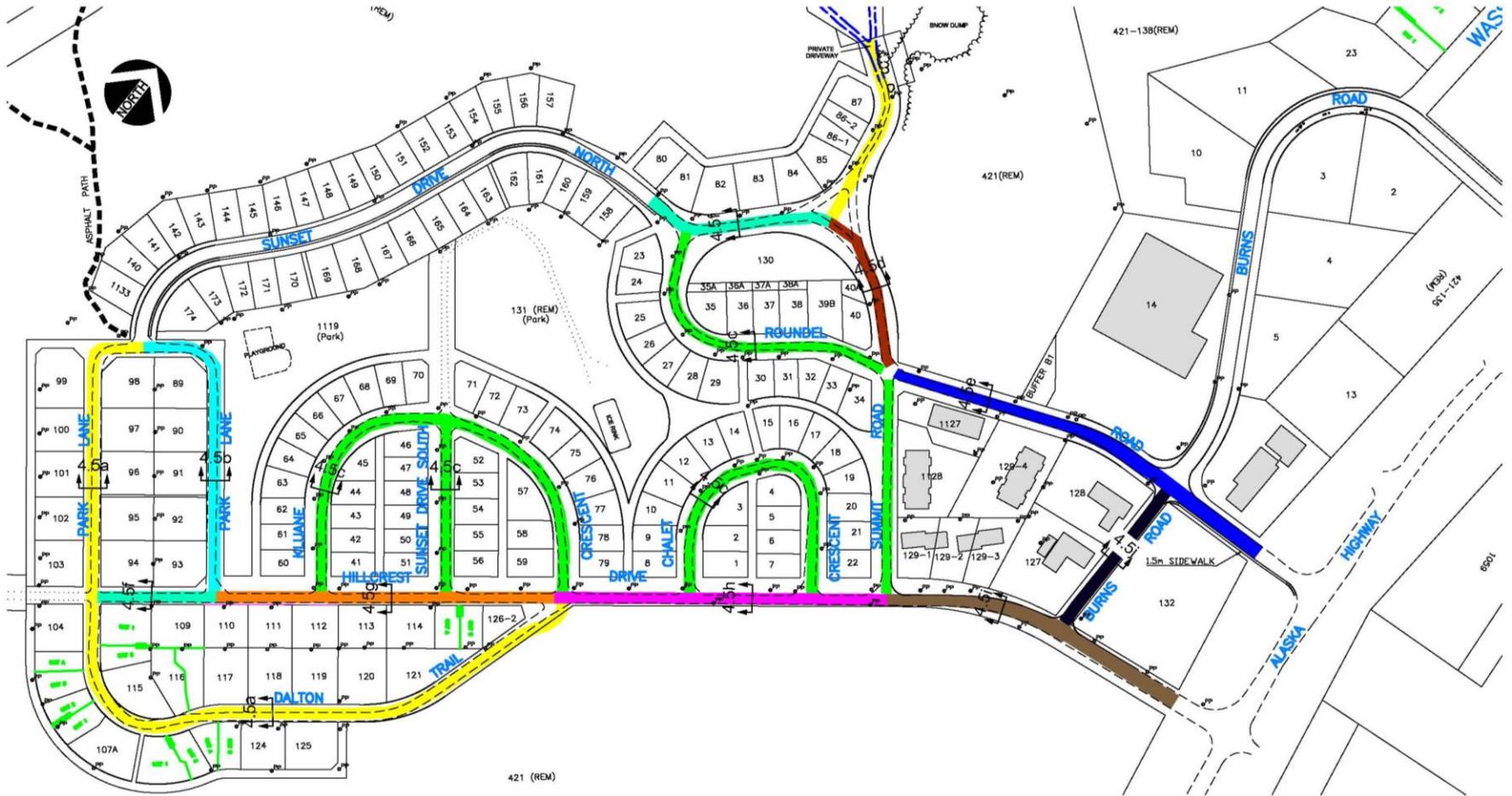
The City is in consultation with Atco Electric and NorthweTel to address conflicts between proposed upgrades and utility poles in the locations indicated above.

# Construction Phasing



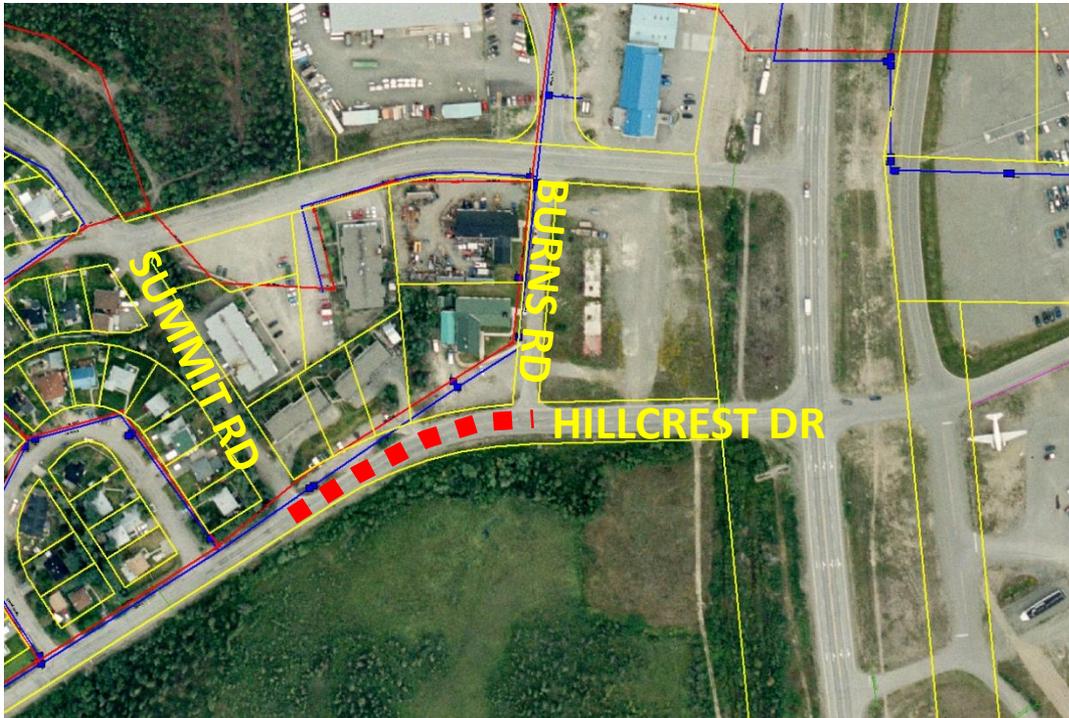
A phased construction plan is proposed that would take three to four years to complete.

# Improvements Key Map



Proposed improvements are described in the following sections on a street-by-street basis. Locations are color-coded to match the Key Map above.

# Hillcrest Dr (Burns Rd to Summit Rd)



- Existing sewer main
- Existing water main
- Property line and ROW

# Hillcrest Dr (Burns Rd to Summit Rd)

## Existing infrastructure:

- ROW: 20 m
- Paved surface: 10 - 10.5 m
- Gravel shoulders
- Storm ditches
- Transit service

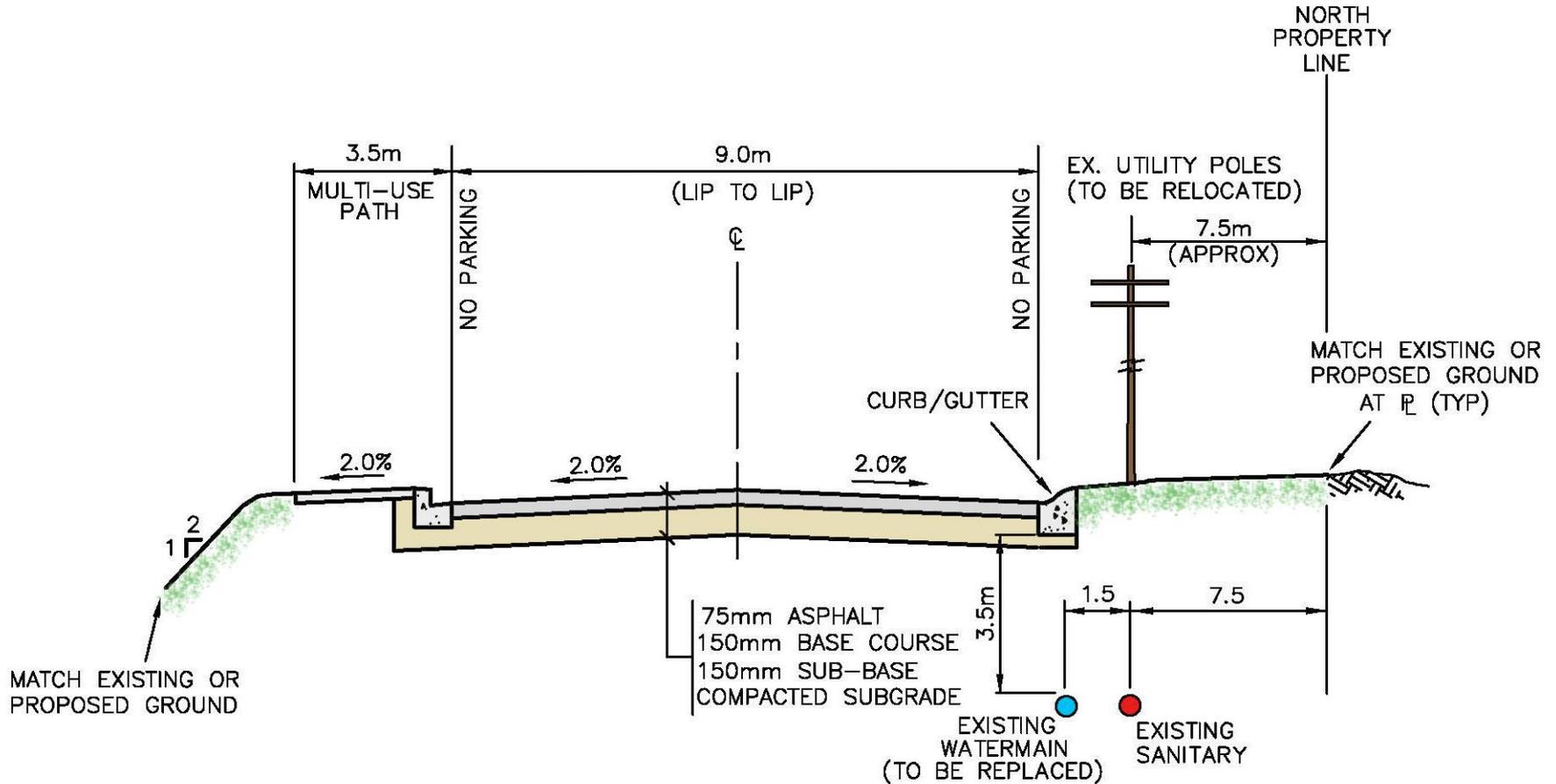
## Concerns:

- Perceived street width
- Speeding
- Lack of pedestrian infrastructure
- Lack of cycling infrastructure

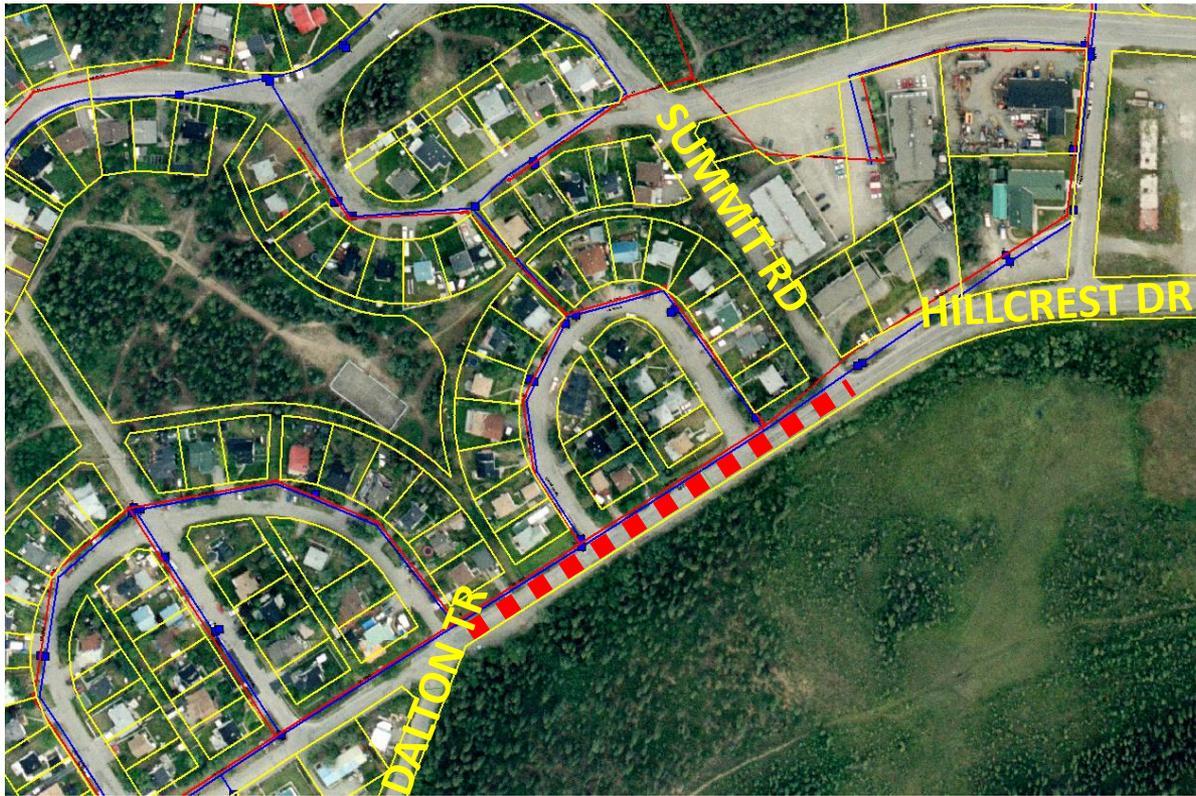
## Proposed infrastructure:

- Road:
  - Paved, 9 m wide (lip-to-lip)
  - No parking
  - Painted bike symbols with chevrons on both sides
- Drainage:
  - Barrier curb on south side
  - Rolled curb and gutter on north side
- Multi-use path:
  - South side
  - Paved, 3 m wide
  - Pedestrian/bike use

# Hillcrest Dr (Burns Rd to Summit Rd)



# Hillcrest Dr (Summit Rd to Dalton Tr)



- Existing sewer main
- Existing water main
- Property line and ROW

# Hillcrest Dr (Summit Rd to Dalton Tr)

## Existing infrastructure:

- ROW: 20 m
- Paved surface: 6.5 - 7.5 m
- Gravel shoulders
- Storm ditches
- Transit service

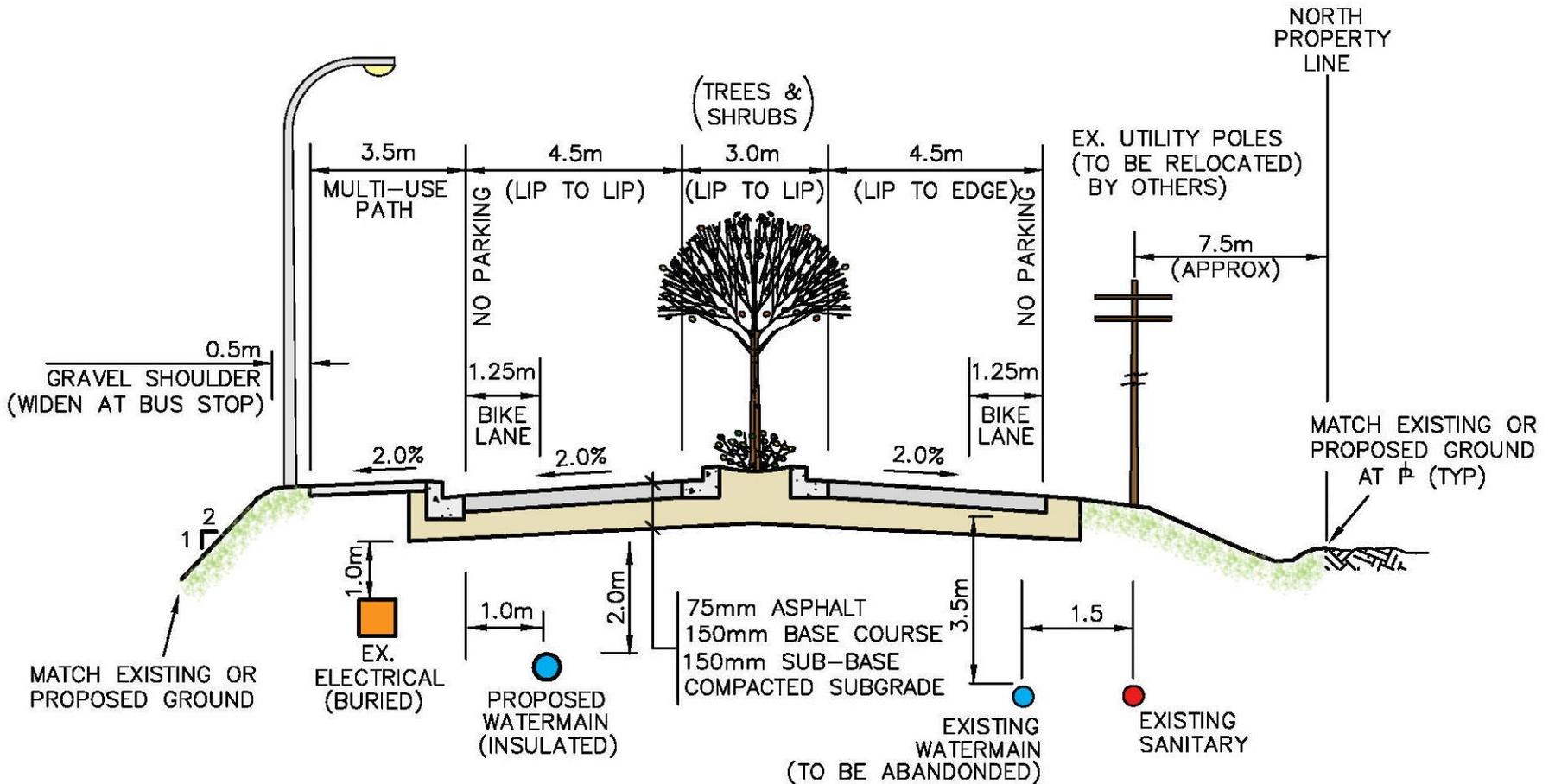
## Concerns:

- Perceived street width
- Speeding
- Lack of pedestrian infrastructure
- Lack of cycling infrastructure
- Drainage travelling across Hillcrest Dr from Chalet Cr causes perennial potholes
- Drainage towards bus stop causes slippery conditions

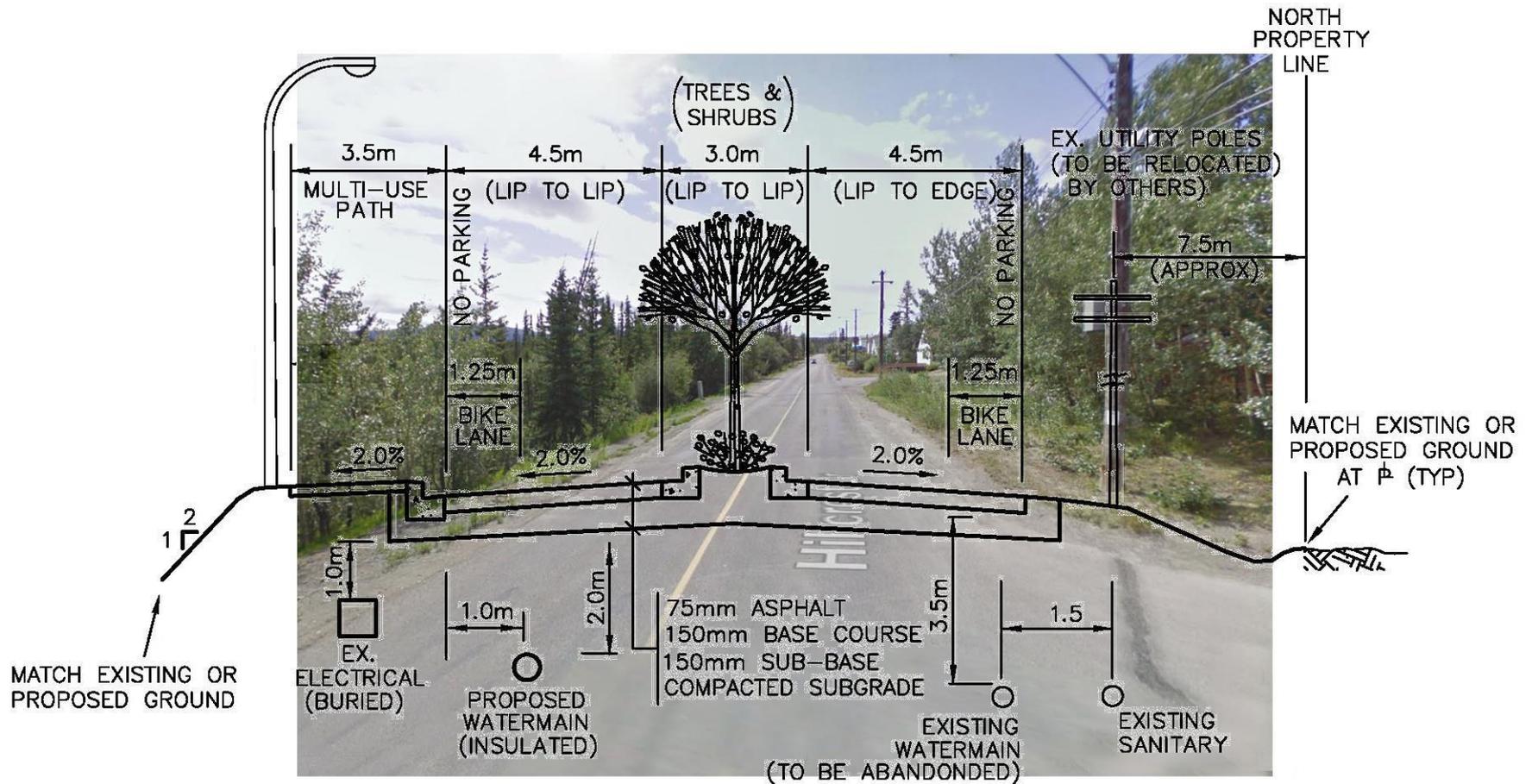
## Proposed infrastructure:

- Road:
  - Separated, paved, 4.5 m wide lanes (x2)
  - 3 m wide splitter medians with landscaping (x3)
  - No parking
  - Painted bike symbols with chevrons on both sides
- Raised intersections at:
  - Summit Rd
  - Chalet Cr (both intersections)
  - Dalton Tr/Kluane Cr
- Drainage:
  - Barrier curb and gutter on south side
  - Barrier curb and gutter on medians
  - Bio-swale on north side
- Multi-use path:
  - South side
  - Paved, 3 m wide
  - Pedestrian/bike use

# Hillcrest Dr (Summit Rd to Dalton Tr)



# Hillcrest Dr (Summit Rd to Dalton Tr)



# Hillcrest Dr (Dalton Tr to Park Ln E)



- Existing sewer main
- Existing water main
- Property line and ROW

# Hillcrest Dr (Dalton Tr to Park Ln E)

## Existing infrastructure:

- ROW: 20 m
- Paved surface: 6 - 7 m
- Gravel shoulders
- Storm ditches
- Transit service

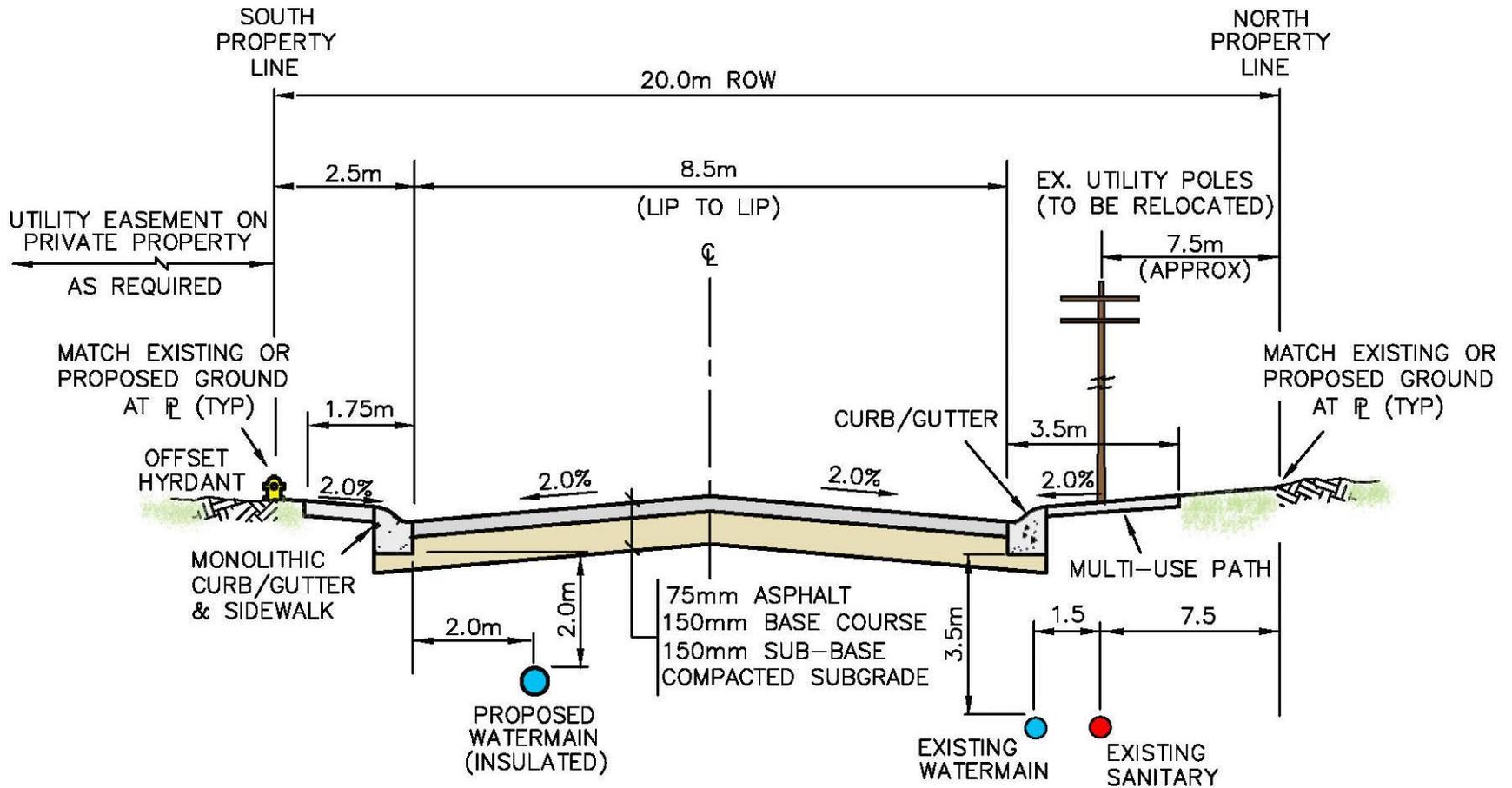
## Concerns:

- Perceived street width
- Speeding
- Lack of pedestrian infrastructure
- Lack of cycling infrastructure
- Road-way sometimes congested due to parallel parking
- Sight line obstruction due to crest

## Proposed infrastructure:

- Road:
  - Paved, 8.5 m wide (lip-to-lip)
  - Undesignated parallel parking
  - Re-profiling between Dalton Tr and Sunset Dr S
- Drainage:
  - Rolled curb and gutter on both sides
- Sidewalk:
  - South side
  - 1.2 m wide
- Multi-use path:
  - North side
  - Paved, 3 m wide
  - Pedestrian/bike use
  - Hydro pole to be relocated
- Adjacent properties:
  - Re-sloping or use of retaining walls on adjacent properties will likely be required due to difference in relative elevation (Chalet Cr properties are 1.5 m lower than Hillcrest Dr road centre line; Hillcrest Dr properties are 1 - 2 m above centre line)

# Hillcrest Dr (Dalton Tr to Park Ln E)



# Hillcrest Dr (Park Ln E to W) and Sunset Dr N



- Existing sewer main
- Existing water main
- Property line and ROW

# Hillcrest Dr (Park Ln E to W) and Sunset Dr N

## Existing infrastructure:

- ROW:
  - Hillcrest Dr: 12 m
  - Sunset Dr N: 18 m
- Paved surface:
  - Hillcrest Dr: 6 - 7 m
  - Sunset Dr N: 5.5 - 6 m
- Gravel shoulders
- Storm ditches

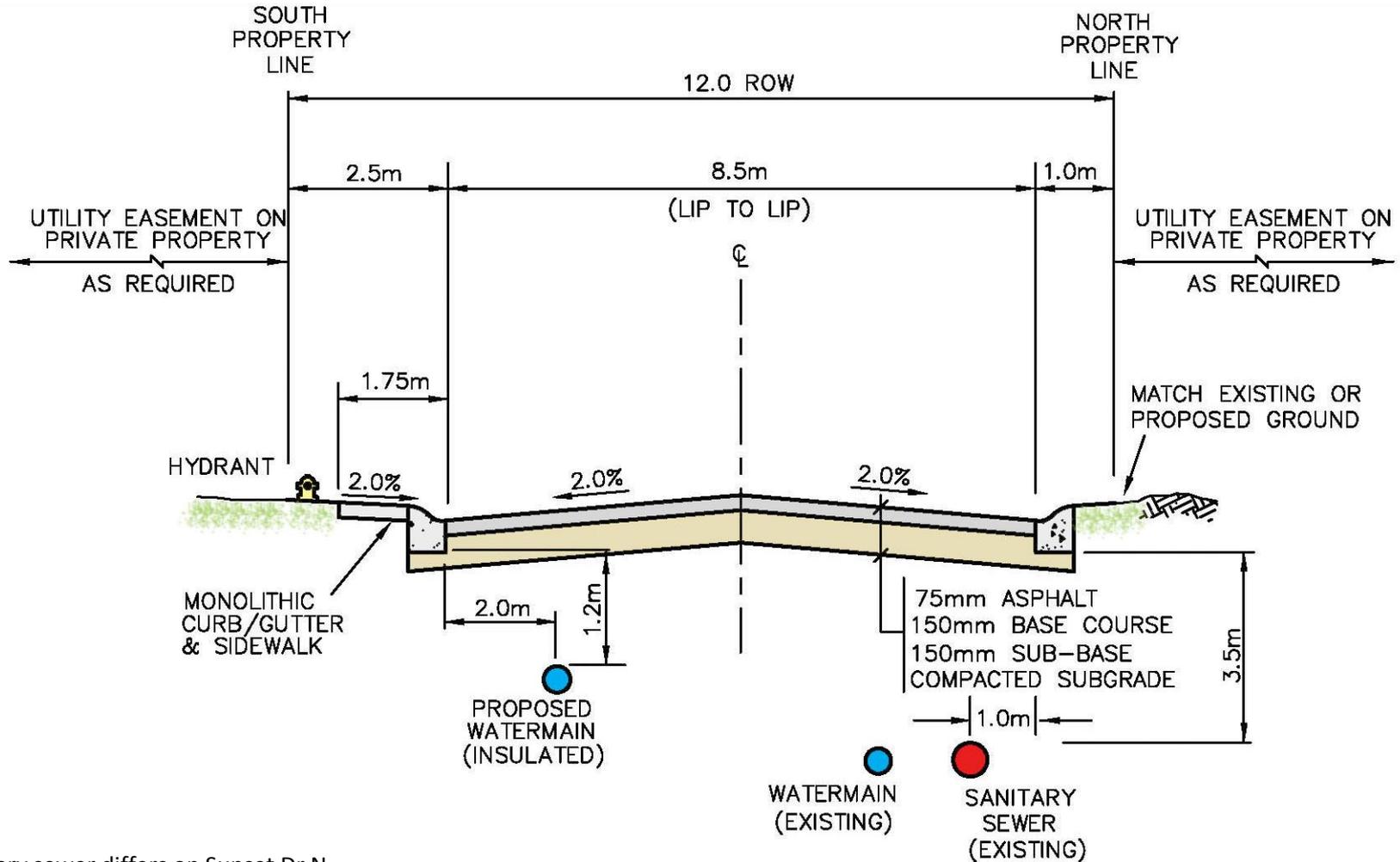
## Concerns:

- Congestion due to on-street parallel parking
- Difference in elevation of adjacent properties relative to Sunset Dr N

## Proposed infrastructure:

- Road:
  - Paved, 8.5 m wide (lip-to-lip)
  - Undesignated parallel parking
  - Intersection realignment on Sunset Dr N, at Summit Rd
- Drainage:
  - Rolled curb and gutter on both sides
- Sidewalk:
  - South side
  - 1.2 m wide

# Hillcrest Dr (Park Ln E to W) and Sunset Dr N



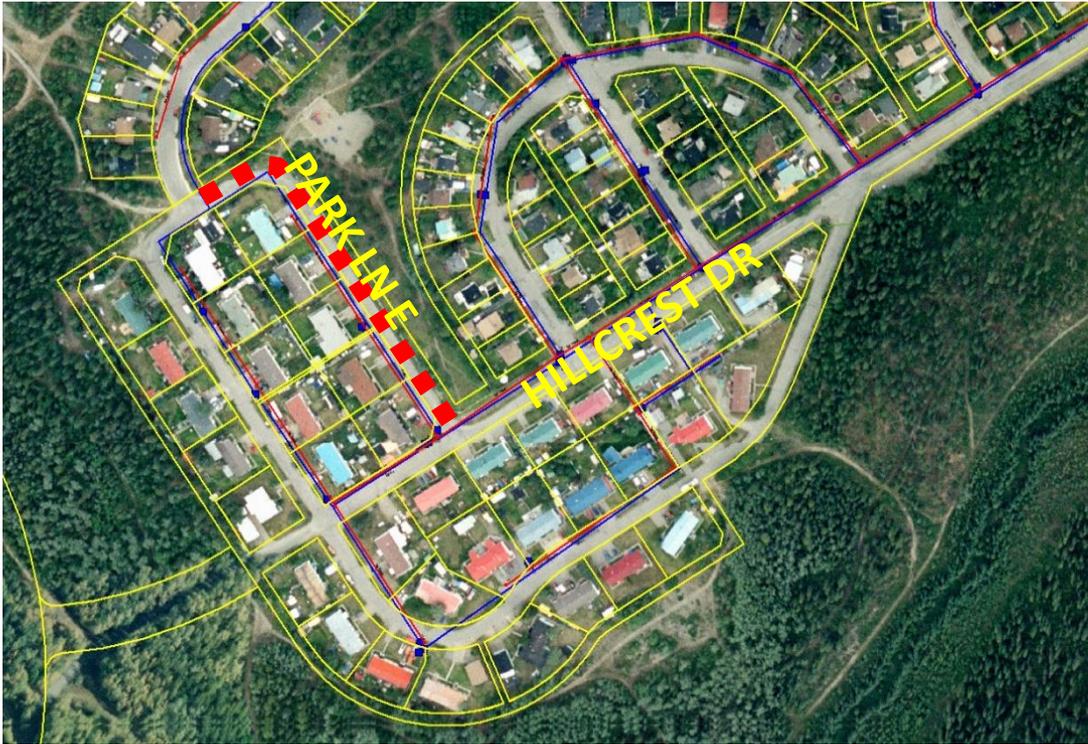
Sanitary sewer differs on Sunset Dr N.  
 Sidewalk would be on south side for both Hillcrest Dr and Sunset Dr N.  
 Not to scale.

# Hillcrest Dr (Park Ln E to W) and Sunset Dr N

Realignment of Sunset Dr N and Summit Rd is recommended to reduce the number of intersections from 3 to a single T-intersection. The driveways of Lots 84 and 85 (#85 and 86 Sunset Dr N) would need to be realigned and paved to achieve this.



# Park Ln E



- Existing sewer main
- Existing water main
- Property line and ROW

# Park Ln E

## Existing infrastructure:

- ROW: 12 m
- Paved surface: 5.5 - 6 m
- Gravel shoulders
- Storm ditches
- Transit service

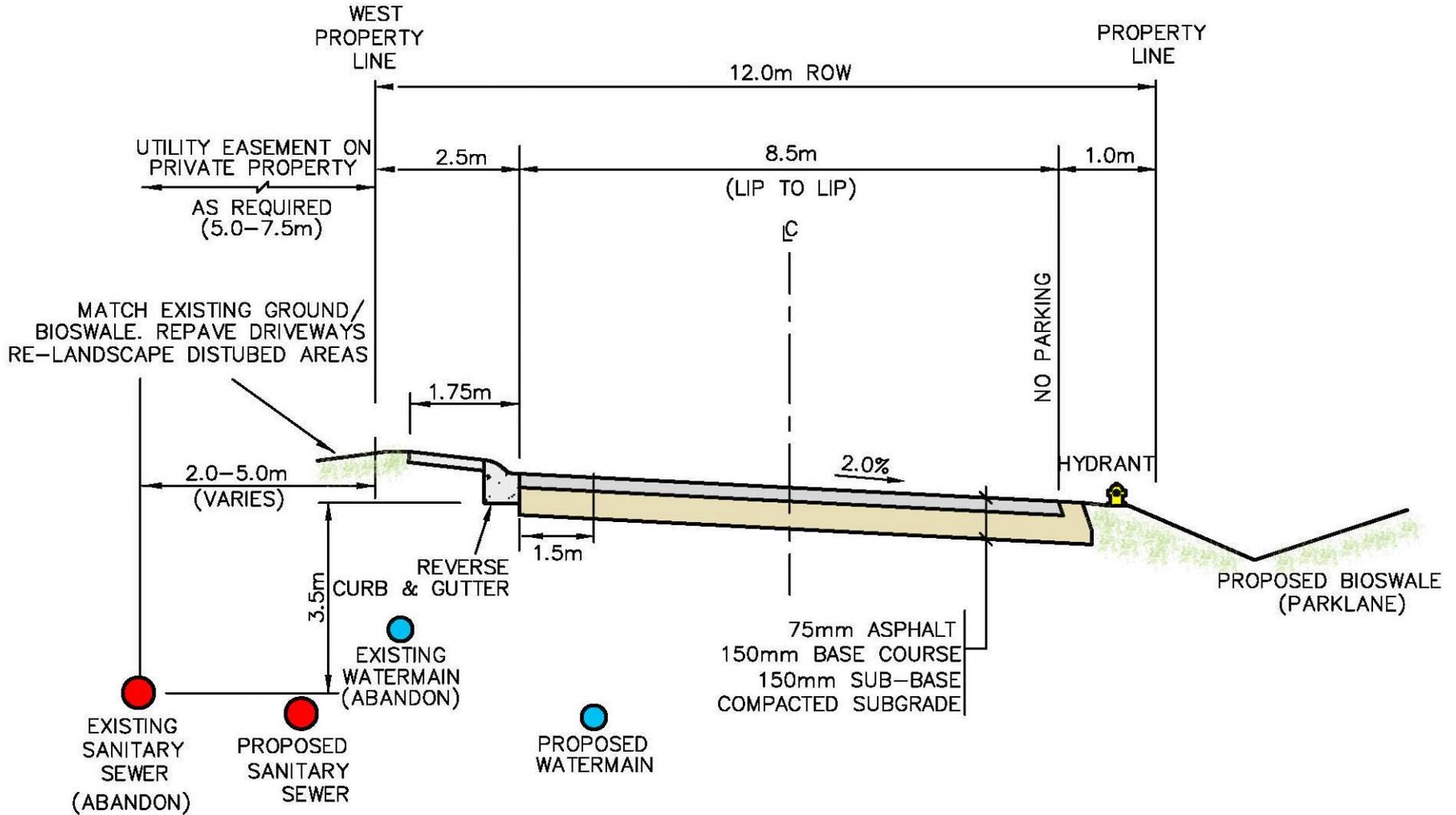
## Concerns:

- Transit bus route with no designated pedestrian infrastructure
- Tight turn for Transit buses turning east from Sunset Dr N
- Lack of designated pedestrian crossing to link playground to paved trail that leads to Elijah Smith School
- Obstructed sight-lines due to vegetation and road angles

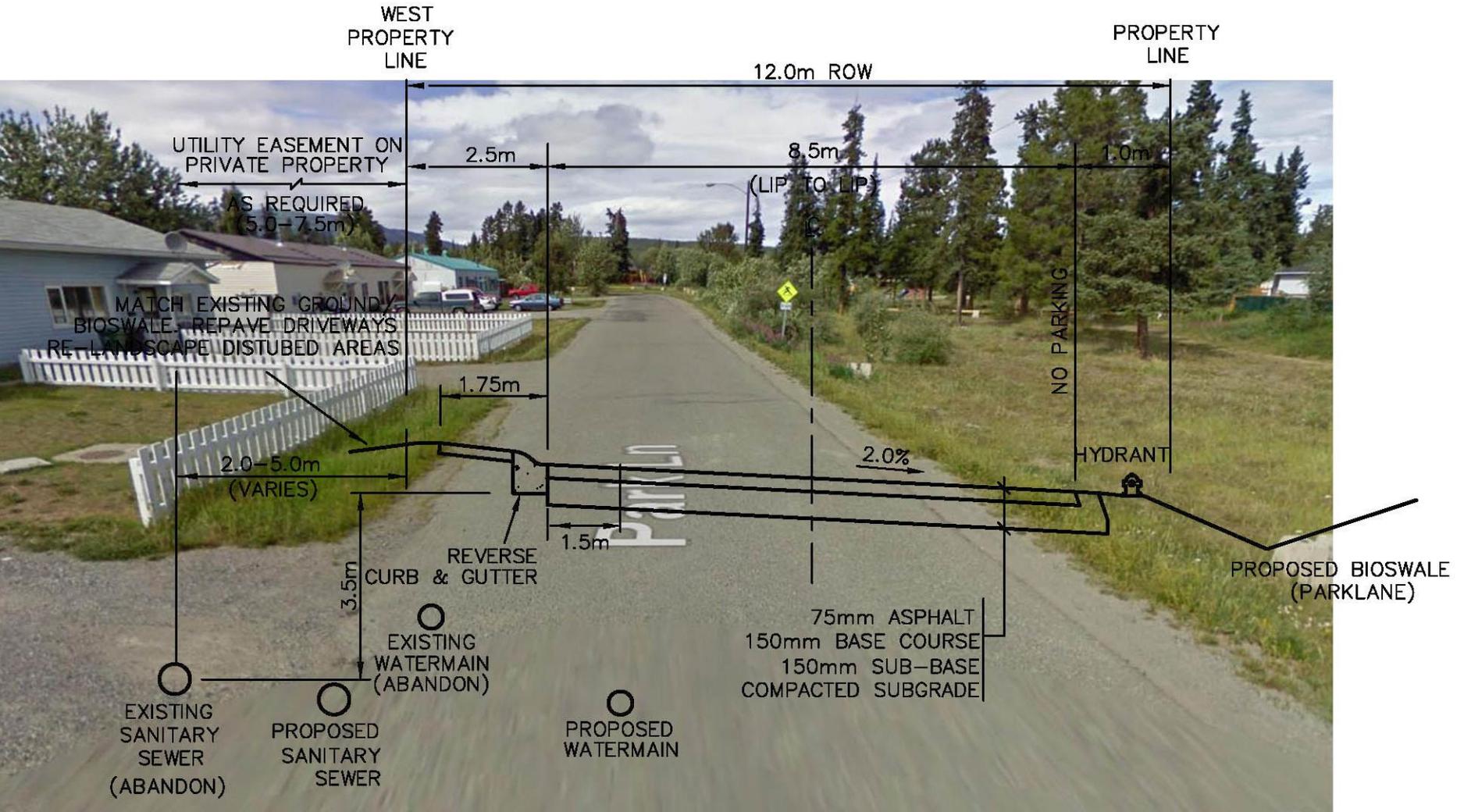
## Proposed infrastructure:

- Road:
  - Paved, 8.5 m wide (lip-to-lip)
  - No parking on east side
  - Undesignated parallel parking on west/residential side
  - Realignment at Park Ln E/W intersection with Sunset Dr N
- Drainage:
  - Rolled curb and gutter on west side
  - Run-off into green space on east side
- Sidewalk:
  - West side
  - 1.2 m wide

# Park Ln E



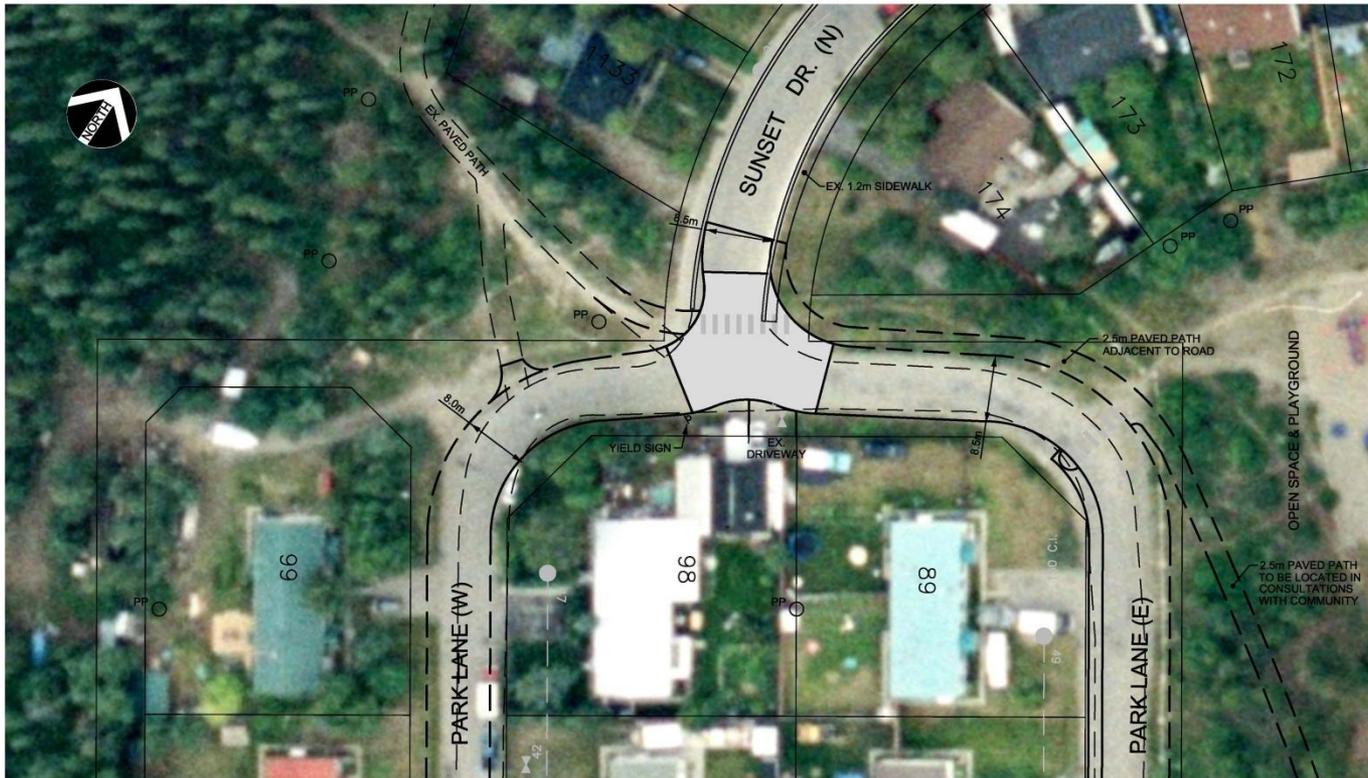
# Park Ln E



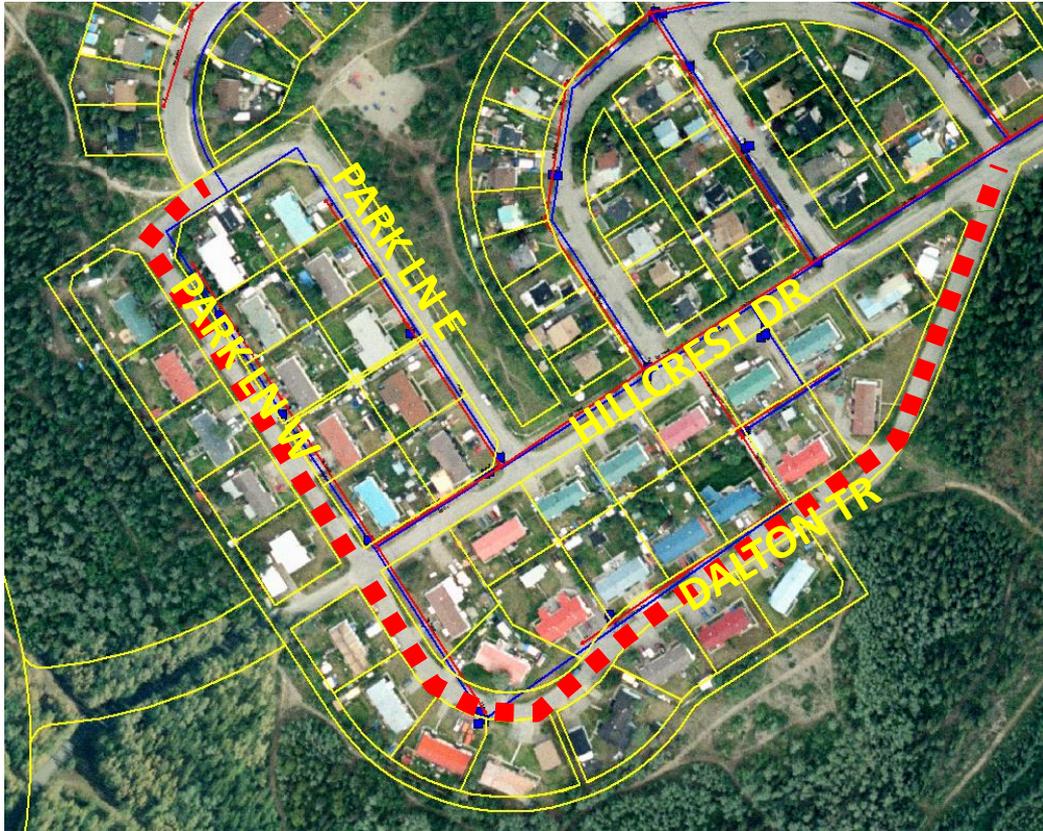
Not to scale – approximate overlay. Google Image.

# Park Ln E

A realignment is proposed for the Park Ln E/W and Sunset Dr N intersection to reduce transit/vehicle/pedestrian conflicts and improve the safety of the area for trail and playground users. Transit buses currently travel on Sunset Dr N and turn left/east onto Park Ln E, which can create a pinch point for oncoming cars.



# Park Ln W, Dalton Tr, and Sunset Dr N (east portion)



- Existing sewer main
- Existing water main
- Property line and ROW

# Park Ln W, Dalton Tr, and Sunset Dr N (east portion)

## Existing infrastructure:

- ROW:
  - Park Ln W and Dalton Tr: 12 m
  - Sunset Dr N (east portion): 18 m
- Paved surface: 3.5 - 6.5 m
- Gravel shoulders
- Storm ditches

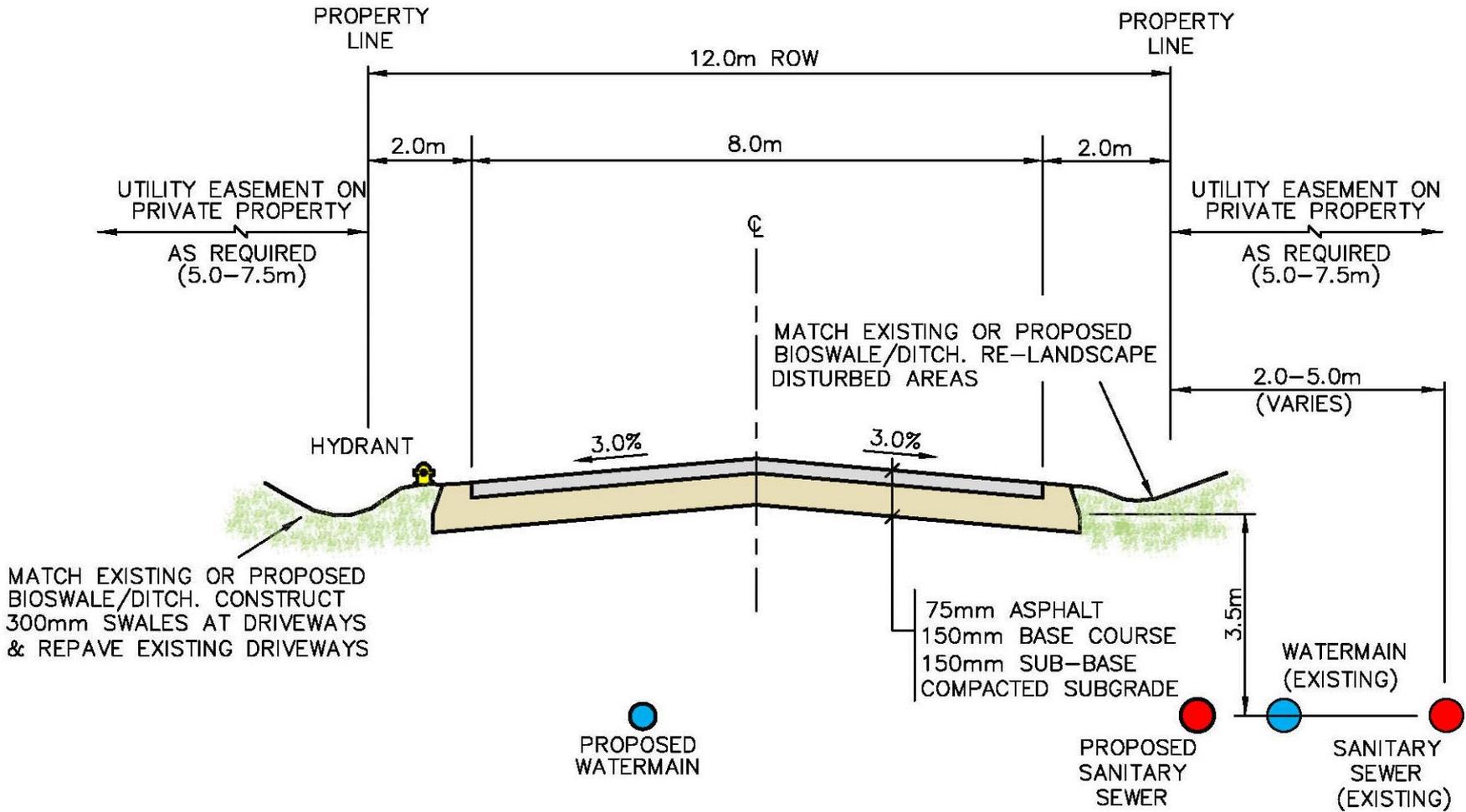
## Proposed infrastructure:

- Road:
  - Paved, 8 m wide
  - Undesignated parallel parking on both sides
  - Shared-road design
  - Intersection realignment of Dalton Tr at Hillcrest Dr
- Drainage:
  - Bio-swales on both sides

## Concerns:

- Seasonal ponding in flat areas
- Drivers will sometimes roll through stop on Dalton Tr at Hillcrest Dr intersection without checking for traffic heading east on Hillcrest Dr

# Park Ln W, Dalton Tr, and Sunset Dr N (east portion)



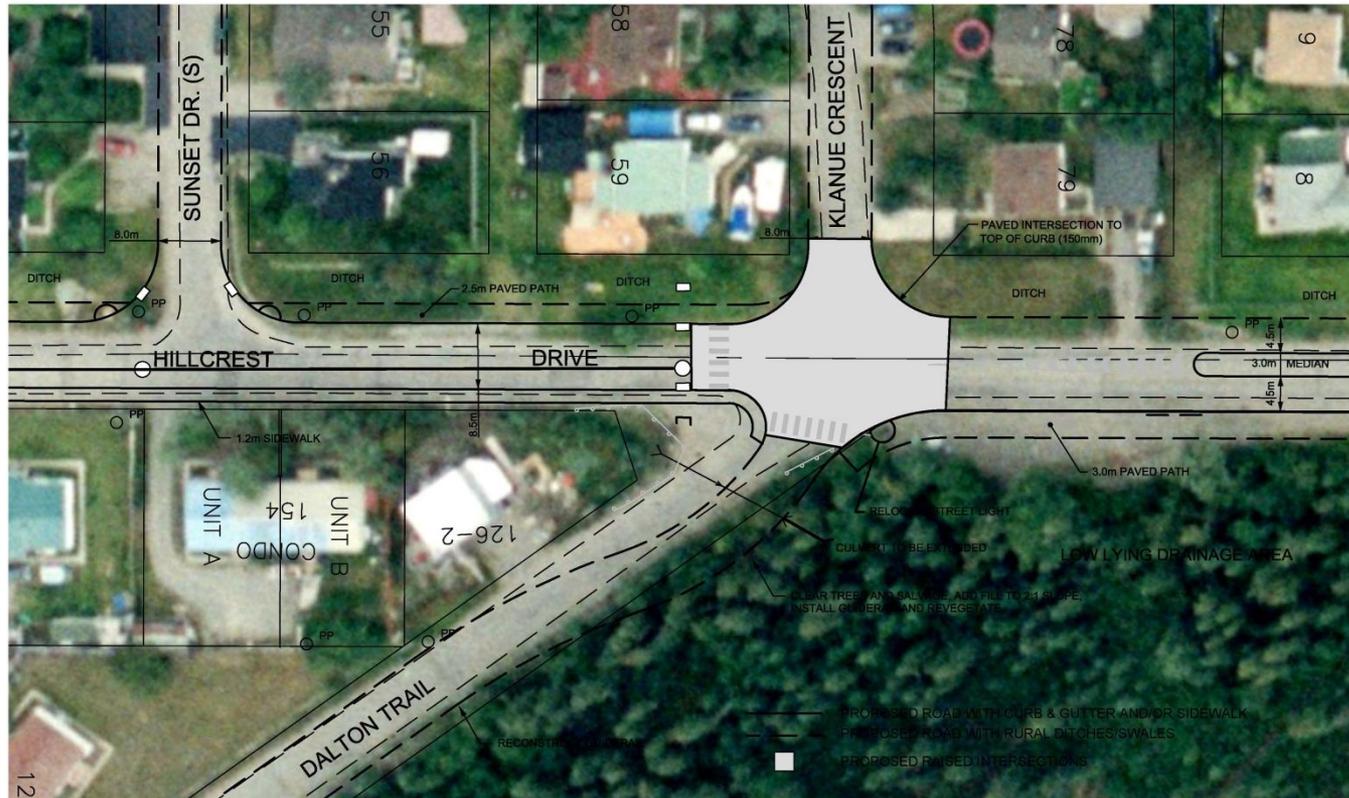
Right-of-way on Sunset Dr N is 18 m.

Eastern portions of Dalton Tr and Sunset Dr N would either be crowned or have a full cross fall towards adjacent green space.

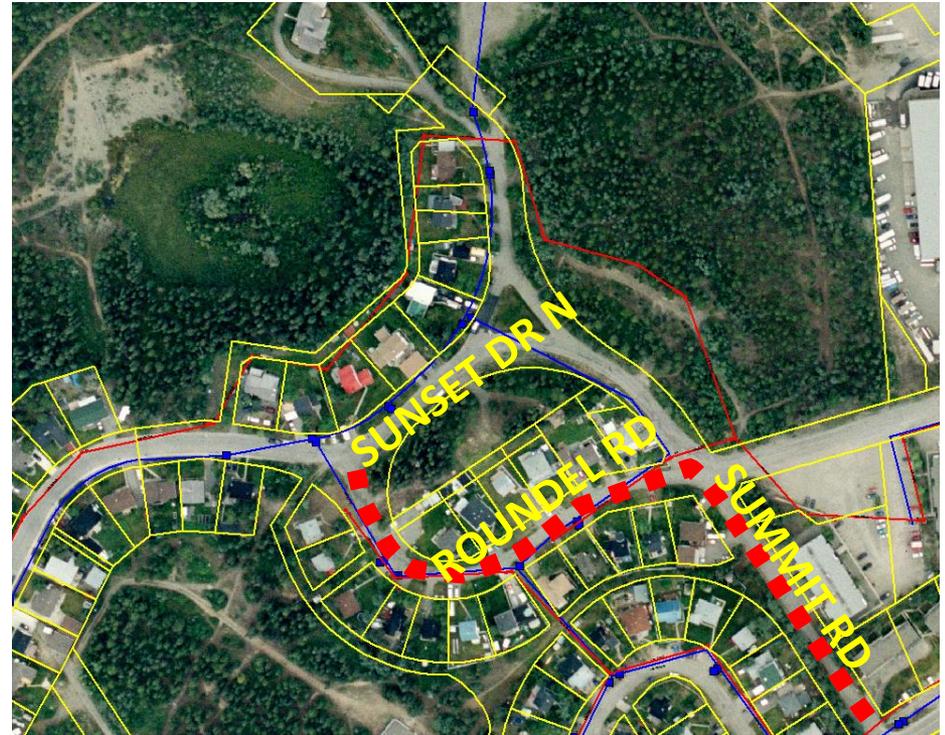
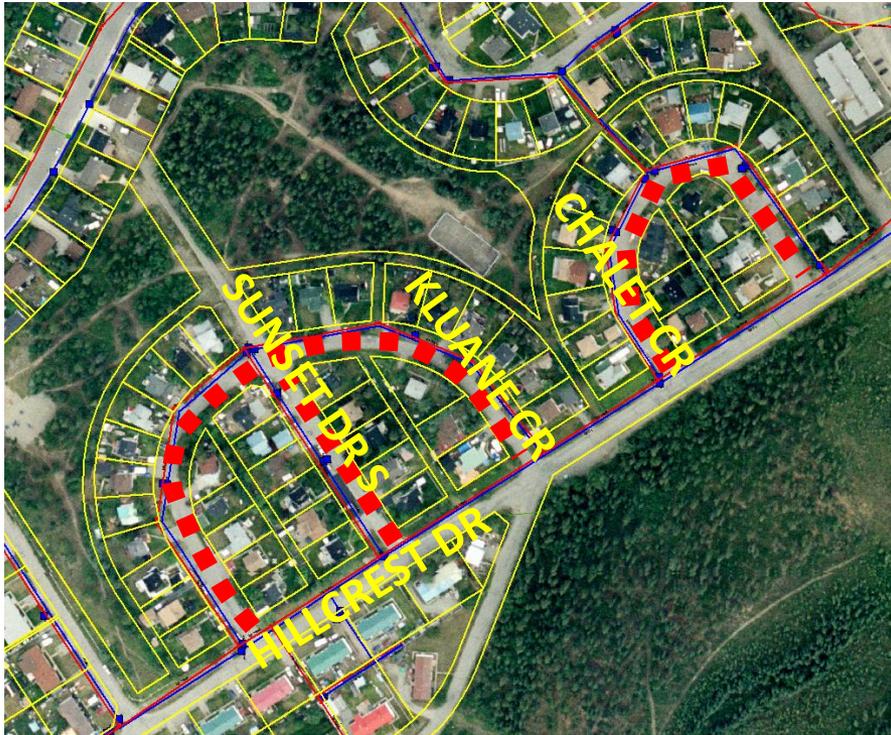
Not to scale.

# Park Ln W, Dalton Tr, and Sunset Dr N (east portion)

A road realignment is proposed for Dalton Tr at the Hillcrest Dr intersection. Work would entail adding fill to the green space on the east side of Dalton Tr, pulling the road away from Lot 126-2, repositioning guard rails, and raising the intersection for traffic calming.



# Chalet Cr, Kluane Cr, Sunset Dr S, Roundel Rd (west portion), Summit Rd (south portion)



- Existing sewer main
- Existing water main
- Property line and ROW

# Chalet Cr, Kluane Cr, Sunset Dr S, Roundel Rd (west portion), Summit Rd (south portion)

## Existing infrastructure:

- ROW: 18 m
- Paved width: 4 - 7.5 m
- Gravel shoulders
- Storm ditches

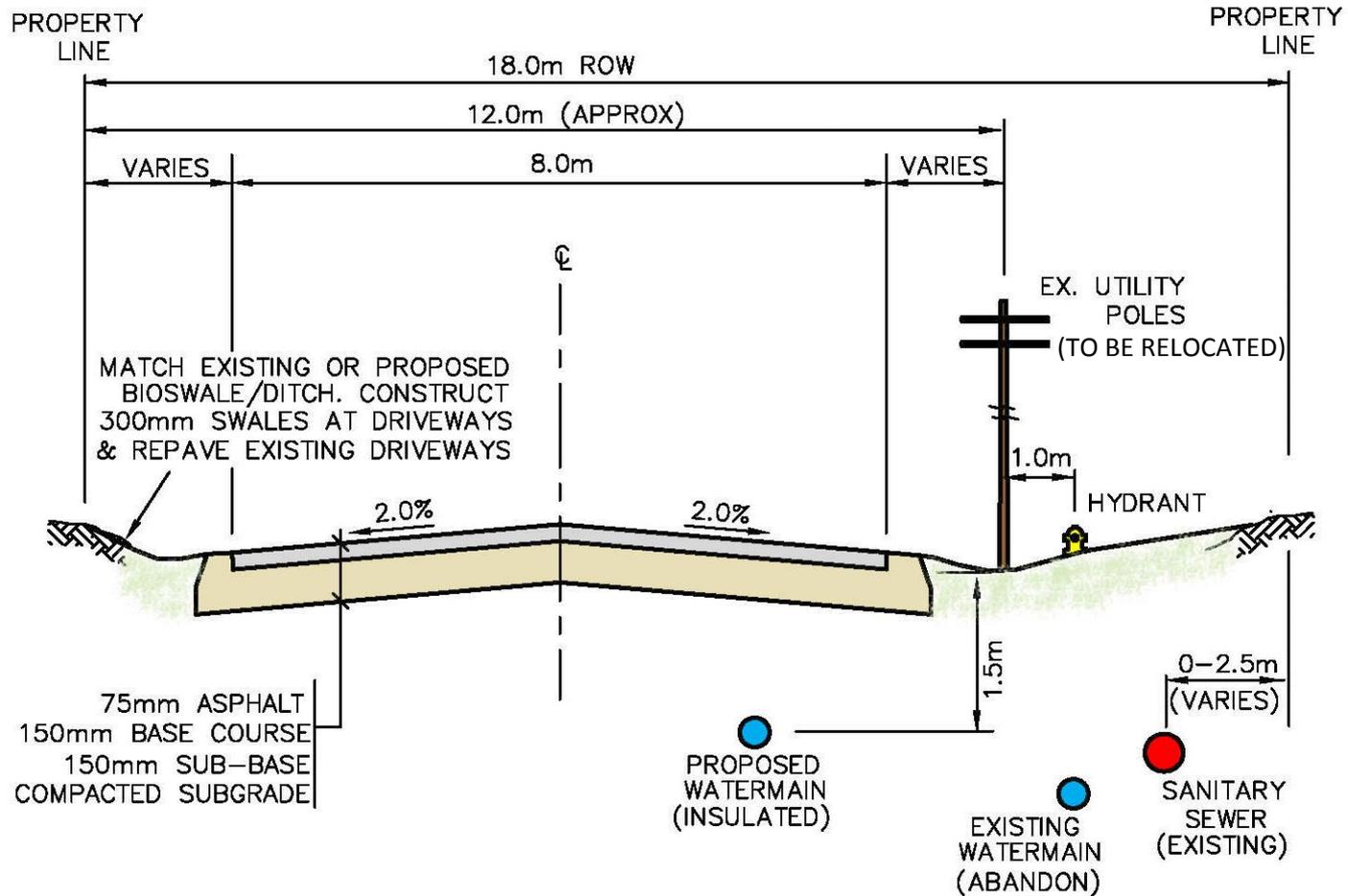
## Proposed infrastructure:

- Road:
  - Paved, 8 m wide
  - Undesignated parallel parking
  - Shared-road design
- Drainage:
  - Bio-swales on both sides

## Concerns:

- Properties on the south side of Chalet Cr experience significant flooding during spring melt
- On Chalet Cr, ice can build-up on the road resulting from drainage path coming down-hill
- Steep grades of Chalet Cr and Kluane Cr entrances/exits slippery in winter

# Chalet Cr, Kluane Cr, Sunset Dr S, Roundel Rd (west portion), Summit Rd (south portion)



# Summit Rd (north portion)



- Existing sewer main
- Existing water main
- Property line and ROW

# Summit Rd (north portion)

## Existing infrastructure:

- ROW: 18 m
- Paved surface: 6 - 8 m
- Gravel shoulders
- Storm ditches
- Transit service

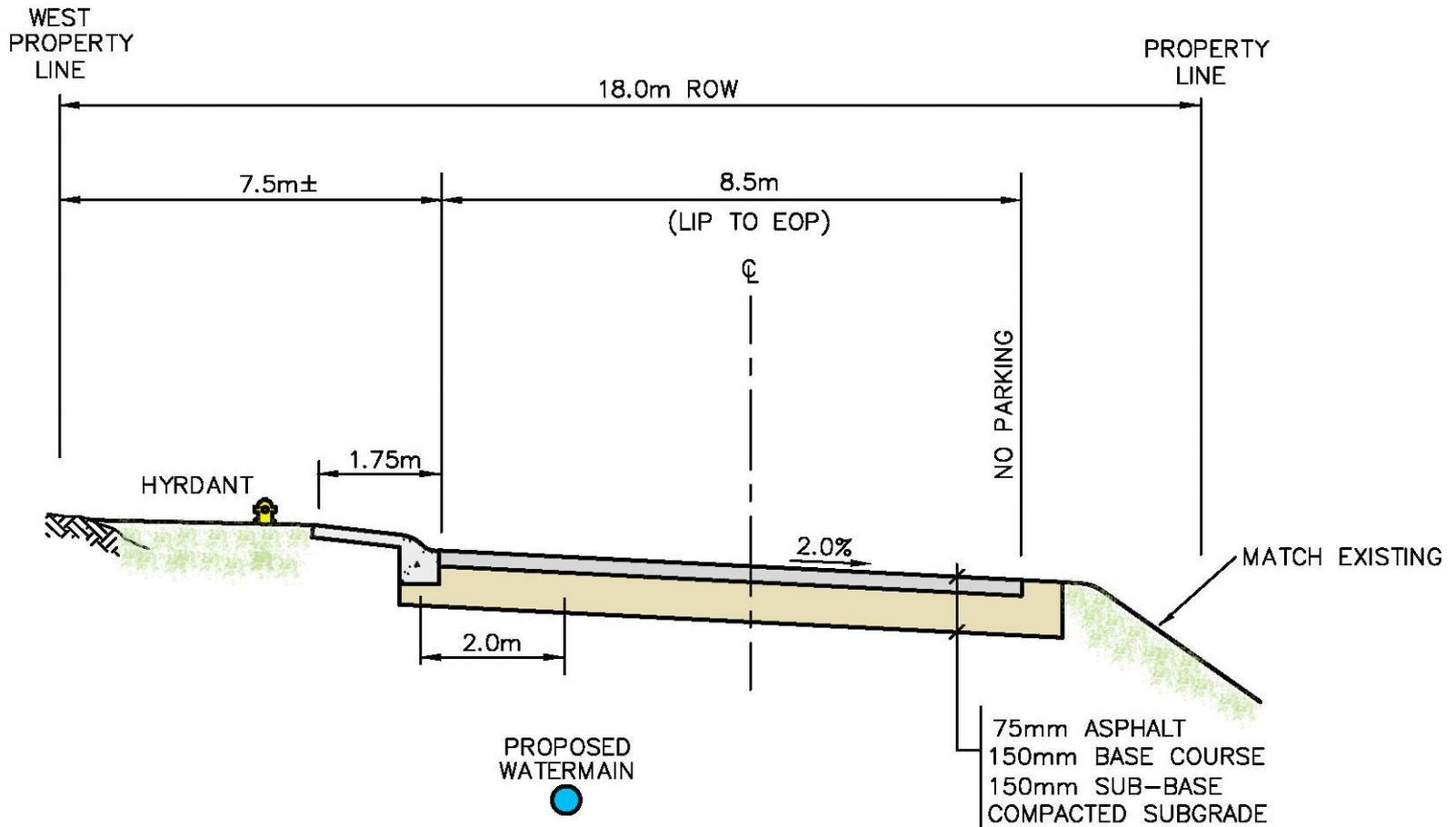
## Concerns:

- Impaired sight line on curves where Summit Rd meets Sunset Dr N
- Poor visibility around curves

## Proposed infrastructure:

- Road:
  - Paved, 8.5 m wide (lip-to-lip)
  - No parking on east side
  - Undesignated parallel parking on west side
- Drainage:
  - Rolled curb and gutter on west side
  - Run-off into green space on east side
- Sidewalk:
  - West side
  - 1.2 m wide

# Summit Rd (north portion)



# Roundel Rd (Burns Rd to Summit Rd)



- Existing sewer main
- Existing water main
- Property line and ROW

# Roundel Rd (Burns Rd to Summit Rd)

## Existing infrastructure:

- ROW: 18 m
- Paved width: 6 - 10 m
- Barrier curb and gutter on eastern portion
- Storm ditches on western portion
- Transit service

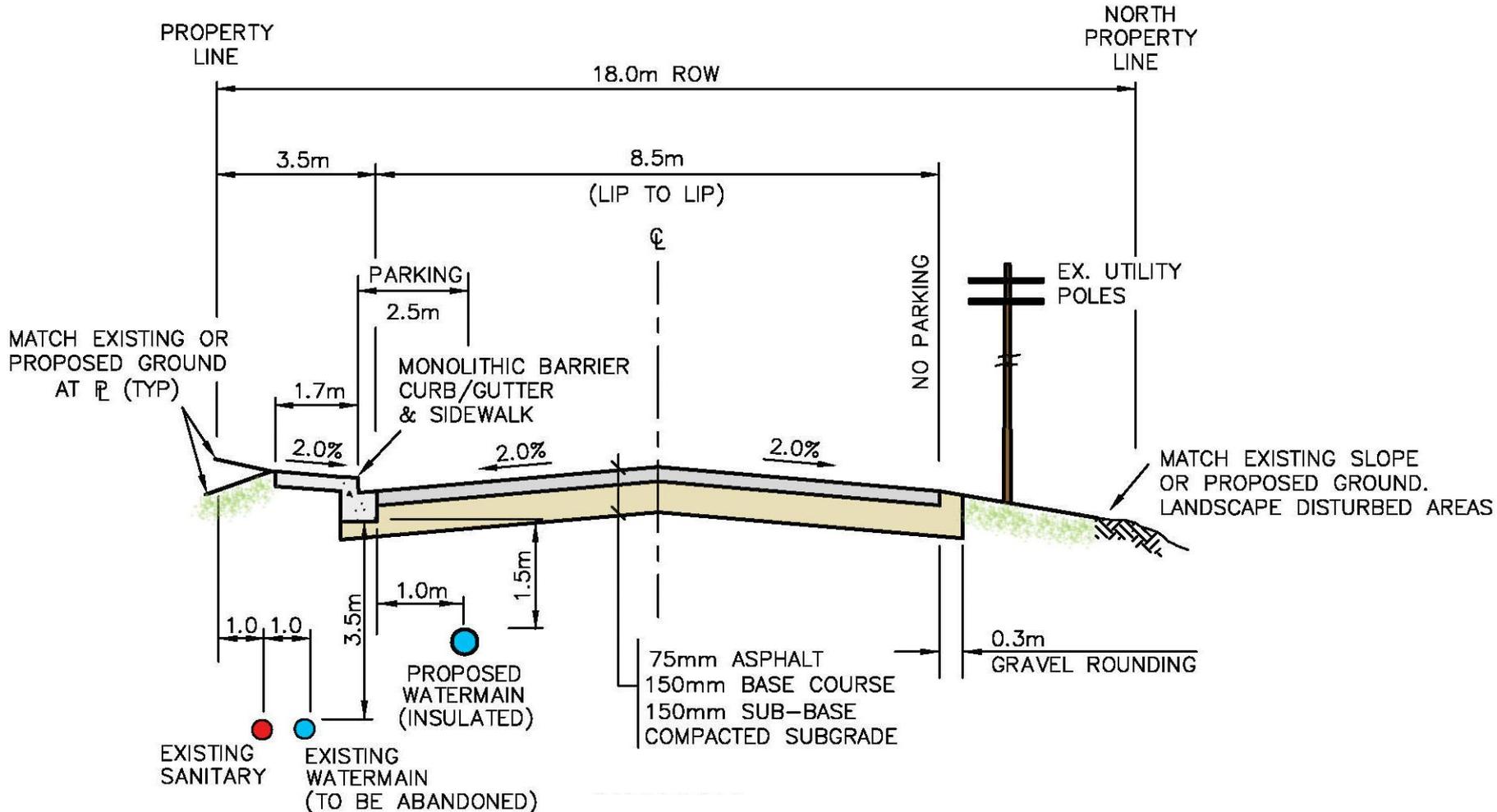
## Concerns:

- Speeding
- Lack of pedestrian infrastructure
- Lack of cycling infrastructure

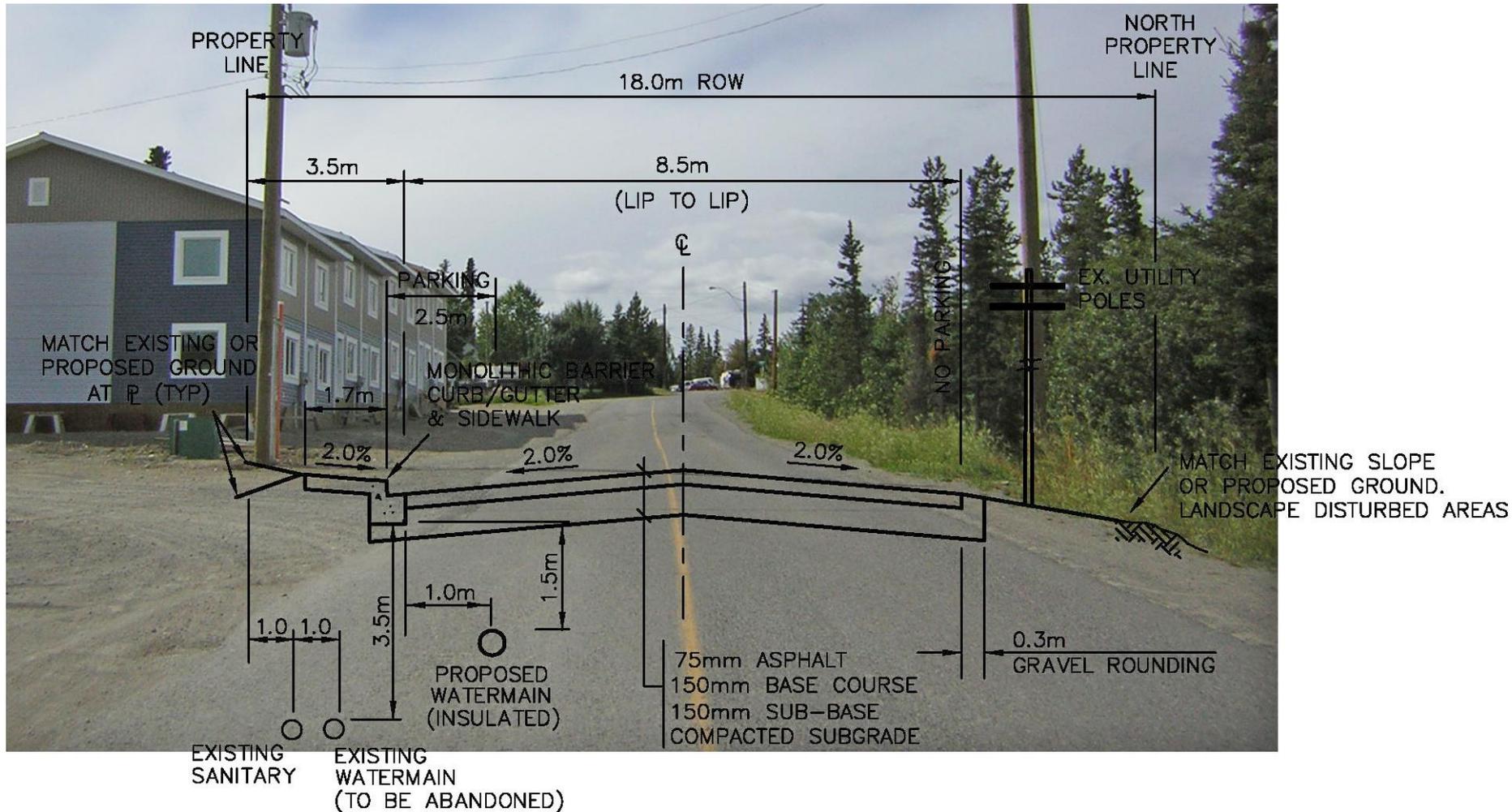
## Proposed infrastructure:

- Road:
  - Paved, 8.5 m wide (lip-to-lip)
  - No parking on north side
  - Parallel parking on south side
  - Painted bike symbols and chevrons on both sides
- Drainage:
  - Barrier curb and gutter on south side
  - Run-off into green space on north side
- Sidewalk:
  - South side extending to Alaska Hwy
  - 1.7 m wide

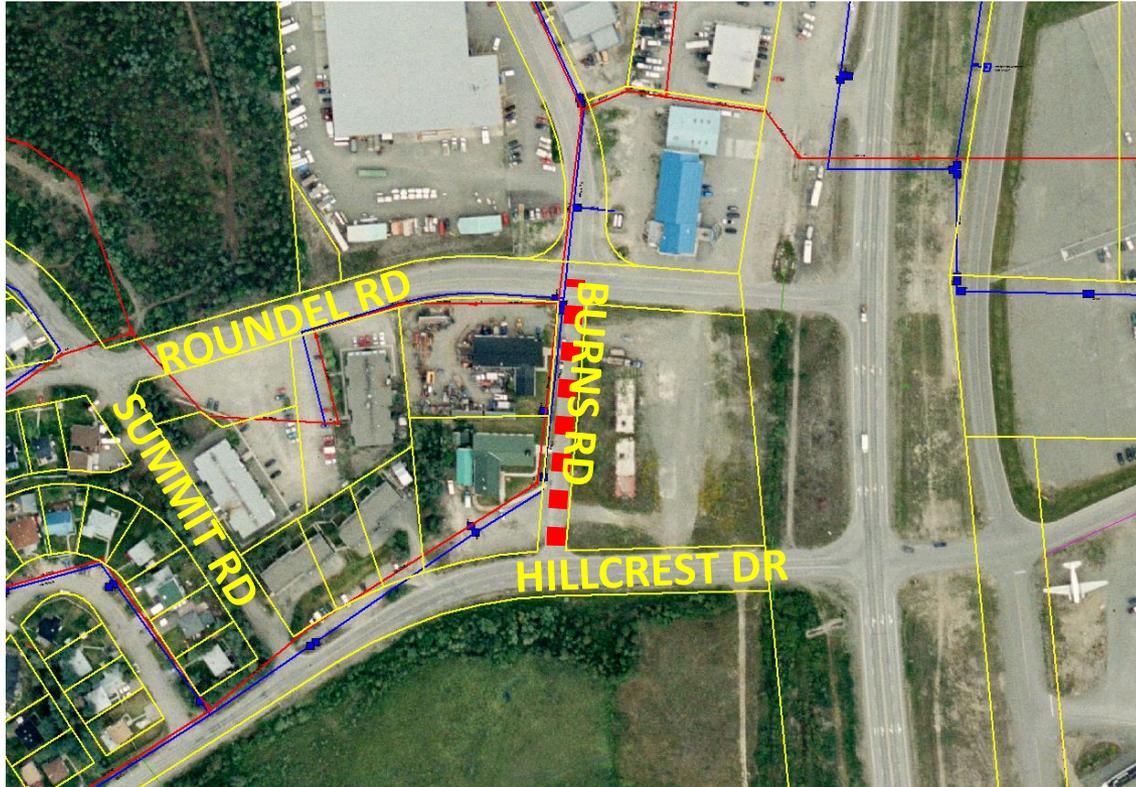
# Roundel Rd (Burns Rd to Summit Rd)



# Roundel Rd (Burns Rd to Summit Rd)



# Burns Rd



- Existing sewer main
- Existing water main
- Property line and ROW

# Burns Rd

## Existing infrastructure:

- ROW: 12 m
- Paved width: 6 - 6.5 m
- Gravel shoulders
- Storm ditches

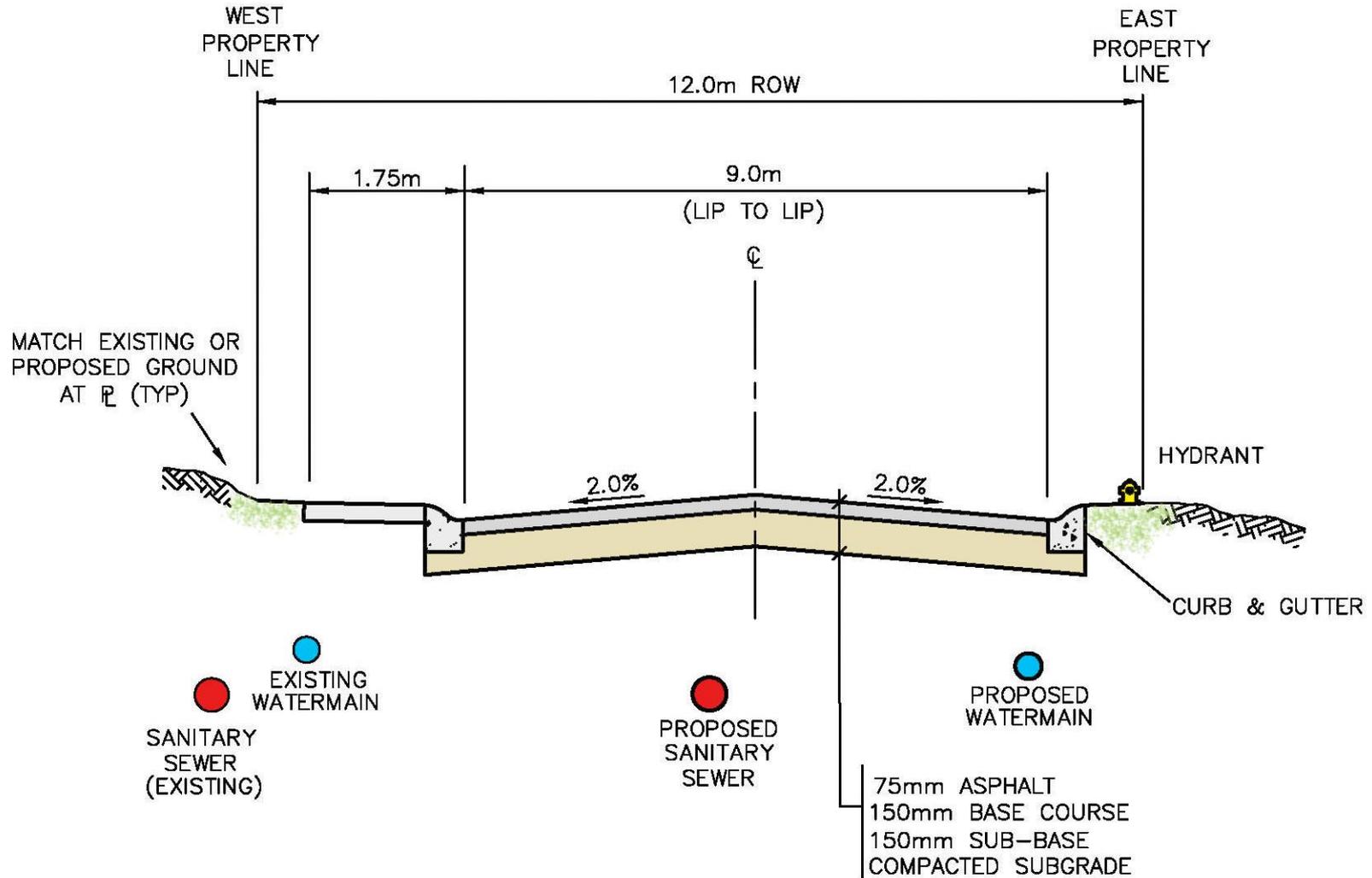
## Concerns:

- Lack of pedestrian infrastructure

## Proposed infrastructure:

- Road:
  - Paved, 9 m wide (lip-to-lip)
  - Undesignated parallel parking
- Drainage:
  - Rolled curb and gutter on both sides
- Sidewalk:
  - West side
  - 1.2 m wide

# Burns Rd



Not to scale.