



July 15, 2019

Project No: 19118-00

Ms. Rachel Ricard
SEYMOUR PACIFIC DEVELOPMENTS LTD.
100 St. Ann's Rd.
Campbell River, BC
V9W 4C4

Dear Rachel;

RE: DESIGN BRIEF
Aspen Greens Multi-Family Development

Sison Blackburn Consulting Inc. is pleased to submit the Design Brief for the Aspen Greens Multi-Family Development located at 1640 Sycamore Drive.

We trust that the information outlined in this Design Brief is satisfactory. Please contact the undersigned if you have any questions.

Sincerely,

Sison Blackburn Consulting Inc.

A handwritten signature in black ink that reads 'Richard E. Sison'.

Richard E. Sison
Principal

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1.0 INTRODUCTION

Sison Blackburn Consulting Inc. (SBC) has been retained by Seymour Pacific Developments to provide Civil Servicing and Grading Design for the Aspen Greens Multi-Family Development located at 1640 Sycamore Drive between Lyndale Drive and Birchwood Drive in Brandon, Manitoba. Based on the latest conceptual site plan prepared by Seymour Pacific Developments Ltd., the proposed 5.43-acre (2.20-ha) multi-family development will consist of two multi-storey buildings totaling 208 units.

As part of the objective to obtain approval for the development, SBC has prepared preliminary servicing and grading plans to address drainage and municipal servicing requirements. This Design Brief will provide details of these concepts, existing site conditions, and highlight some of the impacts the proposed development will have on the City's infrastructure.

2.0 EXISTING SITE

The property is located in Brandon within Pt. S.W. ¼ 11-10-19 W.P.M. and is bounded by a public reserve and an existing commercial development to the west, Willowcrest Avenue and private land to the south, a public reserve and an existing residential development to the east, and Sycamore Drive to the north. The legal description of the property is Parcel A, Plan 1547, BLTO and is zoned as Residential High-Density Multiple Family Zone (RHD).

The site was previously developed as a mobile home park but the majority of the existing buildings and mobile homes have since been removed. The site has three existing approaches on Sycamore Drive, including gravel drive aisles, and has some mature trees throughout the property.

The existing roadway that fronts the site on Sycamore Drive is constructed of asphalt pavement complete with concrete barrier curbs and gutters. Underground hydro, gas and MTS lines run along the south side of Sycamore Drive and overhead hydro lines run along the public reserve located on the west side of the property.

SBC performed a topographic survey of the site and the adjacent section of Sycamore Drive in June, 2019. The site survey indicates that the ground topography generally slopes from the south west corner down toward the north east corner with an elevation difference of approximately 2.25 m. The public reserves on the east and west sides of the site each have shallow swales that run from south to north toward Sycamore Drive. See Dwg C01 – Existing Topographic Survey Plan for additional information.

3.0 PRELIMINARY SERVICING AND GRADING DESIGN

SBC has developed preliminary utility servicing and grading plans for the site development based on the topographic survey, as well as on compiled existing underground infrastructure information provided by the City of Brandon. See Dwg C02 – Preliminary Site Servicing Plan and Dwg C03 – Preliminary Site Grading Plan for supplemental information to the following sections.

3.1 DOMESTIC WATER and FIRE PROTECTION

There is an existing 150 mm diameter watermain running within the public reserve west of site as well as a 150 mm diameter watermain on Sycamore Drive running within the westbound lane. There are also two fire hydrants fronting the site on the north side of Sycamore Drive which were recently tested in May, 2019 for flow and pressure.

Emco Utility Services (EUS) performed the flow and pressure tests with the following results:

Pressure and Flow Test Results				
Description		Residual Hyd.	Flow Hyd.	Flow Hyd.
First Hyd. East of Orchard Way	Static	60 PSI	-	-
	Residual	54 PSI	-	-
	Pitot	-	265 GPM	US 5 PSI
Second Hyd. East of Orchard Way	Static	64 PSI	-	-
	Residual	42 PSI	-	-
	Pitot	-	1000 GPM	US 38 PSI

EUS suspects that the poor flow from Hydrant 1 was due to a partially closed gate valve. However, the City would not allow EUS to locate and operate the valve to confirm.

3.1.1 DOMESTIC WATER

Domestic water requirements are normally based on Peak Hour demand. Anticipated peak hour domestic water demand for the site has been summarized in the following table.

PEAK HOUR - Domestic Water Design Parameters and Demand Summary		
Total Gross Area	2.20	ha
Total Number of Dwelling Units	208	
Number of People per Unit	2.30	
Total Number of People	478	
Average Daily Demand	270	L/capita/day
Average Day Demand (ADD)	1.50	L/s
Peaking Factor – Peak Hour	2.5	
Peak Hour Demand (PHD)	3.73	L/s

Maximum day demand requirements must be met simultaneous with the provision of Fire Protection flow requirements, and are summarized following.

MAX DAY - Domestic Water Design Parameters and Demand Summary		
Total Gross Area	2.20	ha
Total Number of Dwelling Units	208	
Number of People per Unit	2.30	
Total Number of People	478	
Average Daily Demand	270	L/capita/day
Average Day Demand (ADD)	1.50	L/s
Peaking Factor – Peak Hour	1.6	
Peak Hour Demand (PHD)	2.4	L/s

Based on the existing water distribution network and flow/pressure test results data it would appear the existing water distribution network can meet domestic water supply requirements.

Max Day demands are analyzed in conjunction with the provision of fire protection flow and in most instances are dependent on the ability of the network to deliver the required fire flow.

3.1.2 FIRE PROTECTION

Fire protection flow has been estimated to be in the order of 400 L/s for building A, which will govern for the site. Building B will have a fire separation wall splitting the area into two (2) smaller portions, each of which will be smaller than Building A, and therefore will require less flow for fire protection.

Based on preliminary review of the existing City of Brandon water distribution system, and in conjunction with the flow/pressure test results data, in order to supply a total estimated flow of 400 L/s into the site, two (2) separate watermain service connections are proposed, one off of Sycamore Drive, the other from the public reserve to the west, and looping the watermain through the site. Minimum diameter for the looped connection will need to be 200 mm to minimize head losses in supplying the flow. This concept is preliminary only and will need to be confirmed with the City of Brandon.

3.2 WASTEWATER SEWERS

There is an existing 200 mm diameter gravity wastewater sewer main adjacent to the development running from south to north within the public reserve west of site. The main's burial depth is in excess of 4.0 m along the site's entire west property line. It is the intention that the development will be serviced with a single wastewater sewer connection to the existing 200 mm diameter main. The proposed wastewater sewer service will connect to the existing manhole located approximately 60 m south of Sycamore Drive then branch out internally from a manhole between both buildings to service each building individually. Adequate cover can be achieved without the need for insulation due to the depth of the sewer main.

Anticipated sewer flows from the proposed site will consist of domestic flows and extraneous flows. Extraneous flows are comprised of groundwater infiltration through pipe joints, and infiltration into manholes. The following are some design parameters and a summary of the anticipated sewer flows for the proposed development:

Wastewater Sewer Design Parameters and Flow Summary		
Total Gross Area	2.20	ha
Total Number of Dwelling Units	208	
Number of People per Unit	2.30	
Total Number of People	478	
Daily Wastewater Generation	270	L/capita/day
Average Dry Weather Flow (ADWF)	1.50	L/s
Harmon's Peaking Factor	3.98	
Peak Dry Weather Flow (PDWF)	5.96	L/s
Groundwater Infiltration at 2200 L/ha/day	0.06	L/s
Manhole Infiltration at 12 L/min/MH	0.20	L/s
Peak Wet Weather Flow (PWWF)	6.21	L/s

Based on the existing infrastructure and the other surrounding developments, it is expected that the wastewater sewer system will be able to accommodate the additional flows. However, this needs to be confirmed by the City of Brandon.

3.3 SITE GRADING AND STORM DRAINAGE

The City of Brandon requirements for multi-family developments stipulate that post-development storm runoff may not exceed pre-development runoff and that a site must be able to store a 1 in 100-year design storm event. The required storage volume onsite is based on the difference between a 1 in 100-year post development flow and a 1 in 5-year allowable flow (pre-development). To accommodate this criterion, storm runoff will need to be restricted on site in dedicated detention areas. Storm runoff can be managed in a number of ways and usually involves any combination of the installation and construction of land drainage sewers, retention or detention ponds, drainage channels, ditches and swales.

There is an existing 750 mm land drainage sewer main adjacent to the development running from west to east along the center of Sycamore Drive. The sewer main deflects south near the east site limit at which point the nearest manhole has an invert depth of 4.80 m. It is the intention that the development will be serviced with a single land drainage sewer connection to the existing manhole near the northeast property limit.

SBC has prepared a preliminary grading plan that utilizes land drainage sewers and surface ponding in the paved areas, up to a maximum depth of 0.30 m, that allows the runoff to be stored and then released at a controlled rate through an inlet control device. The internal land drainage sewer network will have a series of catch basins and manholes throughout the parking lot in order to drain the site efficiently. The majority of the site, including roof runoff, will be directed toward the internal system either directly through the parking lot or through grass drainage swales. No runoff will be directed toward adjacent private properties. Narrow grass strips between the parking lot and the west, north and east property lines may need to be directed toward public land due to the elevation differences. However, all unrestricted overland flows will be accounted for in the allowable discharge rate.

In order to determine the allowable stormwater discharge rate and the required on-site storage, the rational method was used with a City of Brandon design storm. The following are some design parameters and a summary of the anticipated stormwater runoff and storage for the proposed development:

Stormwater Design Parameters and Runoff Summary		
Total Gross Area	2.20	ha
Landscaped or Grassed Area Runoff Coefficient	0.10	1.2225 ha
Roof Area Runoff Coefficient	0.90	0.550 ha
Gravel Surface Roads/Driveways Area Runoff Coefficient	0.50	0.4275 ha
Weighted Pre-Development C-Value ("Allowable")	0.40	2.20 ha
Estimated "Allowable" C-Value	0.15	
Weighted Post-Development C-Value	0.69	2.20 ha
Time of Concentration	15 min <i>PRE</i>	10 min <i>POST</i>
5-Year Rainfall Intensity (Pre)	89.39	mm/hr
100-Year Rainfall Intensity (Post)	210.09	mm/hr
Existing Pre-Development 5-Year Runoff (weighted 'C'-value)	0.207	m ³ /s
Post-Development 100-Year Runoff	0.888	m ³ /s
On Site Storage Volume Required	460 ±	m ³
Pavement Surface Storage Volume Available (max 0.3 m depth)	550 ±	m ³

Since the estimated available on-site surface storage volume is more than than the estimated required storage volume, the requirements for stormwater management have been satisfied.

4.0 TRAFFIC IMPACT STUDY

A Traffic Impact Study has been completed and the report sent to the City of Brandon for review.

5.0 SUMMARY

The information presented in this design brief shows that the surrounding existing infrastructure should be able to accommodate the site servicing and grading of the multi-family development.

The existing water distribution network can meet domestic water supply requirements.

The on-site water system requirements for fire protection seem to be viable in concept, however will be subject to review of the existing water distribution network in consultation with the City of Brandon.

It is expected that the existing wastewater sewer system will have capacity. However, this needs to be confirmed by the City of Brandon based on the anticipated sewer flows provided in this report.

The post-development stormwater runoff will be restricted to the allowable pre-development rate. On-site storage capacity will accommodate a 1 in 100-year storm event therefore satisfying the stormwater management requirements.

6.0 CLOSURE

This report has been prepared by Sison Blackburn Consulting Inc. (SBC) for the benefit of the Client to whom it is addressed. The findings and recommendations provided in this report were prepared in accordance with generally accepted professional engineering principles and practices. The information and data contained herein represent SBC's best professional judgment in light of the knowledge and information available to SBC at the time of preparation. Except as required by law, this report and the information and data contained herein are to be treated as confidential and may be used and relied upon only by the client, its officers and employees. SBC denies any liability whatsoever to other parties who may obtain access to this report for any injury, loss or damage suffered by such parties arising from their use of, or reliance upon, this report or any of its contents without the express written consent of SBC and the client.

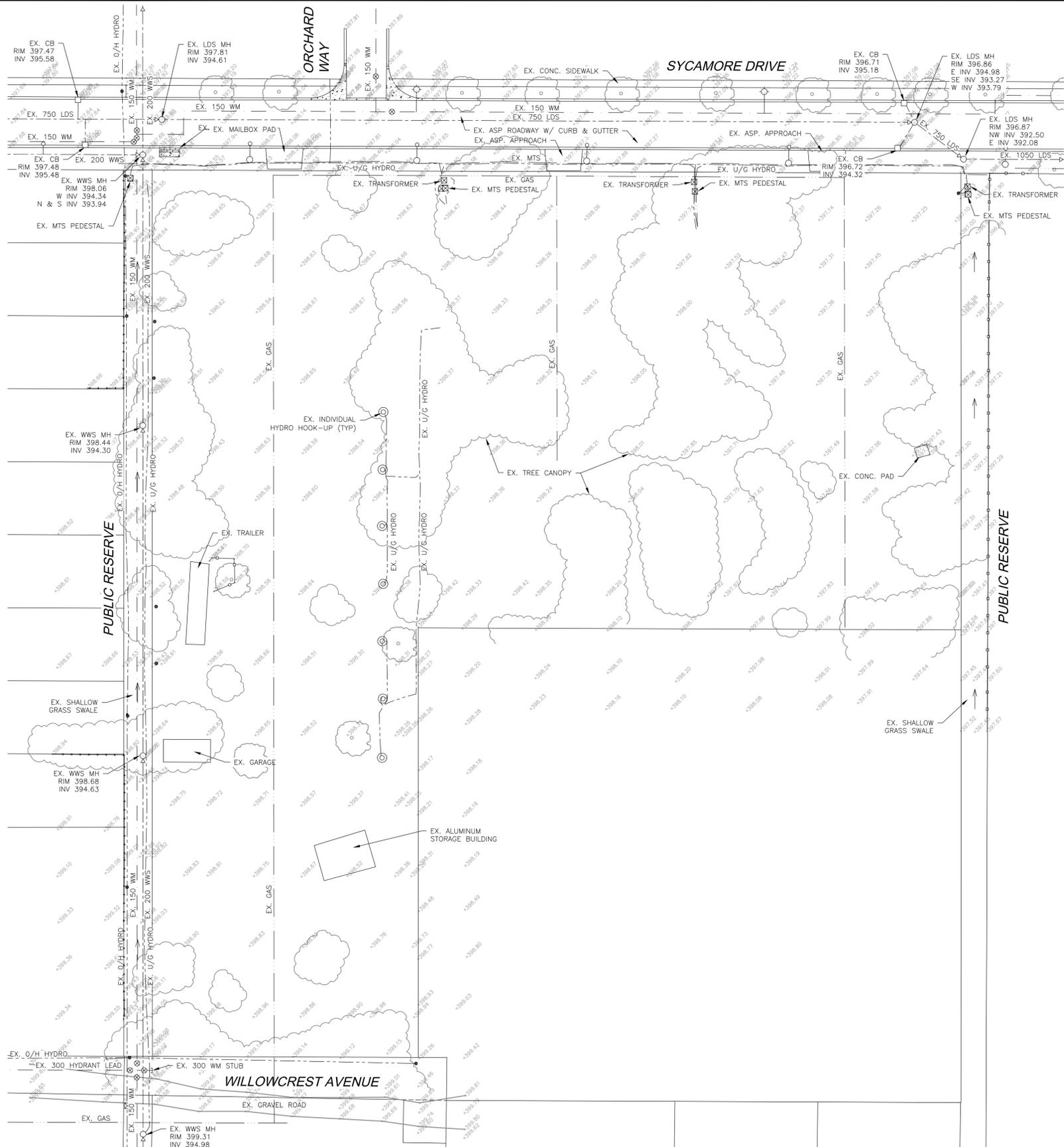
APPENDIX A
PRELIMINARY DESIGN DRAWINGS



Sison Blackburn Consulting Inc.

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Winnipeg, MB, R3Y 1G3
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www.SBCinc.ca

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150 WM	WATERMAIN	150 WM
250 WWS	WASTEWATER	250 WWS
300 LDS	LAND DRAINAGE SEWER	300 LDS
⊙	HYDRANT ASSEMBLY	⊙
⊗	GATE VALVE	⊗
⊕	CURB STOP	⊕
⊘	REDUCER	⊘
○	MANHOLE	○
□	CATCH BASIN	□
▽	CATCH PIT	▽
⊖	CLEAN OUT	⊖
⊕	TESTHOLE	⊕
⊕	SURVEY BAR	⊕
⊕	SIGN	⊕
⊕	UTILITY POLE	⊕
⊕	UTILITY PEDESTAL	⊕
---	HYDRO	---
---	GAS	---
---	MTS	---
---	TREE LINE	---
---	CULVERT	---
---	SWALE	---
---	DIRECTION OF FLOW	---
235.380	GROUND ELEVATION	235.38
[235.38]	DITCH ELEVATION	[235.38]
(235.400)	ROAD ELEVATION	(235.400)
---	BARRIER CURB	---
---	MOUNTABLE CURB	---
EXISTING	LEGEND	PROPOSED

PRELIMINARY
NOT FOR CONSTRUCTION

ISS	REV	DATE	DESCRIPTION
0	0	19/07/05	FOR INFORMATION

CLIENT / PROJECT:
SEYMOUR PACIFIC DEVELOPMENTS LTD.
ASPEN GREENS MULTI-FAMILY DEVELOPMENT
1640 SYCAMORE DRIVE

TITLE:
EXISTING TOPOGRAPHIC SURVEY PLAN

DISCIPLINE:
CIVIL

SCALE:	DRAWN:	DESIGNED:	CHECKED:
1:500 (A1)	JSE/EN	JLT	RES

ISSUE:
FOR INFORMATION

PROJECT #:	DRAWING #:	REVISION:
19118-00	C01	0

SHT: 1 OF 3

METRIC
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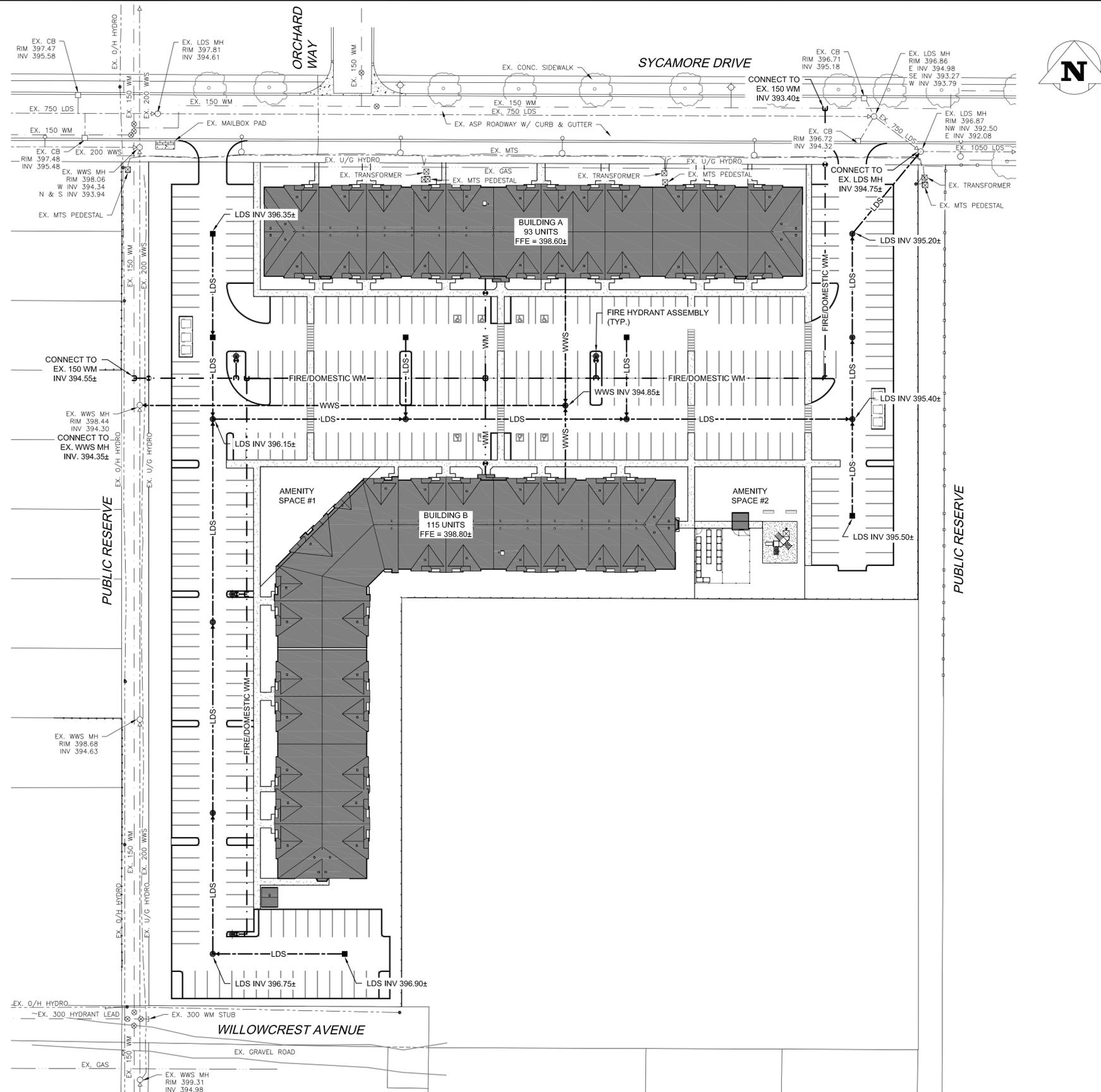
BENCHMARK 339.462m
TOP NUT OF HYDRANT ON THE SOUTH EAST CORNER AT THE INTERSECTION OF LYNDALE DR & SYCAMORE DR.



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CLIENT / PROJECT:
SEYMOUR PACIFIC DEVELOPMENTS LTD.
ASPEN GREENS MULTI-FAMILY DEVELOPMENT
1640 SYCAMORE DRIVE

TITLE:
PRELIMINARY SITE SERVICING PLAN

DISCIPLINE:
CIVIL

SCALE:	DRAWN:	DESIGNED:	CHECKED:
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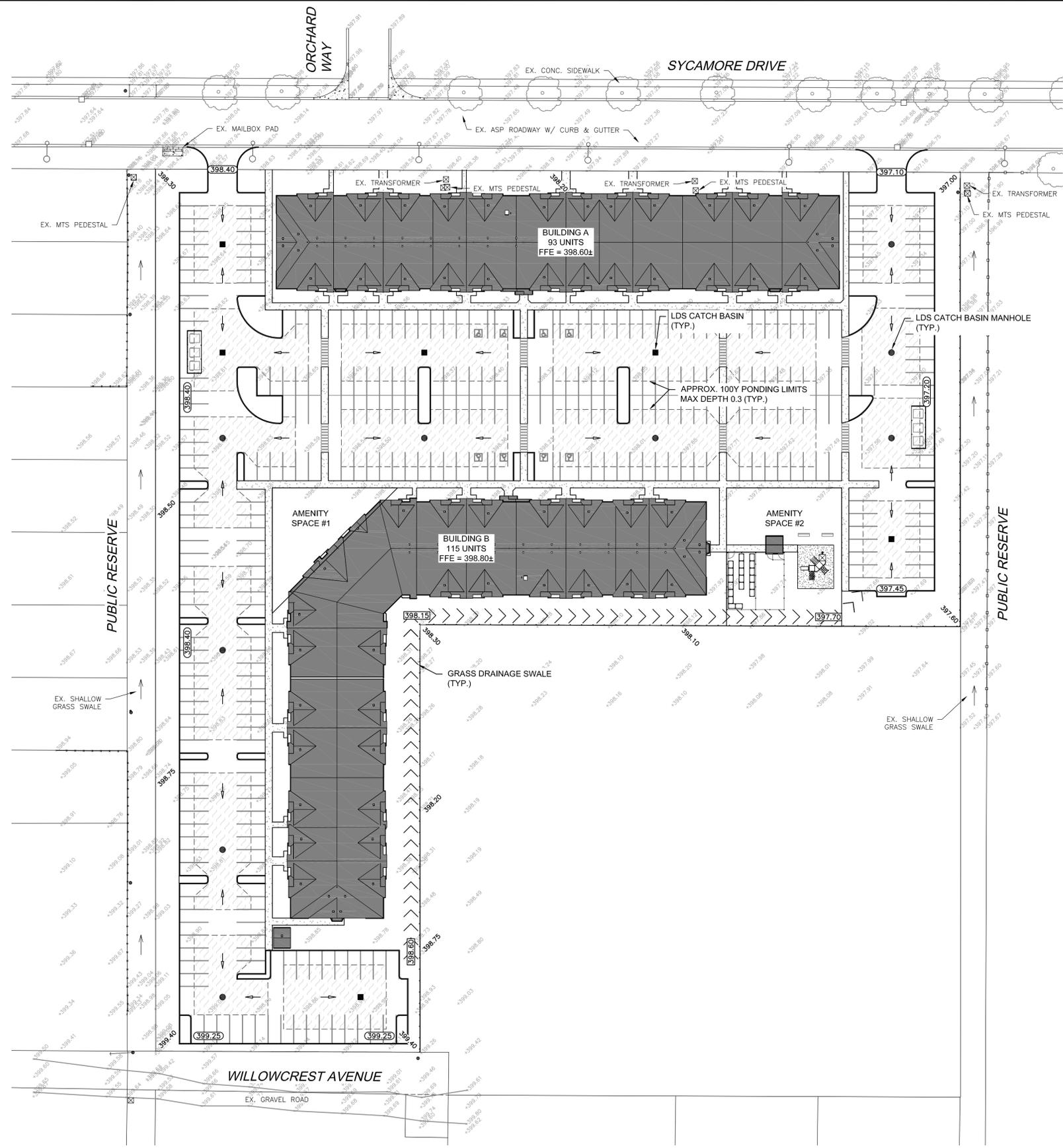
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PROJECT #:	DRAWING #:	REVISION:
19118-00	C02	0

SHT: 2 OF 3

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CLIENT / PROJECT:
SEYMOUR PACIFIC DEVELOPMENTS LTD.
ASPEN GREENS MULTI-FAMILY DEVELOPMENT
1640 SYCAMORE DRIVE

TITLE:
PRELIMINARY SITE GRADING PLAN

DISCIPLINE:
CIVIL

SCALE:	DRAWN:	DESIGNED:	CHECKED:
1:500 (A1)	JSE/EN	JLT	RES

ISSUE:
FOR INFORMATION
 PROJECT START DATE: APRIL, 2019

PROJECT #:	DRAWING #:	REVISION:
19118-00	C03	0

SHT: 3 OF 3

METRIC
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