



# 2020 Various Roads Drainage Improvements Program

Town of Innisfil

May 26, 2021



# Presentation Agenda

1. Project Understanding
2. Class EA Process
3. Problem or Opportunity (Class EA Phase 1)
4. Alternative Solutions & Recommendations (Class EA Phase 2)
5. Next Steps





# 1 PROJECT UNDERSTANDING

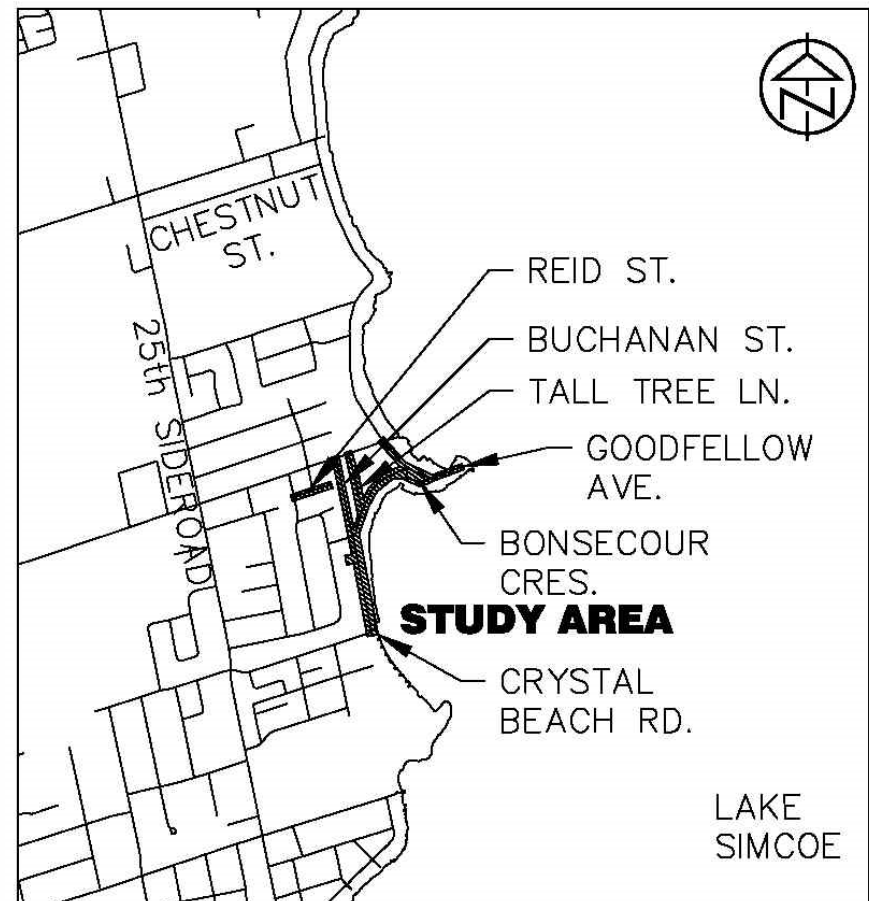


# What is the Town Trying to Achieve?

To develop possible solutions to known drainage problems for specific road areas in the Town.

These areas include:

- Buchanan St from 9th Line to Hartley Rd/Crystal Beach Rd;
- Tall Tree Ln from 9th Line to Crystal Beach Rd;
- Crystal Beach Rd from Roberts Rd to Goodfellow Ave;
- Goodfellow Ave from 9th Line to dead end of Goodfellow Ave;
- Reid St; and
- Bonsecour Cres.



# Study Background

- Drainage issues have been observed along Leonard's Creek, from Reid St to the Lake Simcoe outlet at Goodfellow Ave.
- Buchanan St typically sees seasonal flooding at the crossing of Leonard's Creek, severe enough to cause road closures in the spring and after heavy rainfalls.



Buchanan St Culvert Crossing, Looking Upstream



Buchanan St Culvert Crossing, Looking Downstream



# Study Background

- The following issues have been identified as contributing factors to the drainage problems occurring in the study area:
  - Climate change;
  - Low ground elevation and proximity to Lake Simcoe;
  - Development in floodplain; and
  - Upstream development resulting in increases to streamflow and water volumes travelling down Leonard's Creek.

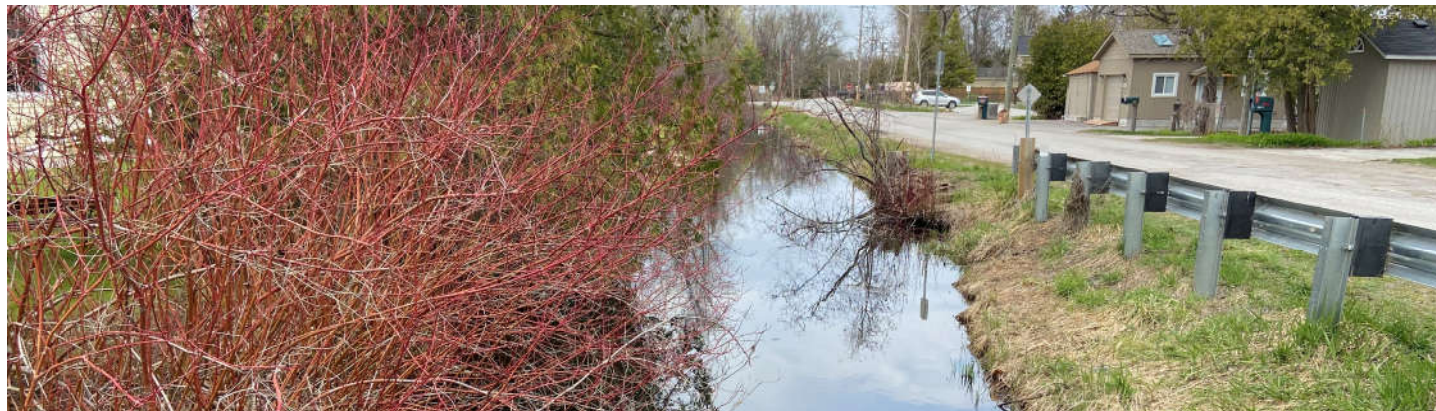




# How Can Identified Drainage Issues be Addressed?

The most direct way to restore floodplain capacity would be for the Town to acquire property along the creek corridor or acquire property to create a diversion with an alternate outlet to the Lake, however, both options are very expensive and not feasible in the short term.

This study will focus on other options to reduce flood risk, while allowing for the Town to look for opportunities to acquire property in the creek corridor in the future.



Leonard's Creek, Looking Upstream from Crystal Beach Rd



# What is the Purpose of this Study?

- Develop potential drainage improvements within the study area to provide improvements to flooding
- Assess the potential drainage improvements given potential environmental impacts
- Identify the preferred solutions
- Establish measures to reduce environmental impacts
- Satisfy the Class EA requirements
- Gather feedback from the Public



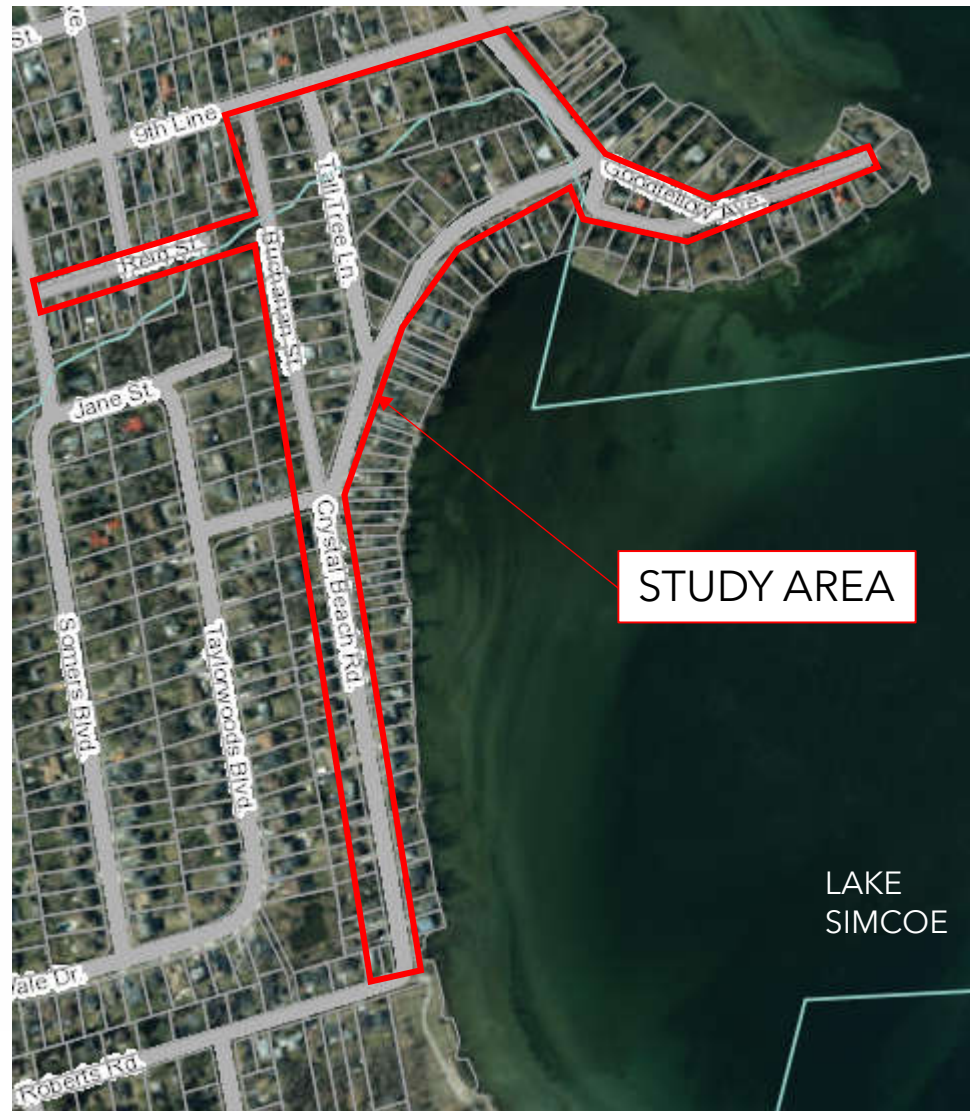


# What is the Purpose of this Information Session?

- Provide opportunity for public engagement
- Describe the study area, study purpose and objective
- Present the need and justification for the study and issues to be resolved
- Identify alternative solutions and potential environmental impacts
- Get feedback and comments to help us select preferred solutions

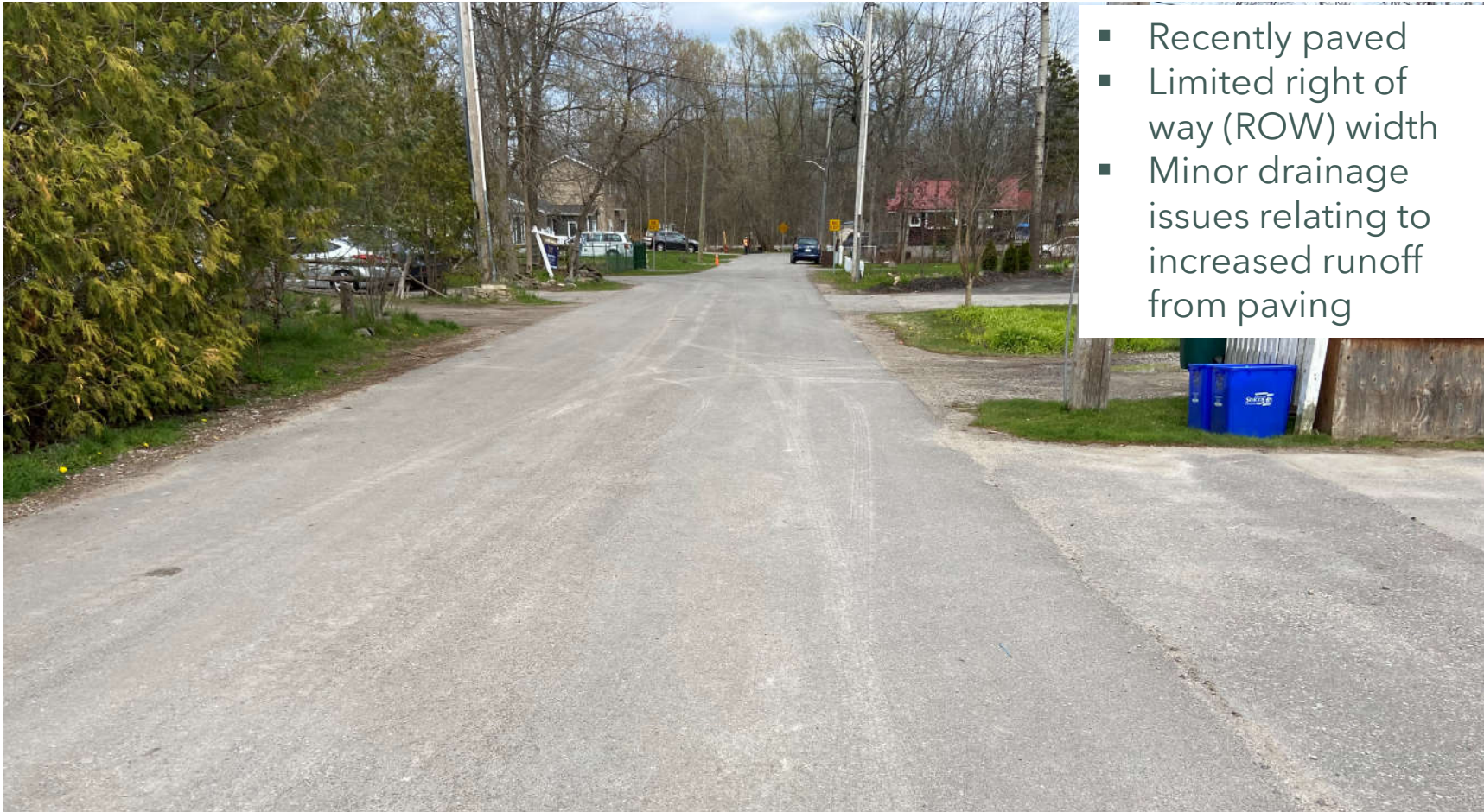


# Where is the Study Area?





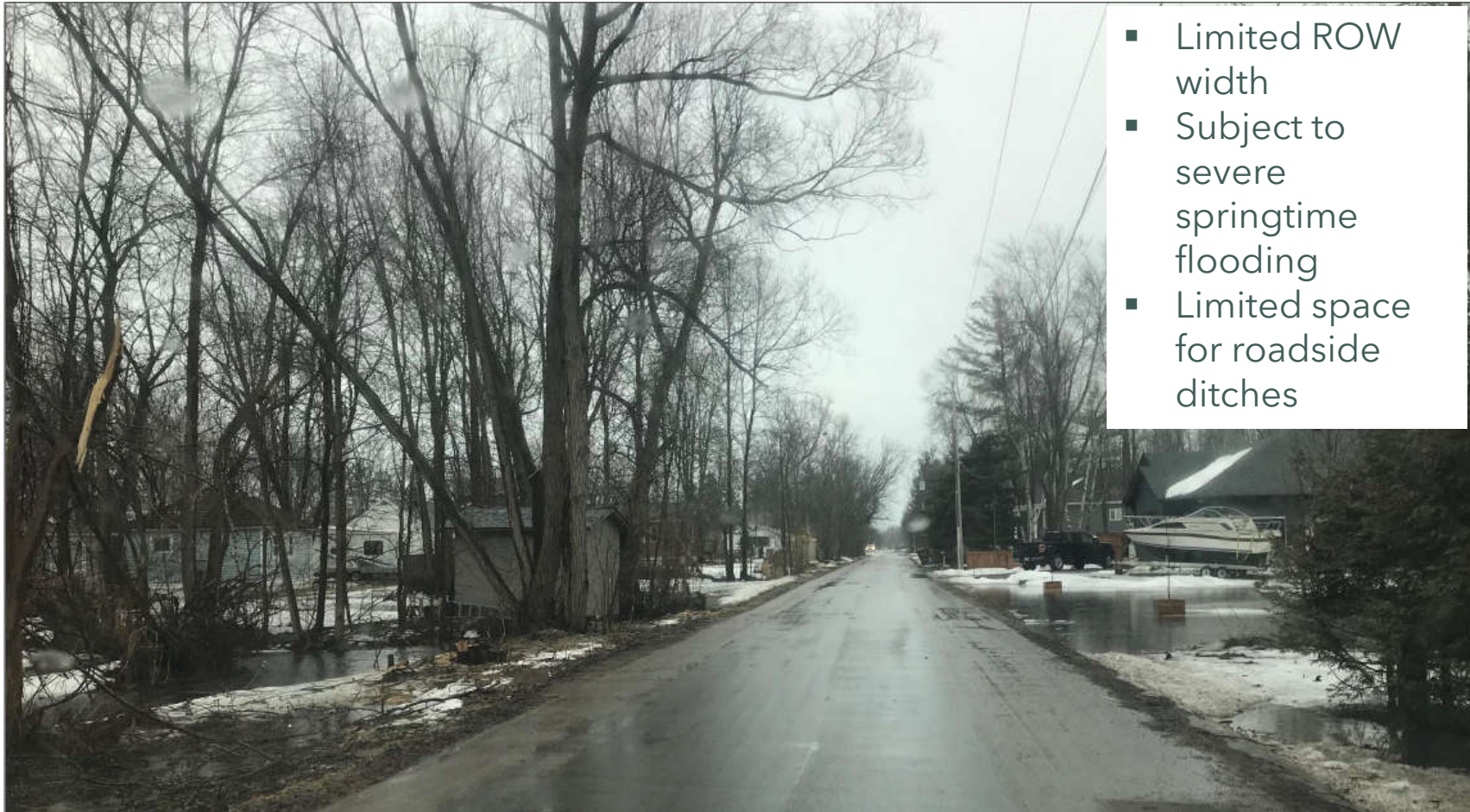
# What are the Existing Conditions Along Reid St?



- Recently paved
- Limited right of way (ROW) width
- Minor drainage issues relating to increased runoff from paving



## What are the Existing Conditions Along Buchanan St?





## What are the Existing Conditions Along Tall Tree Ln?





# What are the Existing Conditions Along Goodfellow Ave?



- Paved road transitions to gravel
- Limited ROW width
- Ponding issues reported for multiple driveways





## What are the Existing Conditions along Bonsecour Cres?



- Gravel surface
- No guide rail protection
- Limited ROW width
- Ponding issues reported for multiple driveways





## What are the Existing Conditions Along Crystal Beach Rd?



- Ponding issues reported for multiple driveways
- Ditch in west boulevard only



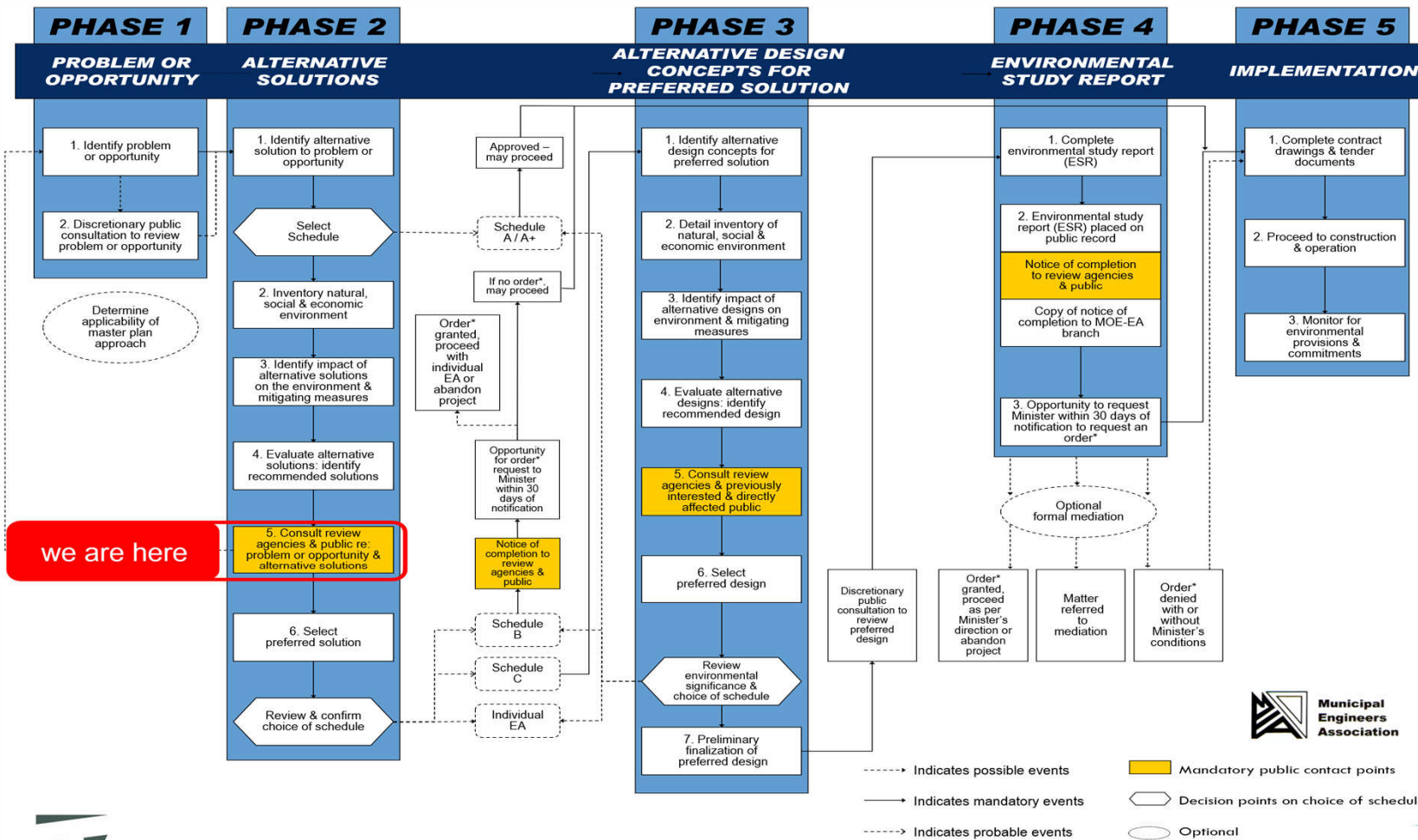


# 2 CLASS EA PROCESS



# What is a Class Environmental Assessment?

It is a standardized planning procedure for common Municipal projects

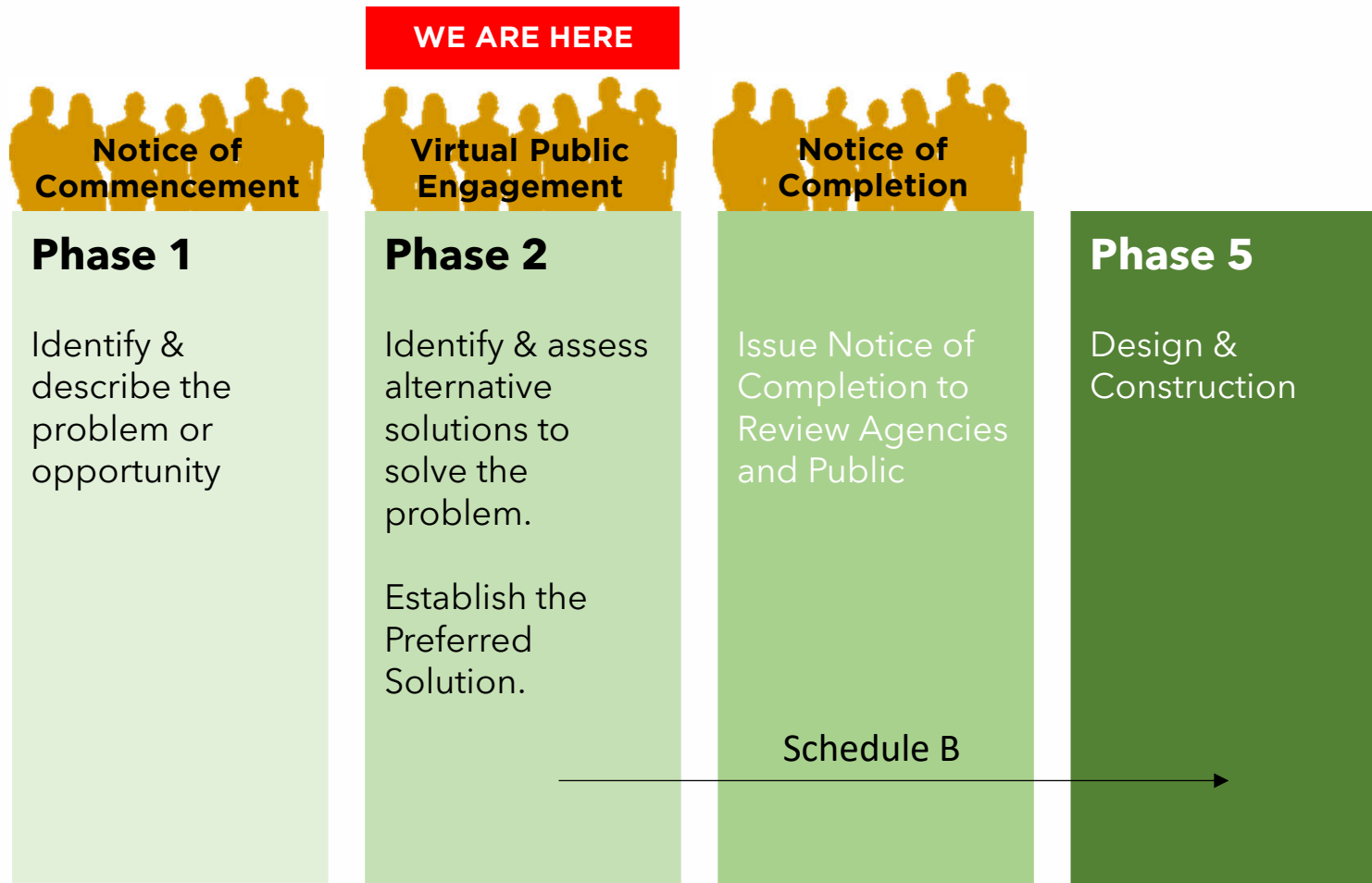


we are here





# In More Simple Terms





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# PROBLEM / OPPORTUNITY STATEMENT



# Problem/Opportunity Statement

The study area experiences flooding during the spring and after heavy rainfalls. While historical flooding due to development of the Leonard's Creek floodplain has been documented in the study area, Town staff have noted that seasonal flooding problems have worsened in recent years.

The study area requires solutions to improve drainage conditions, as a result of resident requests, road closures due to flooding and high maintenance demands on the Town.



Leonard's Creek Looking Upstream from Buchanan Street





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# ALTERNATIVE SOLUTIONS & RECOMMENDATIONS



## Alternative #1 - Do Nothing

- Study Area to remain in existing condition (i.e. no proposed drainage improvements)
- Alternative provides no solutions to drainage issues



Existing Outlet #1 Channel



Existing Outlet #2





## Alternative #2 - Replacement of Crystal Beach Rd Culverts

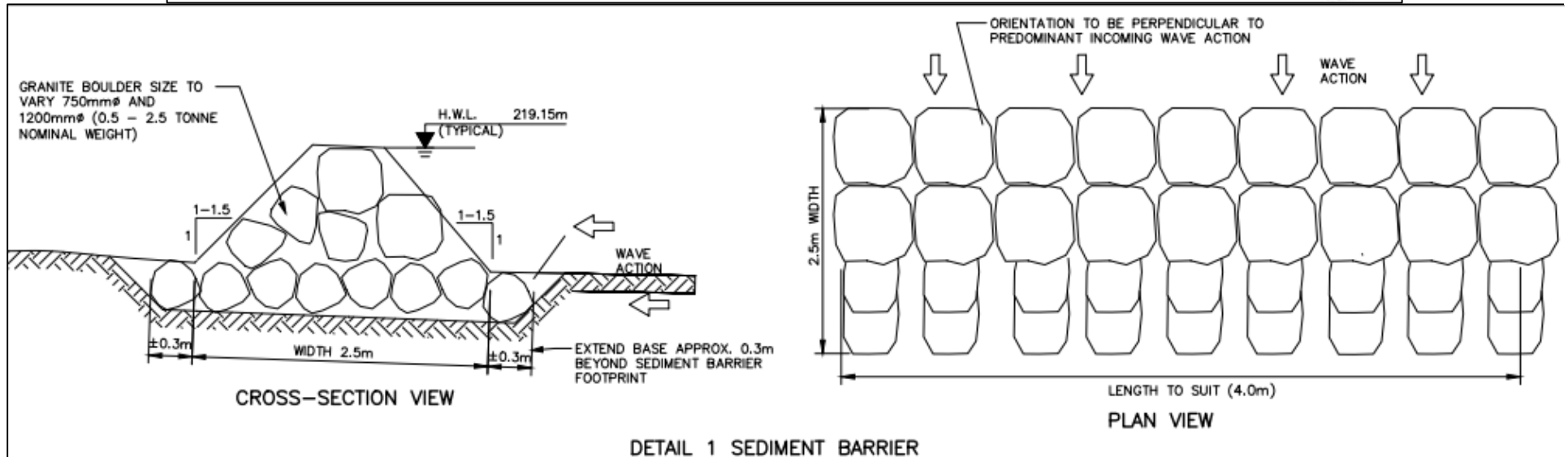
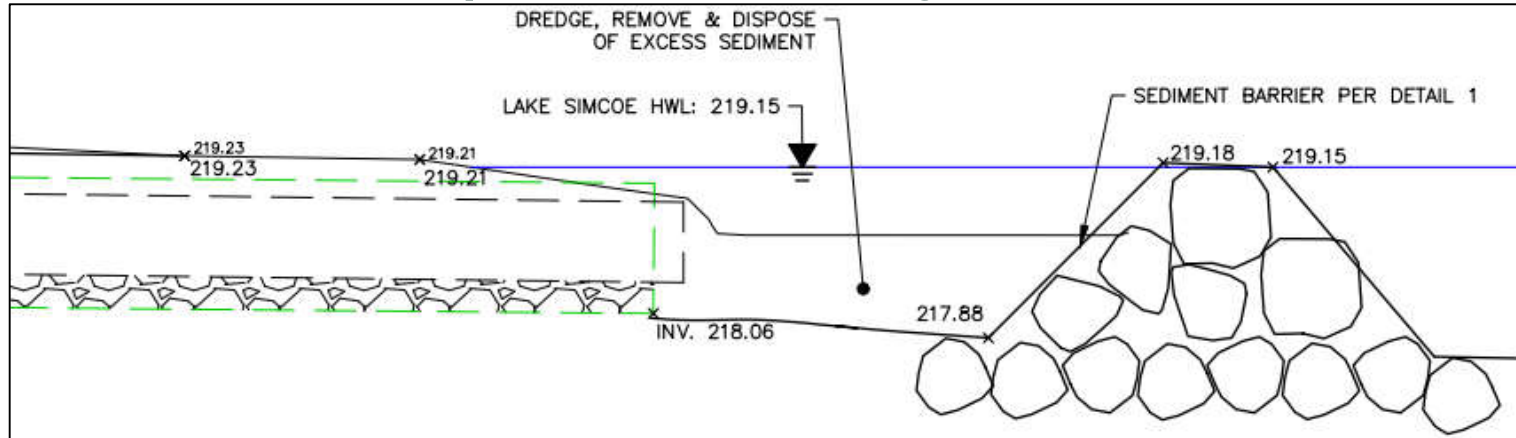
- Existing culverts to be removed and replaced with two larger corrugated pipe arch culverts
- Create a defined low point in Crystal Beach Rd to better convey flow that overtops the road toward Lake Simcoe
- Create sediment barrier to protect culvert outlets from being blocked by lake sediment



Existing Culverts at South end of Crystal Beach Rd (Upstream End)

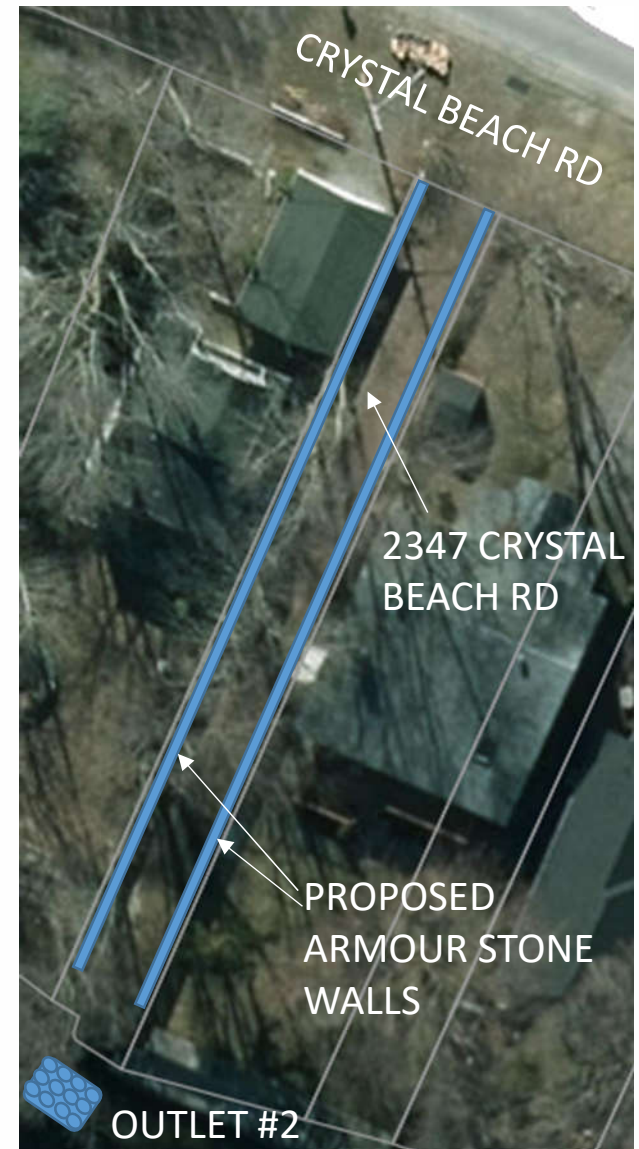
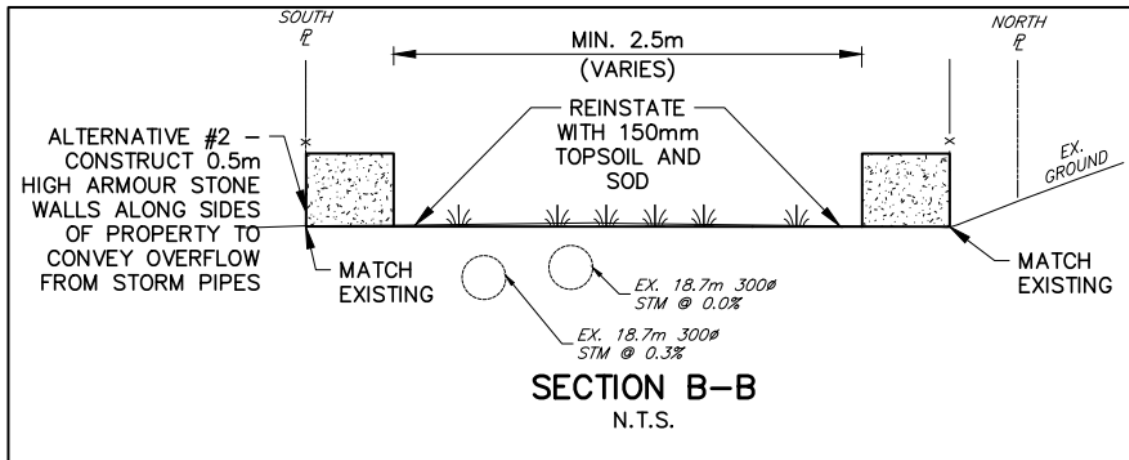


# Alternative #2 - Replacement of Crystal Beach Rd Culverts



## Alternative #3 - Improvements to Tall Tree Ln Outlet

- Construct armour stone wall along north and south property lines to better contain overflowing flows
- Install a sediment barrier to protect pipe outlets from sediment accumulation
- May impact roots of trees on adjacent private properties





## Alternative #4 - Ditch Improvements

- Minor regrading of ditches where possible
- Upgrading driveway culverts to provide additional capacity
- Construct a roadside ditch from 2385 Crystal Beach Rd to Leonard's Creek
- Installation of a minor swale along Goodfellow Ave east of Crystal Beach Rd
- Regrade and resurface Bonsecour Cres, installation of minor swales in boulevard



Existing Crystal Beach Rd Ditch Looking North from South End



## Alternative #5 - Replacement of Culvert Crossing Hartley Rd at Crystal Beach Rd

- Existing culvert is deteriorated (inlet is blocked/caved in) and requires replacement to prevent upstream ponding
- To be replaced with new culvert of the same size



Existing Hartley Rd Culvert Inlet



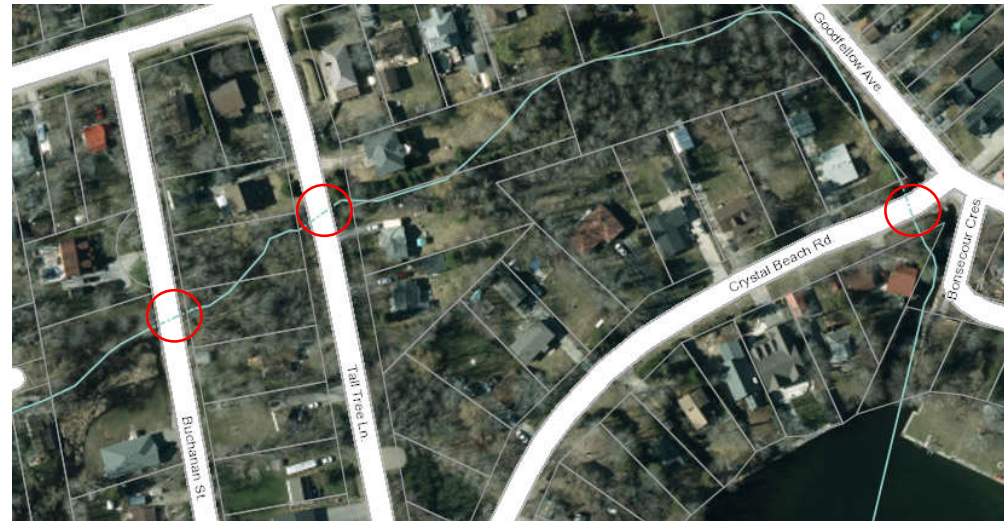
Existing Hartley Rd Culvert Outlet (Looking South on Crystal Beach Rd)





# Alternative #6 - Upgrade Leonard's Creek Culvert Crossings

- Add culverts to allow for more flow to be conveyed through culverts at Crystal Beach Rd, Tall Tree Ln and Buchanan St
- The existing culverts are lower than the Lake Simcoe high water level, which limits the flow that can travel through the culverts



Existing Leonard's Creek Culvert Crossing Locations



Existing Buchanan St Culverts



Existing Tall Tree Ln Culvert

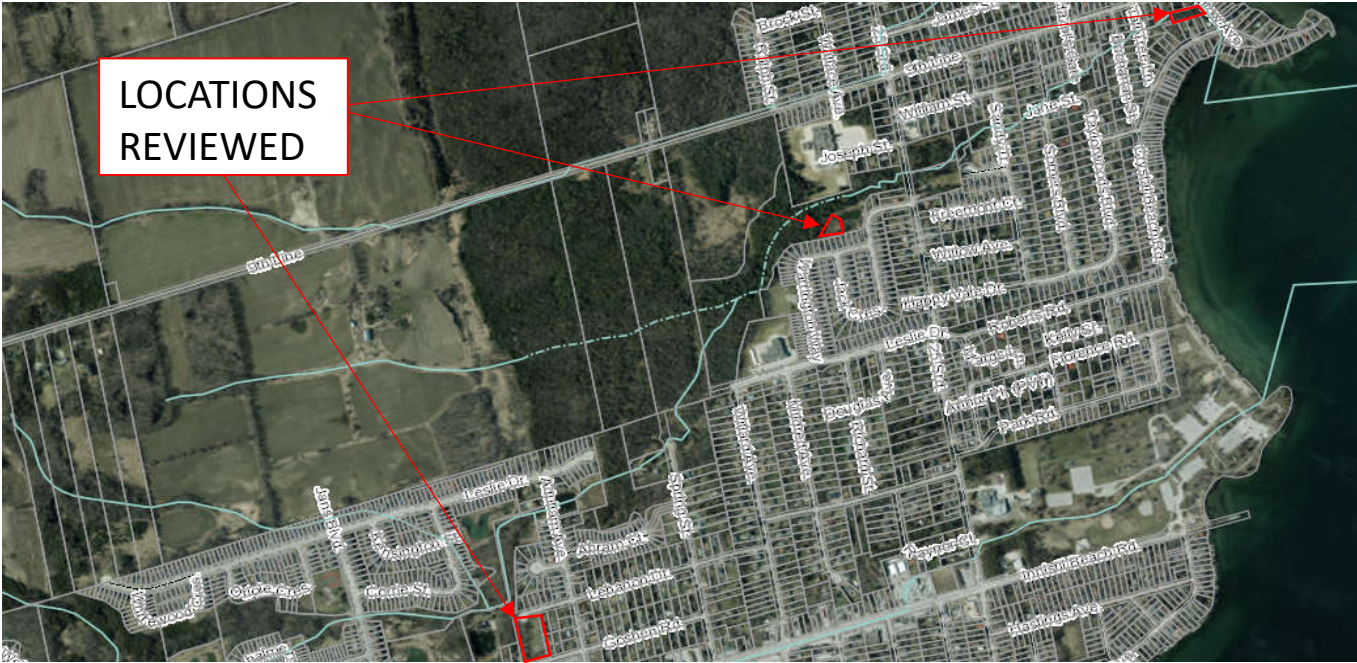


Existing Crystal Beach Rd Culvert



# Alternative #7 - Upstream Wetland Reconstruction Screening

- Upstream Town-owned properties were reviewed for possible wetland creation opportunities
- Constructed wetland would provide water storage to reduce the rate of flow in the creek through the study area, and reduce flooding impacts
- However, the sites available were not large enough to provide meaningful improvements to flood conditions in the study area, and therefore wetland creation is not recommended





## Alternative #8 - Implement Recommendations from Alcona North Secondary Plan

- Implement Policy Controls for Upstream Development, including:
  - Stricter stormwater management controls to be provided for new developments, to reduce flows released to Leonard's Creek
  - Improvements and maintenance for existing upstream stormwater management ponds to reduce flows released to Leonard's Creek
  - Require infiltration measures for new development and improvements to existing stormwater facilities to reduce stormwater runoff volumes released to Leonard's Creek
- Changes implemented through these policy controls can reduce peak flow rates (meaning the maximum rate that water travels through the creek after a storm event) in the study area by up to 25%

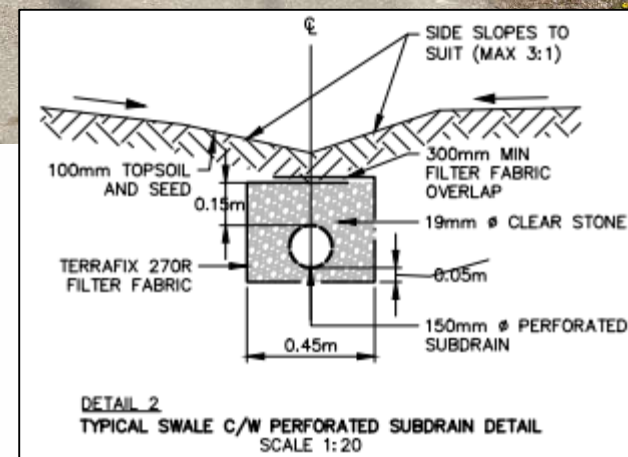


## Alternative #9 - Drainage Improvements at Reid St

- Reinstate minor drainage ditch on both sides of Reid St, include perforated subdrains in stone infiltration trenches
- Would lessen drainage issues as a result of Reid St and Hazel's Gate paving works

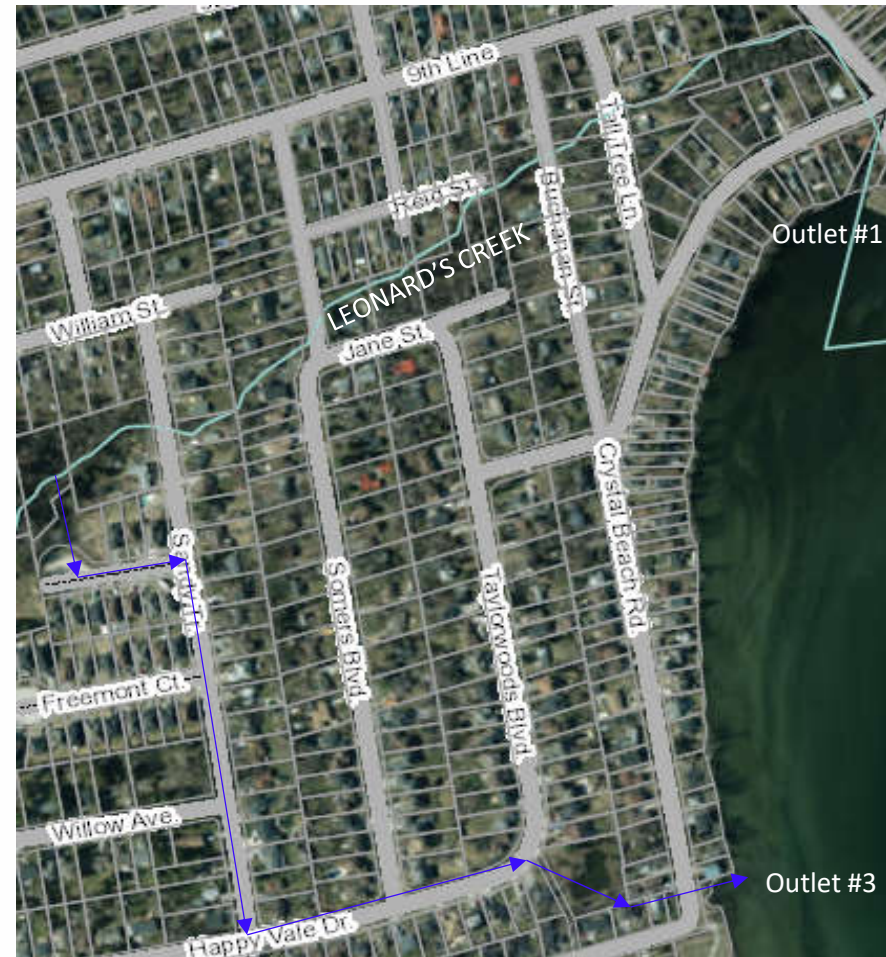


Existing Reid St ROW



## Alternative #10 - Storm Sewer Diversion from Chappell Court/Sandy Trail

- Diversion of flow from Leonard's Creek via storm sewers on Chappell Court and Sandy Trail to Happy Vale Drive to Outlet #3
- Happy Vale Drive storm sewer system does not have enough capacity for the area it currently serves
- Would result in minor improvements at Leonard's Creek outlet, but not recommended due to very high capital cost and possible negative impacts on Outlet #3



Leonard Creek Diversion via storm sewer to Outlet #3





## Alternative #11 - Rain Barrel Program

- Encourage residents to install rain barrels to collect rainwater from roof downspouts
- Will not significantly reduce flood flows in the study area, but will reduce runoff from lots under light rainfall conditions
- Provides minor local improvement, increased public education and engagement



Rain Barrel



## Alternative #12 - Diversion Through 9<sup>th</sup> Line Park

- Grade a ditch from Goodfellow Ave to Lake Simcoe, upsize culverts at pedestrian crossing
- Install culverts under Goodfellow Ave at 9<sup>th</sup> Line
- Reduce flows in Leonard's Creek and divert flows from Outlet #1

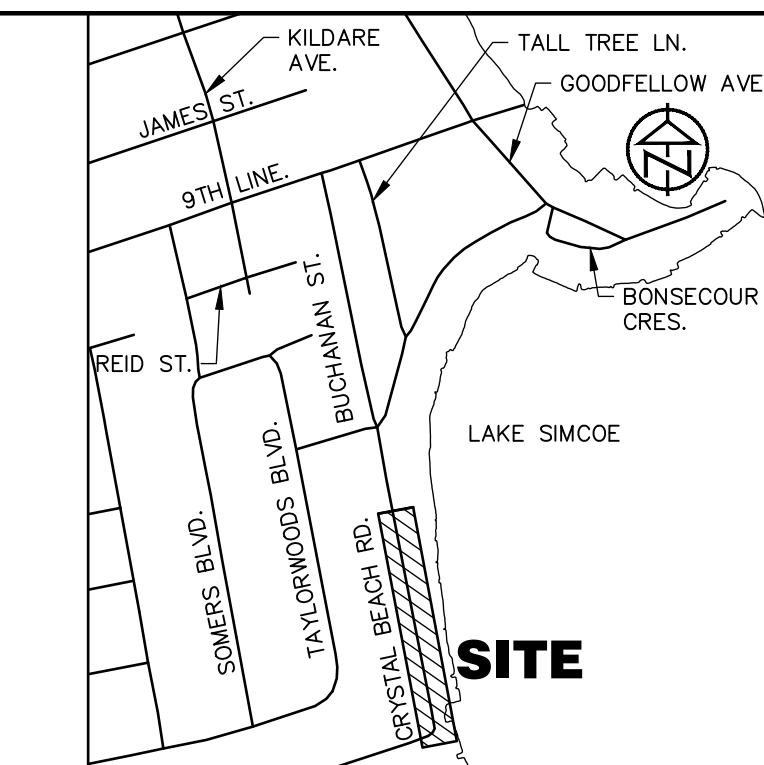
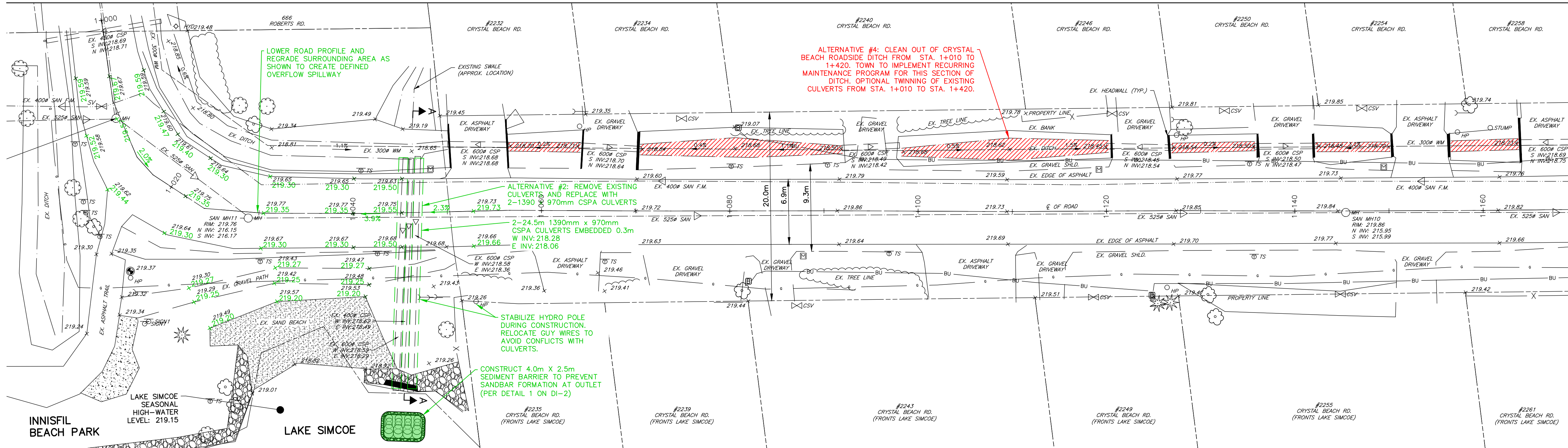


9<sup>th</sup> Line Park

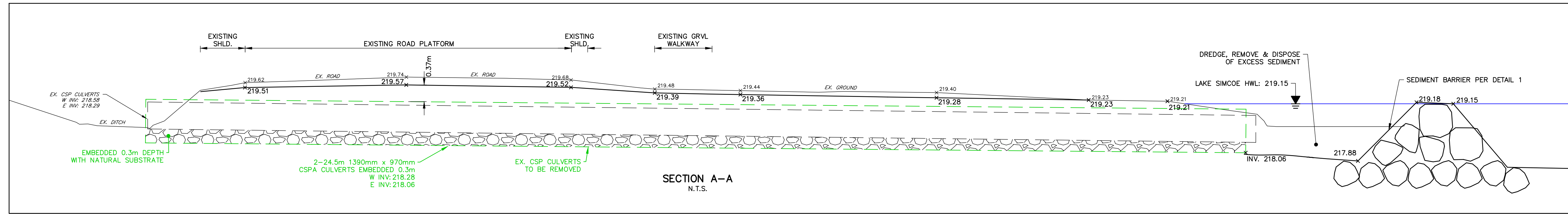




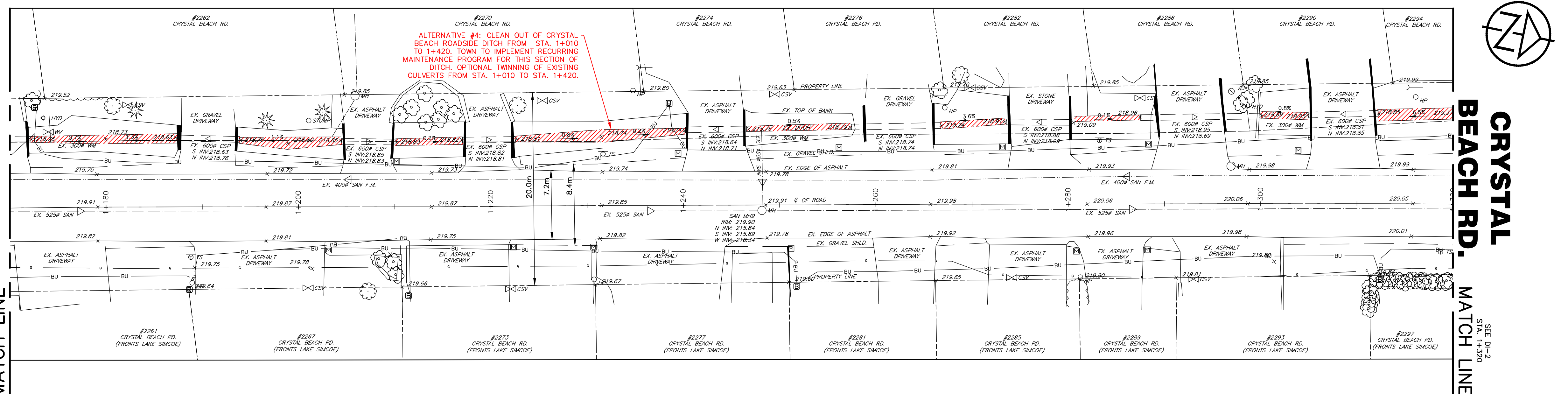
# ROBERTS RD.



CRYSTAL BEACH RD. MATCH LINE



CRYSTAL BEACH RD. MATCH LINE



CRYSTAL BEACH RD. MATCH LINE

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**NOTES**  
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**2020 VARIOUS ROADS DRAINAGE IMPROVEMENTS INNISFIL, ON**  
**CRYSTAL BEACH ROAD STA. 1+000 - STA. 1+320**

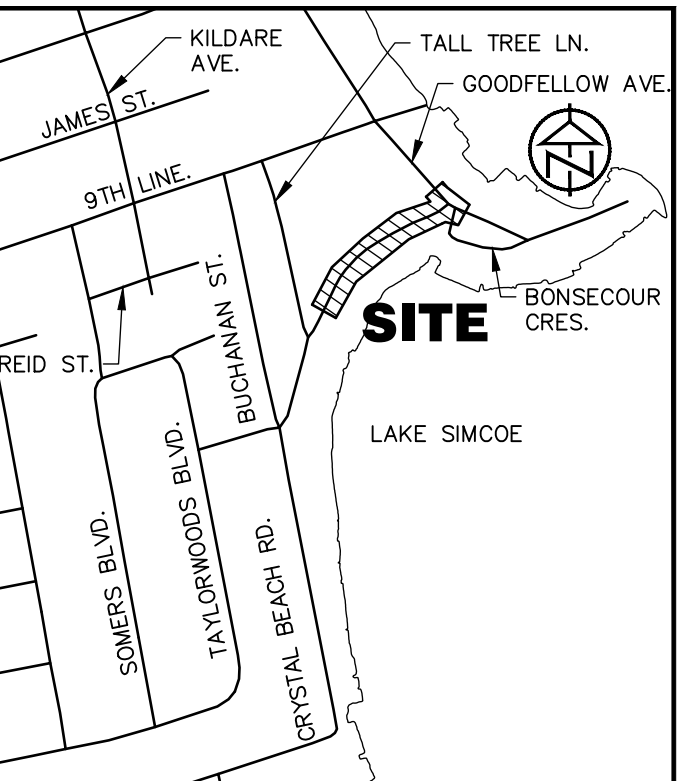
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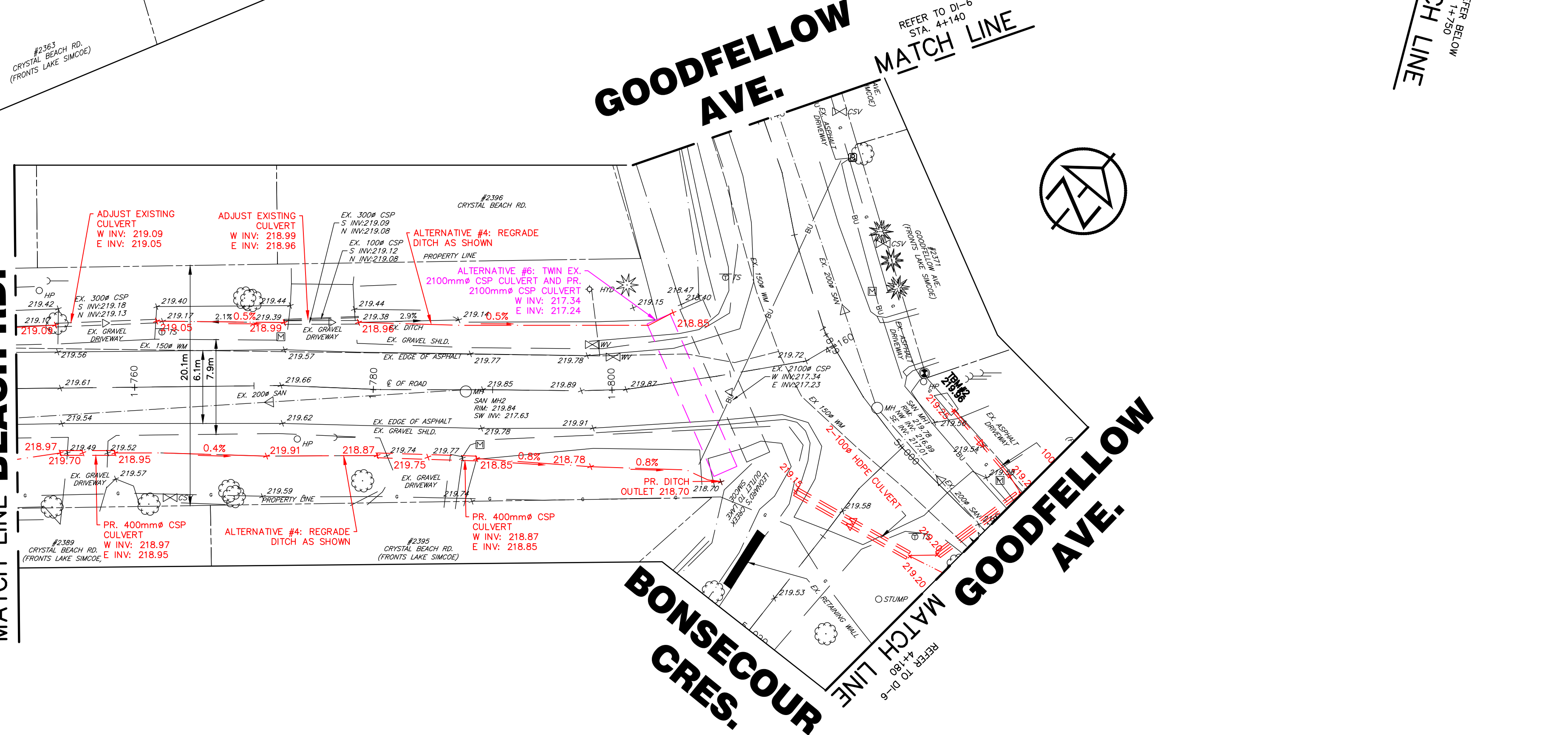
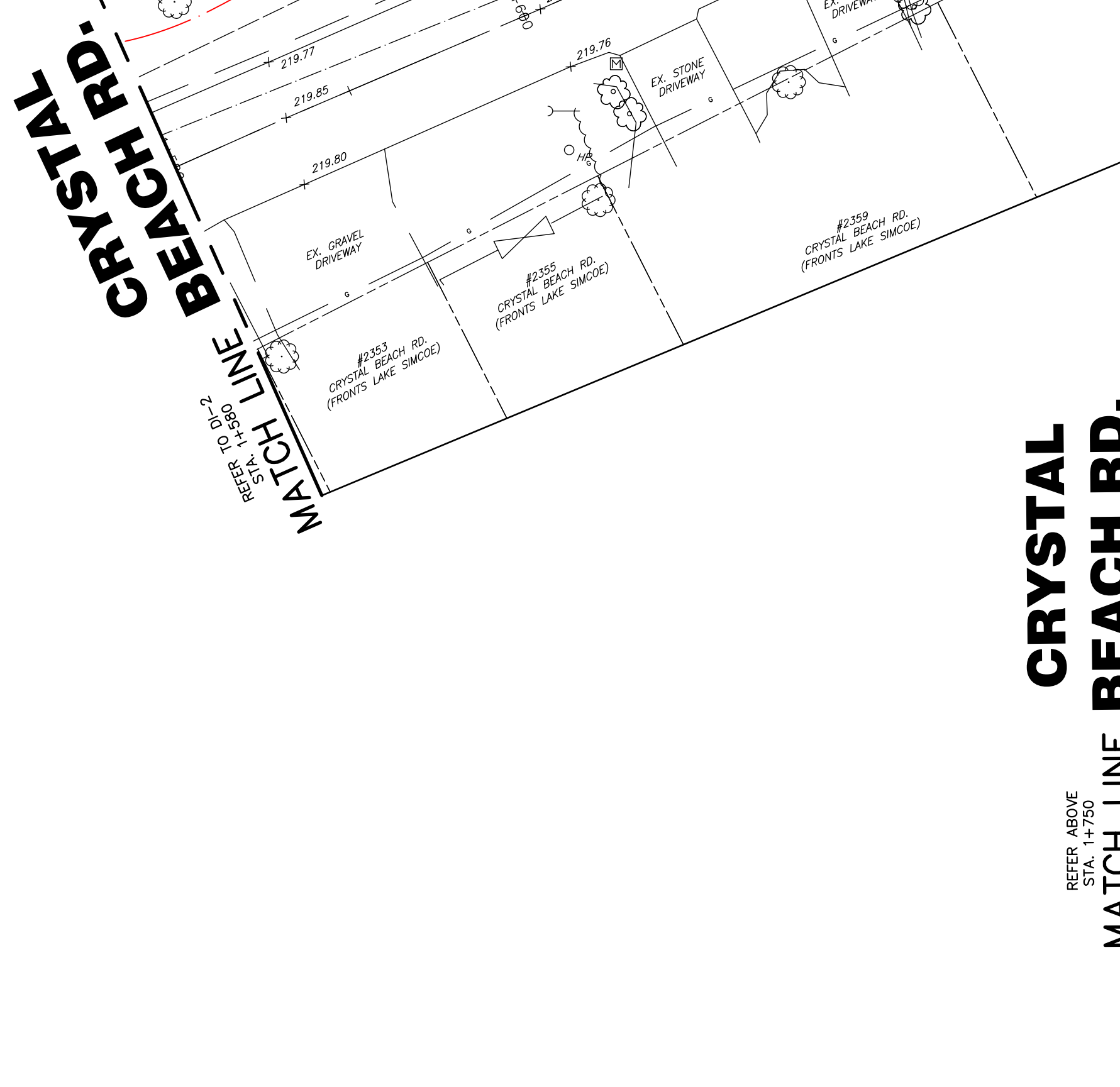
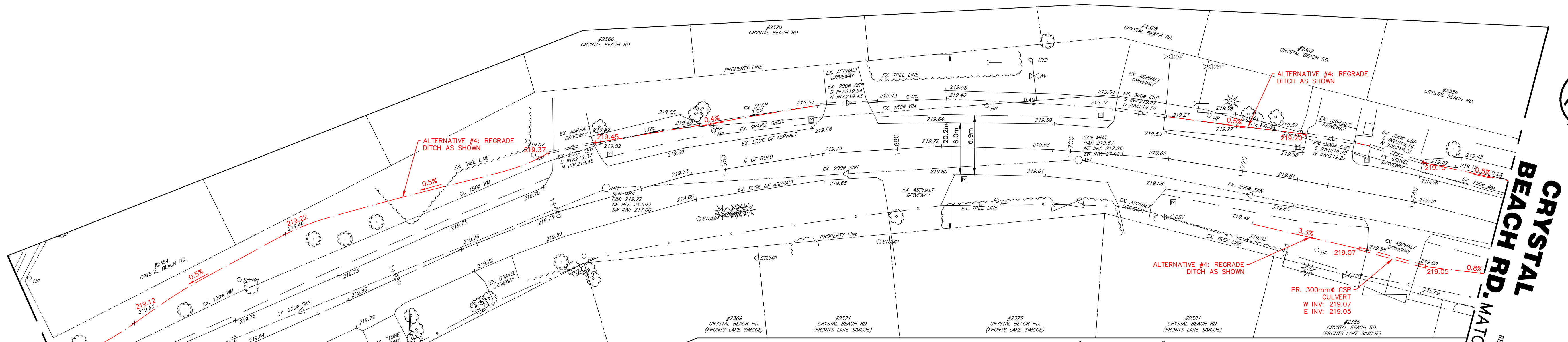








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INNISFIL, ON

CRYSTAL BEACH ROAD  
STA. 1+580 - STA. 1+819

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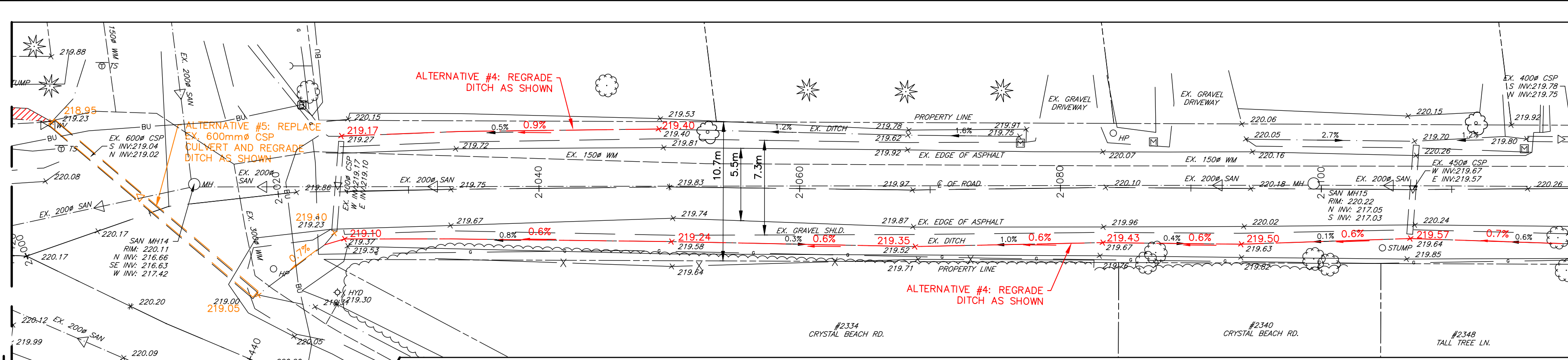
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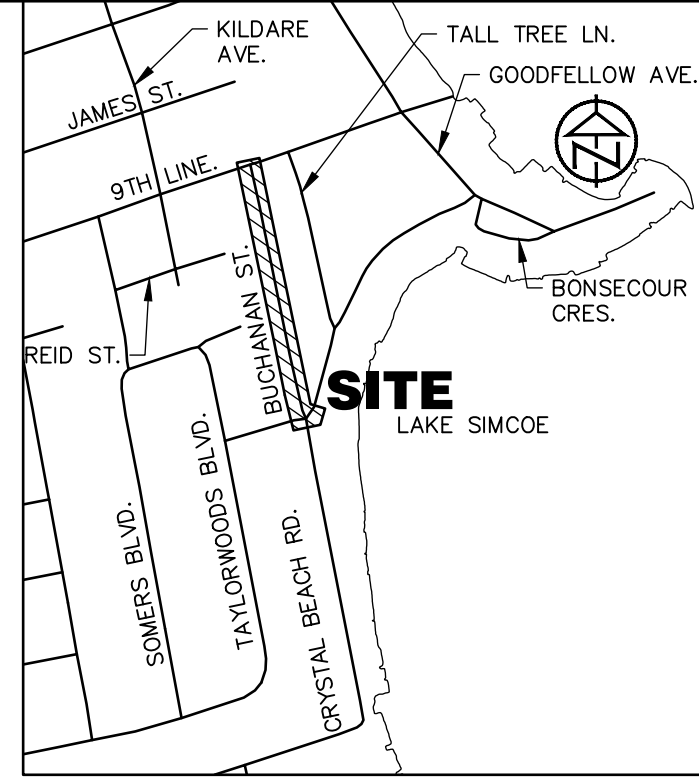
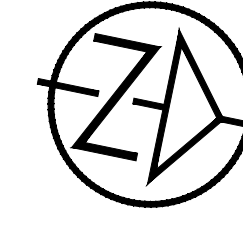
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**BUCHANAN ST. MATCH LINE**

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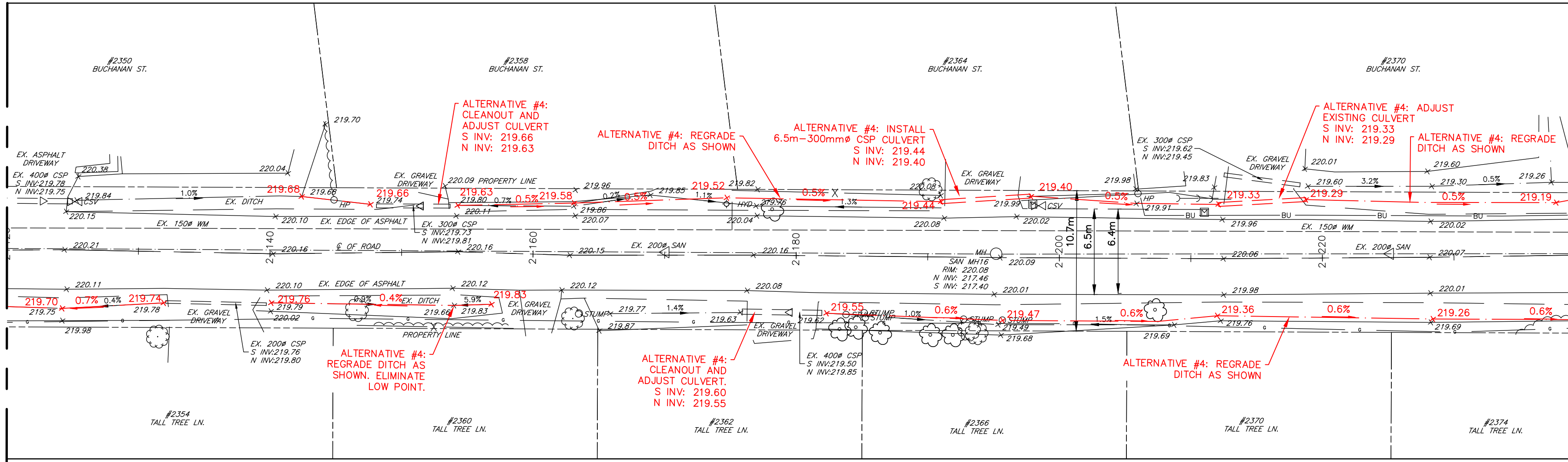


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**BUCHANAN ST.**

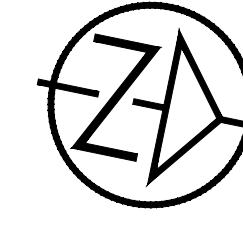
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MATCH LINE



**BUCHANAN ST. MATCH LINE**

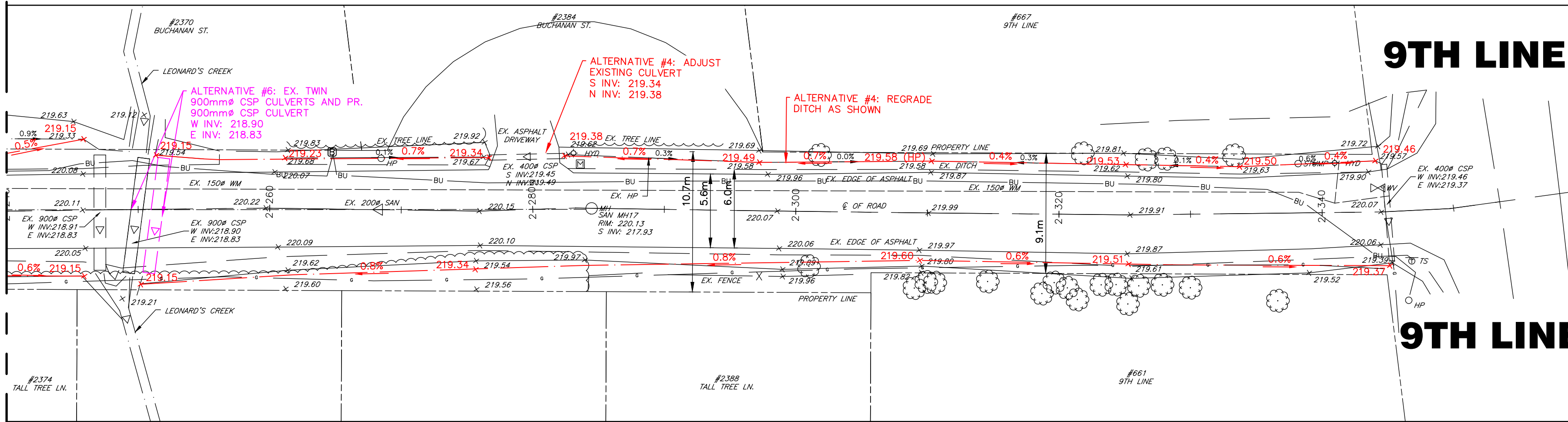
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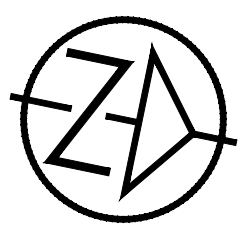
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**9TH LINE**

**9TH LINE**



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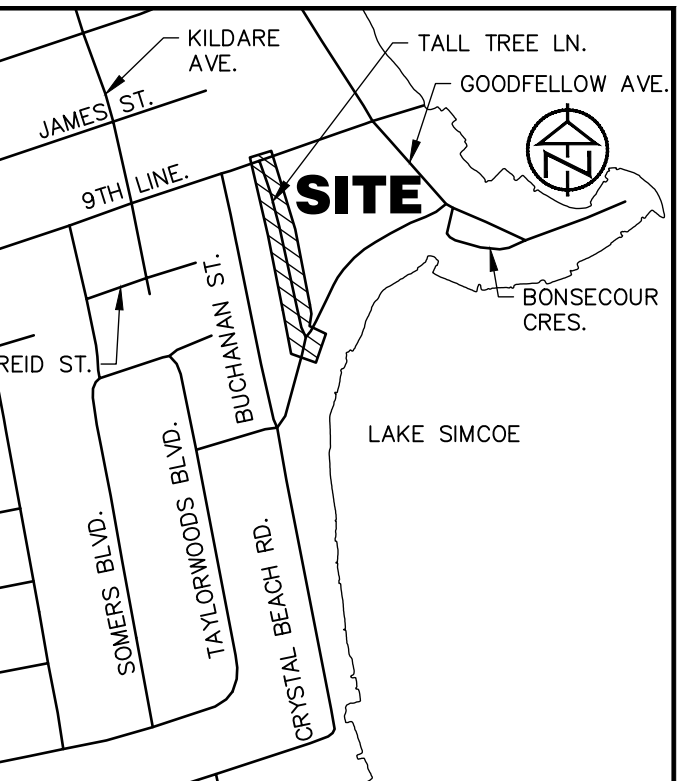
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STA. 2+000 - STA. 2+360



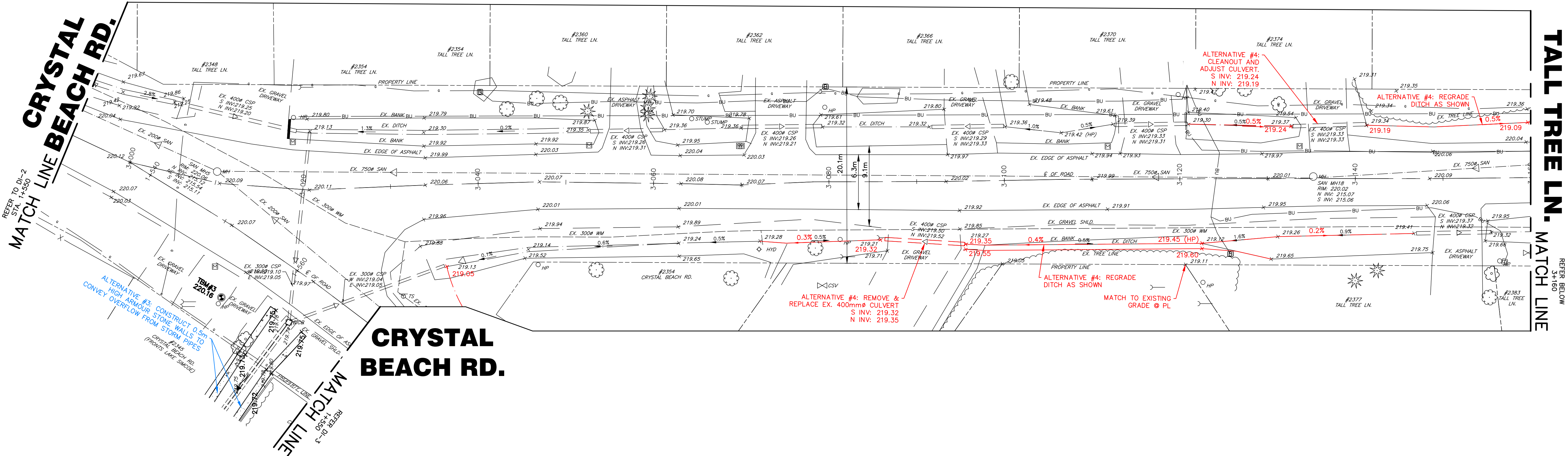
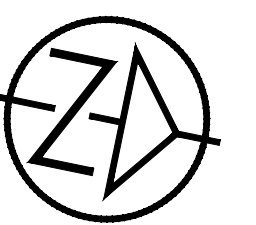
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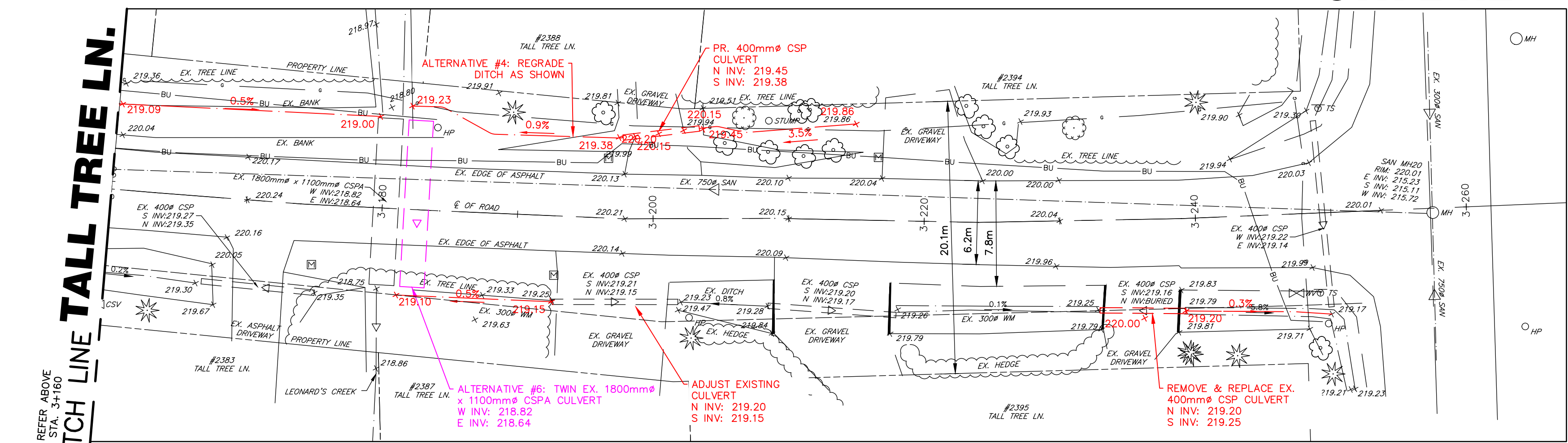
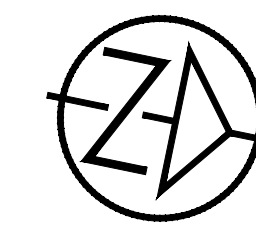


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**CRYSTAL BEACH RD.**

**9TH LINE**



**9TH LINE**

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TALL TREE LANE  
STA. 3+000 - STA. 3+269

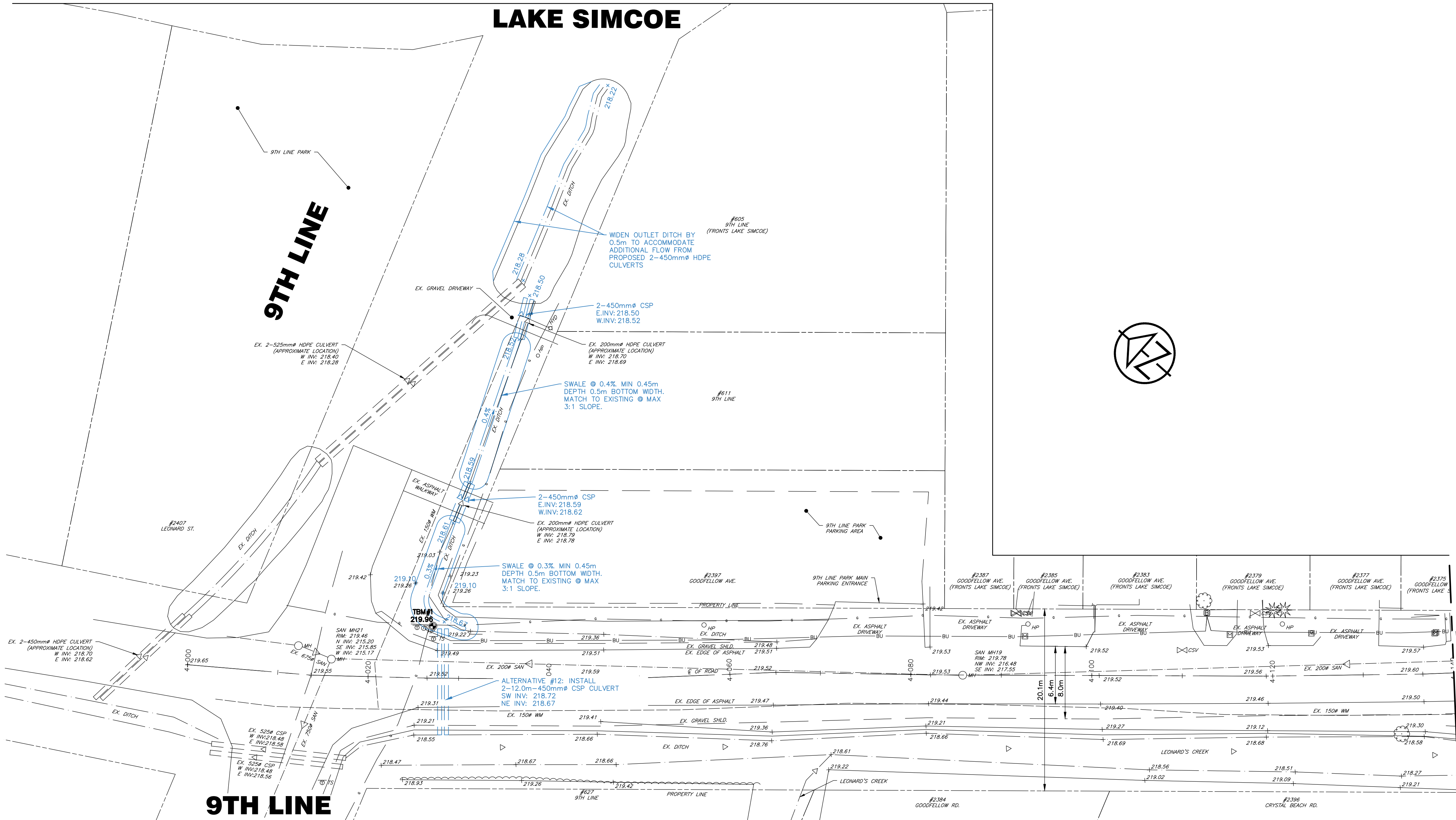
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**KEY PLAN**  
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**GOODFELLOW AVE.**  
MATCH LINE  
REFER BELOW  
4+140

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BM2 - ELEVATION 219.96  
BOLT ON WEST FACE OF HYDRO POLE AT INTERSECTION OF CRYSTAL BEACH ROAD, GOODFELLOW AVE, AND BONSECOUR CRESCENT. THE HYDRO POLE IS LOCATED ON THE EAST SIDE OF THE ROAD, BETWEEN HOUSE #2371 & 2369.  
BM3 - ELEVATION 220.18  
NAIL AND WASHERS IN NORTH FACE OF HYDRO POLE AT SOUTH SIDE OF INTERSECTION OF CRYSTAL BEACH ROAD AND TALL TREE LANE ON SOUTH SIDE OF CRYSTAL BEACH ROAD, POLE IN FRONT OF HOUSE #2351

**NOTES**  
TOPOGRAPHIC SURVEY COMPLETED BY TATHAM ENGINEERING FOR THE TOWN OF INNISFIL VARIOUS ROADS DRAINAGE STUDY COMPLETED AUGUST 2020

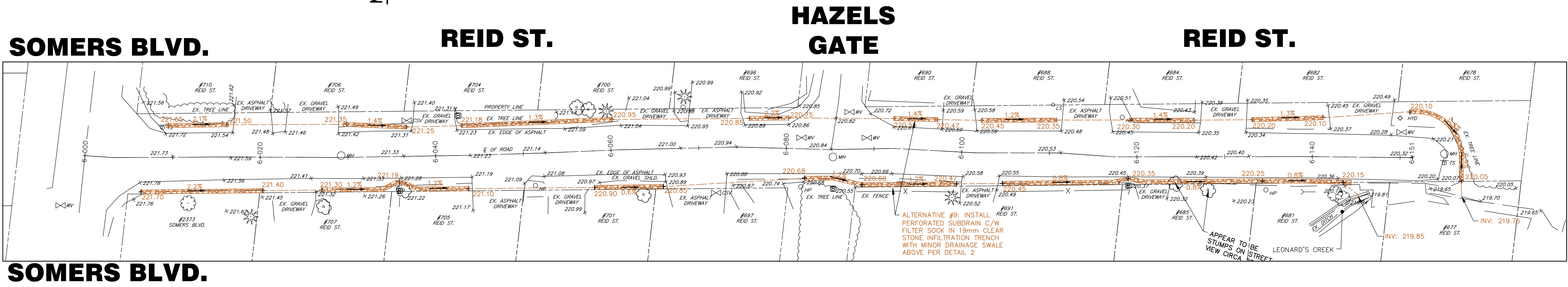
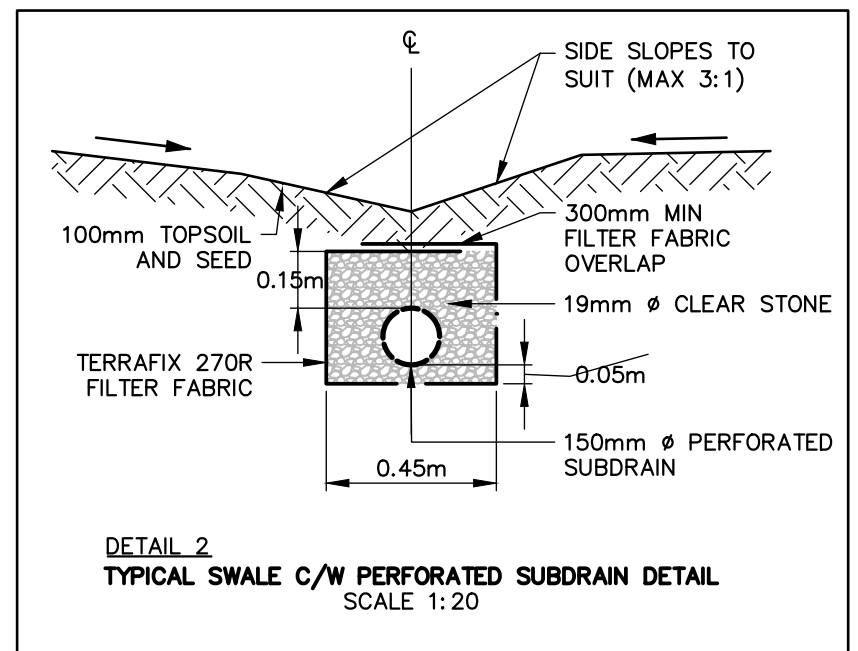
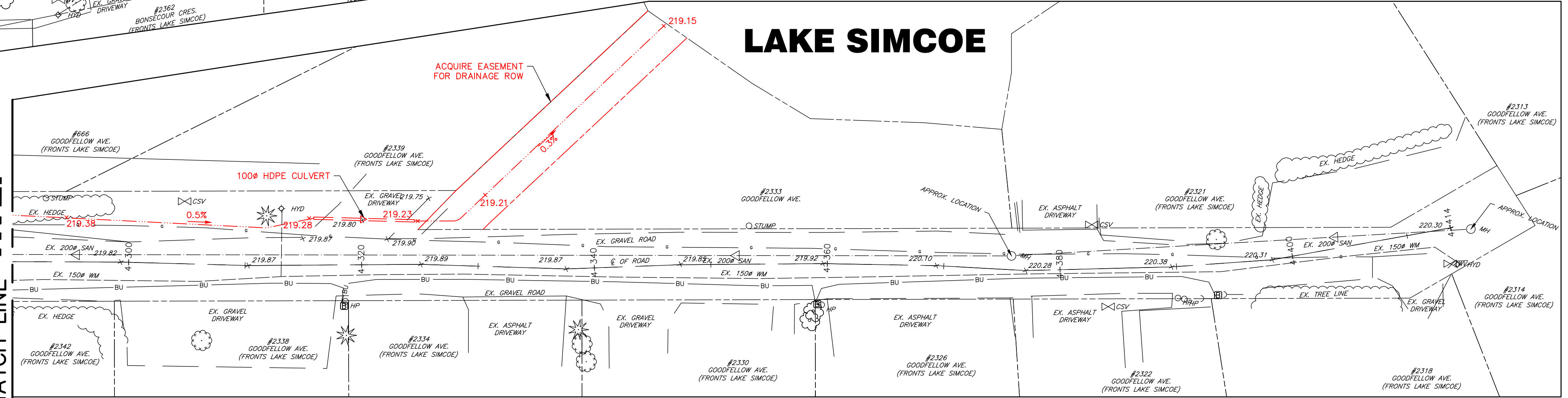
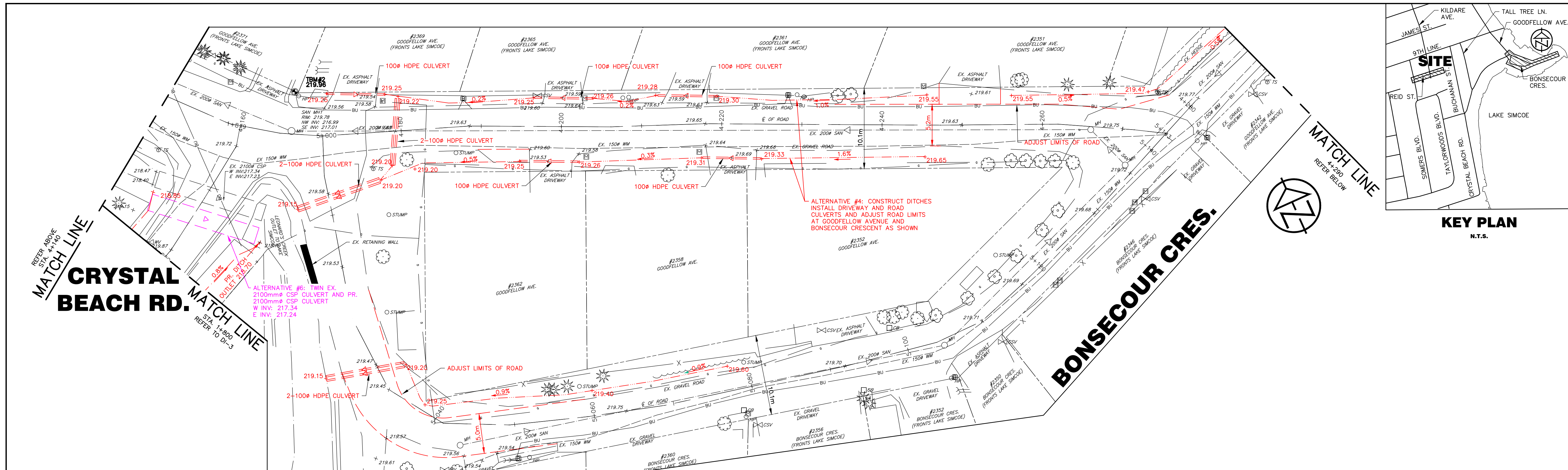
No.	REVISION DESCRIPTION	DATE	ENGINEER STAMP
1.	ISSUED FOR 30% DESIGN	OCT 10/20	
2.	ISSUED FOR 30% DESIGN ADDENDUM 1	JAN 29/21	
3.	ISSUED FOR VIRTUAL PUBLIC ENGAGEMENT	MAY 14/21	

**2020 VARIOUS ROADS DRAINAGE IMPROVEMENTS INNISFIL, ON**  
GOODFELLOW AVENUE  
STA. 4+000 - STA. 4+290  
BONSECOUR CRESCENT  
STA. 5+000 - 5+143

**TATHAM ENGINEERING**

DESIGN: NHF	FILE: 420395	DWG:
DRAWN: SD	DATE: SEPT 2020	<b>DI-6</b>
CHECK: ALK	SCALE: 1:250	





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**BENCHMARKS**  
BM1 - ELEVATION 219.60  
DOUBLE SPIKE IN SOUTH FACE OF HYDRO POLE AT SOUTH-EAST INTERSECTION OF 9TH LINE AND GOODFELLOW AVE.  
BM2 - ELEVATION 219.96  
BOLT ON WEST FACE OF HYDRO POLE AT INTERSECTION OF CRYSTAL BEACH ROAD, GOODFELLOW AVE, AND BONSECOUR CRESCENT. THE HYDRO POLE IS LOCATED ON THE EAST SIDE OF THE ROAD, BETWEEN HOUSE 2371 & 2369.  
BM3 - ELEVATION 220.18  
NAIL AND WASHERS IN NORTH FACE OF HYDRO POLE AT SOUTH SIDE OF INTERSECTION OF CRYSTAL BEACH ROAD AND TALL TREE LANE ON SOUTH SIDE OF CRYSTAL BEACH ROAD, POLE IN FRONT OF HOUSE #2351

**NOTES**  
TOPOGRAPHIC SURVEY COMPLETED BY TATHAM ENGINEERING FOR THE TOWN OF INNISFIL VARIOUS ROADS DRAINAGE STUDY COMPLETED AUGUST 2020

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**2020 VARIOUS ROADS DRAINAGE IMPROVEMENTS INNISFIL, ON**  
**GOODFELLOW AVENUE STA. 4+140 - STA. 4+414**  
**REID STREET STA. 6+000 - 6+151**

**TATHAM ENGINEERING**

DESIGN: NHF  
DRAWN: SD  
CHECK: ALK

FILE: 420395  
DATE: SEPT 2020  
SCALE: 1:250

DWG: **DI-7**



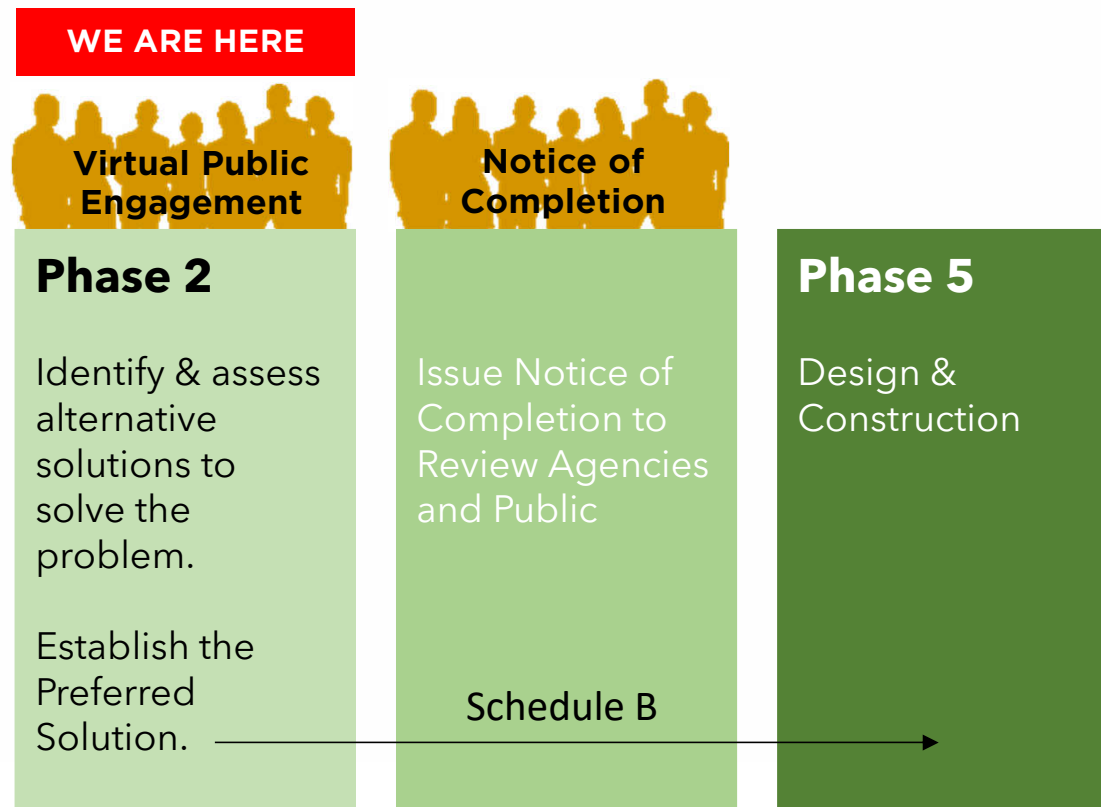


# 5 NEXT STEPS



# What are the Next Steps?

Receive public comments and input for consideration in identification of the Preferred Solutions, to be carried forward to Detailed Design and Construction



# What are the Next Steps?

Remainder of Study to:

- Review/address public, agency and stakeholder comments
- Conduct assessment of alternative design concepts
- Identify preferred alternative(s)
- Complete required environmental investigations
- Issue Notice of Study Completion
- Prepare final report for Council review/endorsement
- Place final report on public record for 30-day review





# Provide Comments

Complete the Resident Survey

- Provide contact information so we can forward study updates and findings

Submit a comment sheet

- Comment sheets are available at:  
<https://app.smartsheet.com/b/form/4cbcd127f88348eda21d0379284976fa>
- All comments will be considered
- All comments become part of the public record

All Comment sheets are to be submitted by Wednesday June 30, 2021



# Thank you for Your Interest in this Project

Please feel free to contact the Town and/or Tatham Engineering any time should you have further questions or concerns.

For Additional Information:

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