APPENDIX A

Trillium Line Proximity Plan

Cross Section A-A'

Cross Section B-B'

Cross Section C-C'

Cross Section D-D'

Topographic Survey Plan

Corso Italia Station Drawings

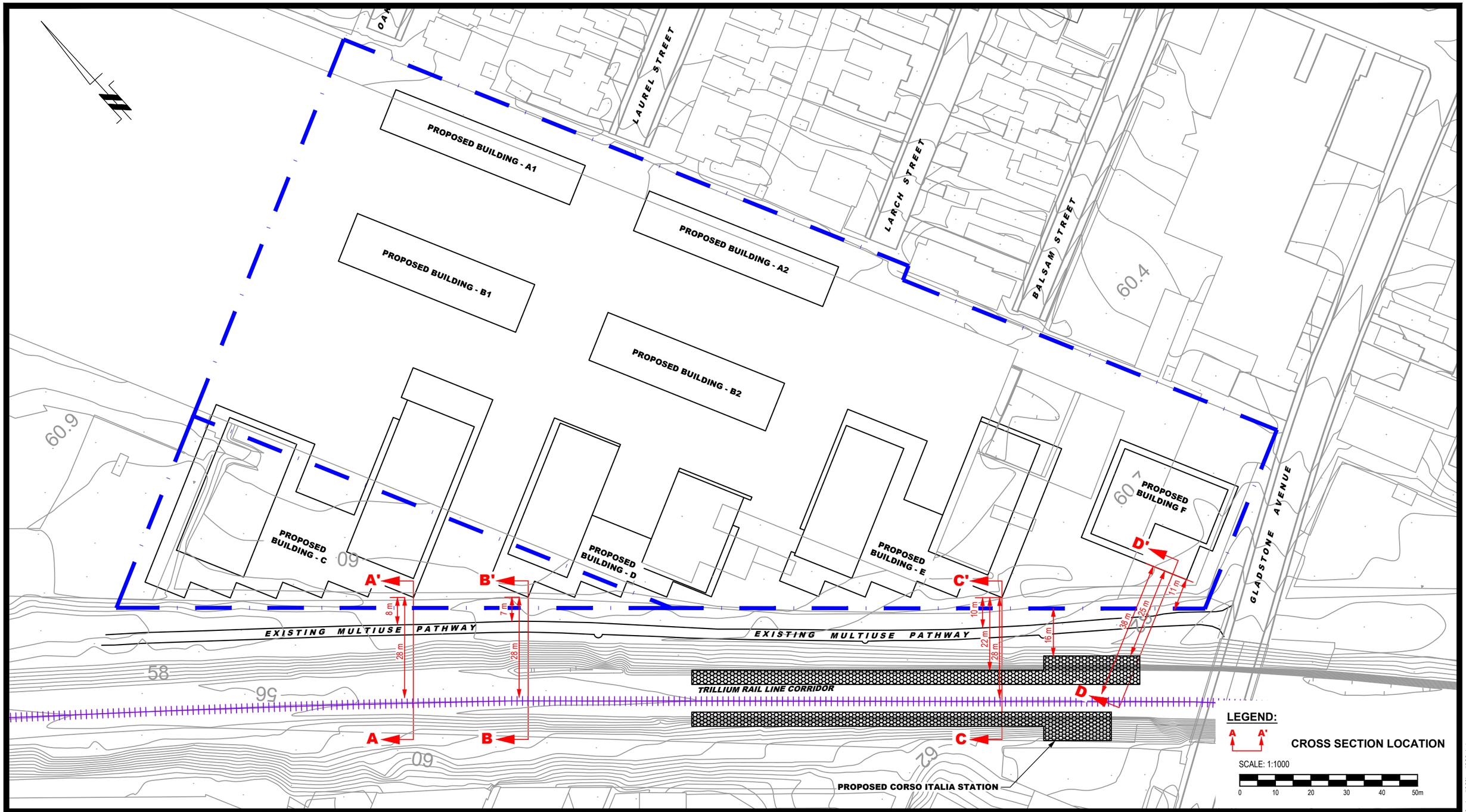
Structural Design Brief

Mechanical Report

Civil Drawings

Architectural Drawings

Construction Methodology and Impact Review



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NO.	REVISIONS	DATE	INITIAL

OTTAWA COMMUNITY HOUSING
PROPOSED MIXED-USE DEVELOPMENT
933 GLADSTONE AVENUE
OTTAWA, ONTARIO

Title:
TRILLIUM LINE PROXIMITY PLAN

Scale: 1:1000	Date: 08/2021
Drawn by: NFRV	Report No.: PG5929
Checked by: NP	Dwg. No.: PG5929-1
Approved by: SD	Revision No.: 0

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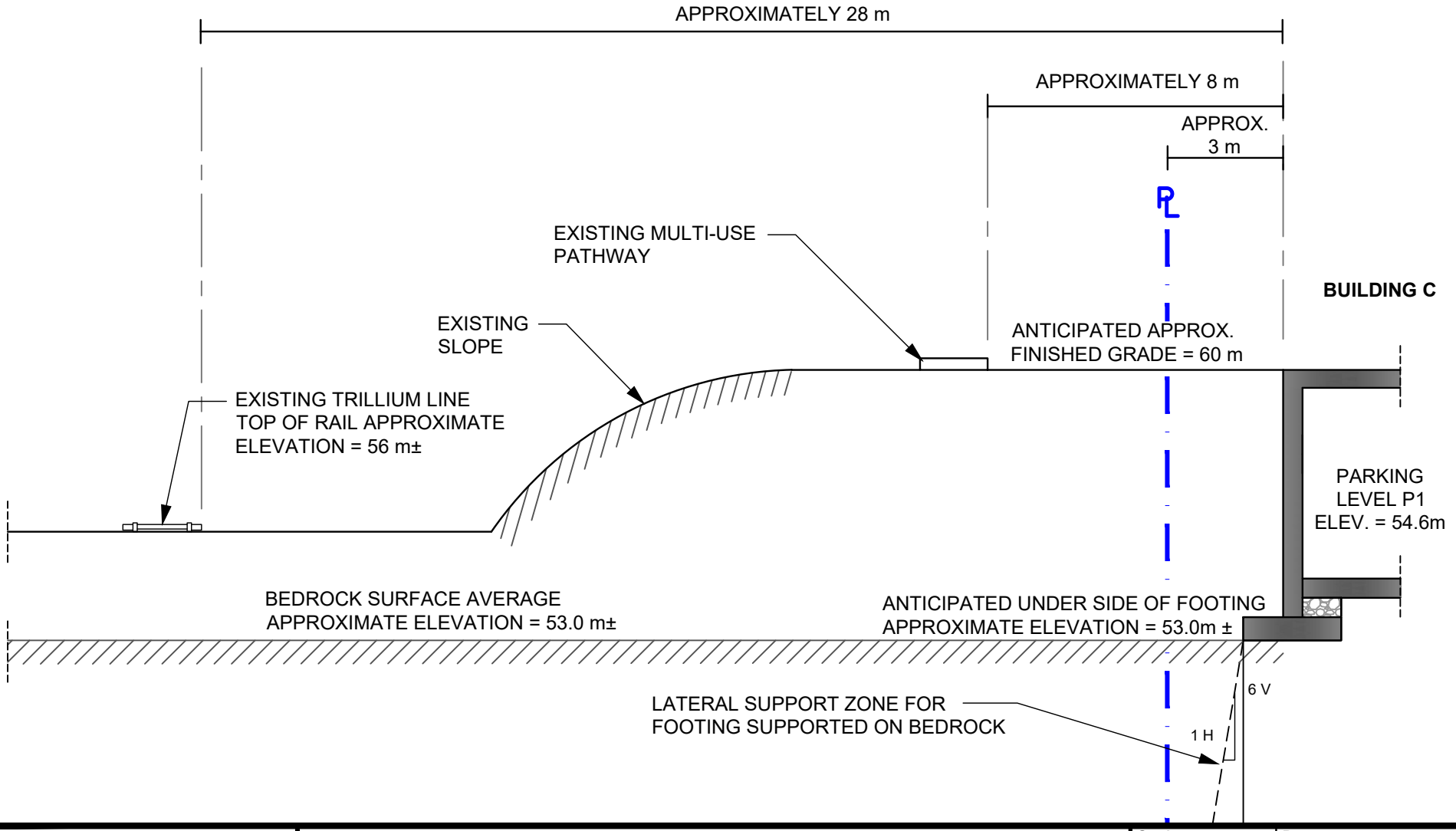

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OTTAWA COMMUNITY HOUSING

TRILLIUM LINE PROXIMITY STUDY
PROPOSED MIXED-USE DEVELOPMENT - BUILDING C
933 GLADSTONE AVENUE

OTTAWA, **ONTARIO**

Title:

CROSS SECTION A-A'

Scale: 1:150	**Date:** 08/2021
Drawn by: NFRV	**Report No.:** PG5929
Checked by: NP	**Drawing No.:** PG5929-2
Approved by: SD	**Revision No.:**

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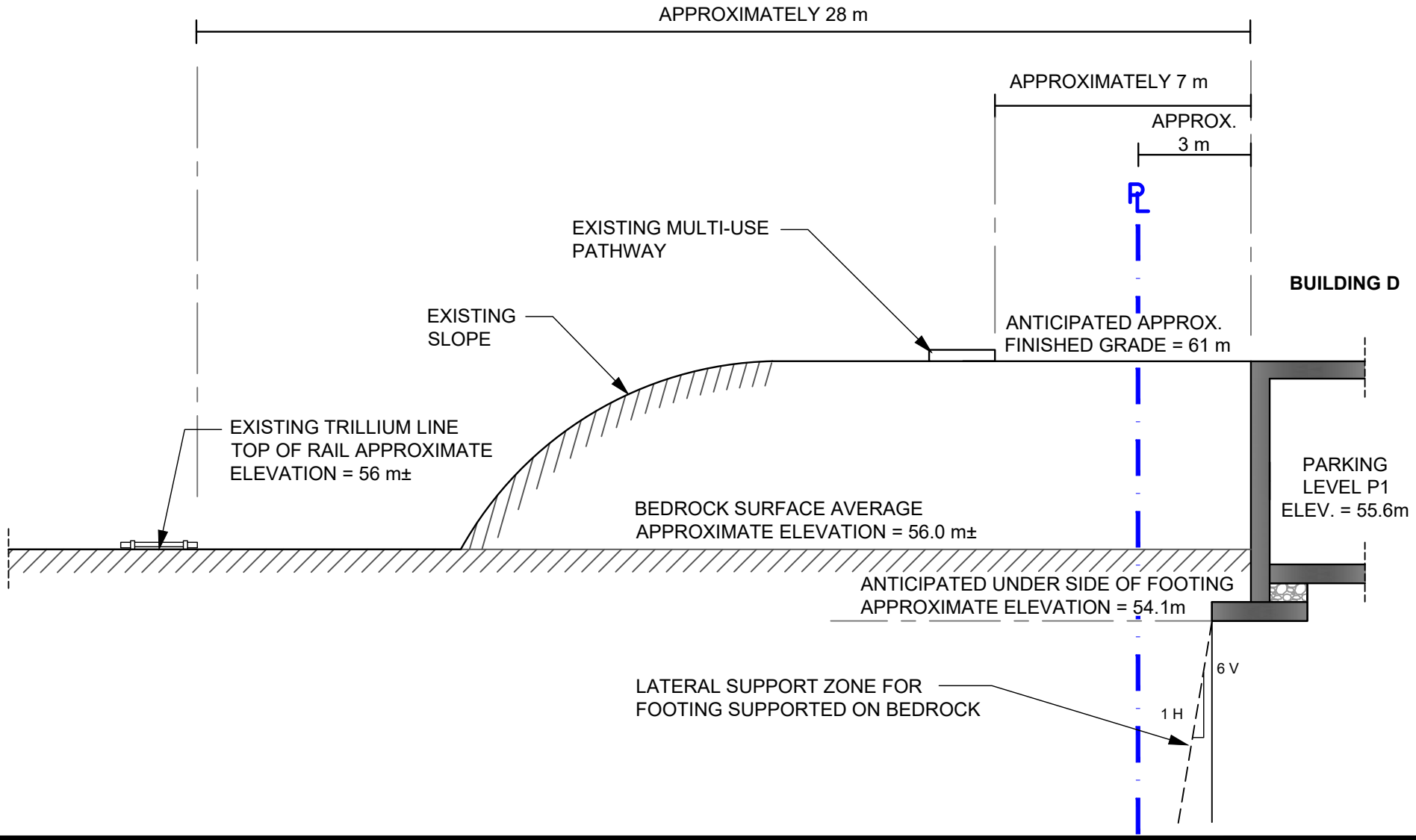

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OTTAWA COMMUNITY HOUSING

TRILLIUM LINE PROXIMITY STUDY
PROPOSED MIXED-USE DEVELOPMENT - BUILDING D
933 GLADSTONE AVENUE

OTTAWA, **ONTARIO**

Title:

CROSS SECTION B-B'

Scale: 1:150	**Date:** 08/2021
Drawn by: NFRV	**Report No.:** PG5929
Checked by: NP	**Drawing No.:** PG5929-3
Approved by: SD	**Revision No.:**

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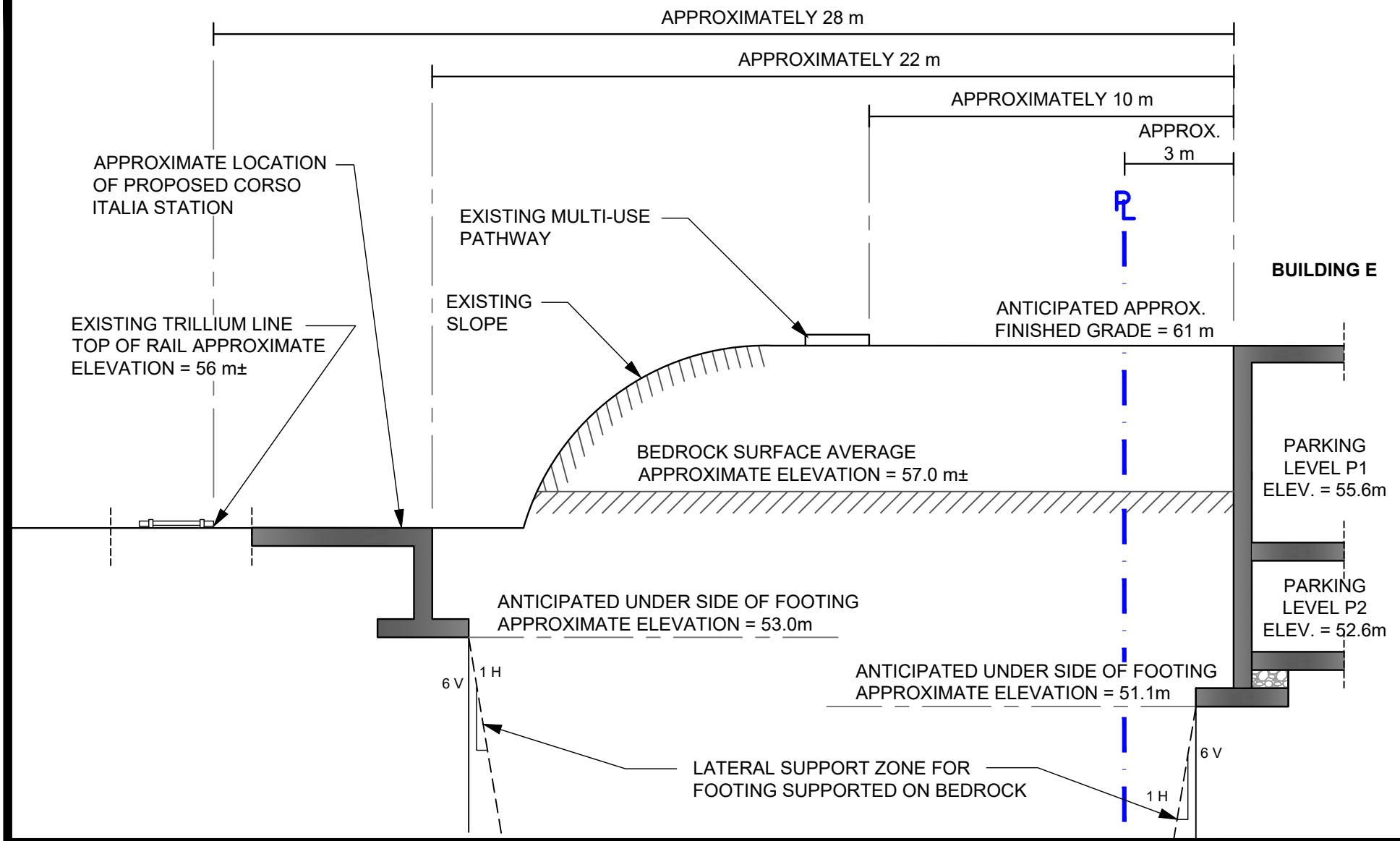

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OTTAWA COMMUNITY HOUSING

TRILLIUM LINE PROXIMITY STUDY
PROPOSED MIXED-USE DEVELOPMENT - BUILDING E
933 GLADSTONE AVENUE

OTTAWA, **ONTARIO**

Title:

CROSS SECTION C-C'

Scale: 1:150	**Date:** 08/2021
Drawn by: NFRV	**Report No.:** PG5929
Checked by: NP	**Drawing No.:** PG5929-4
Approved by: SD	**Revision No.:**

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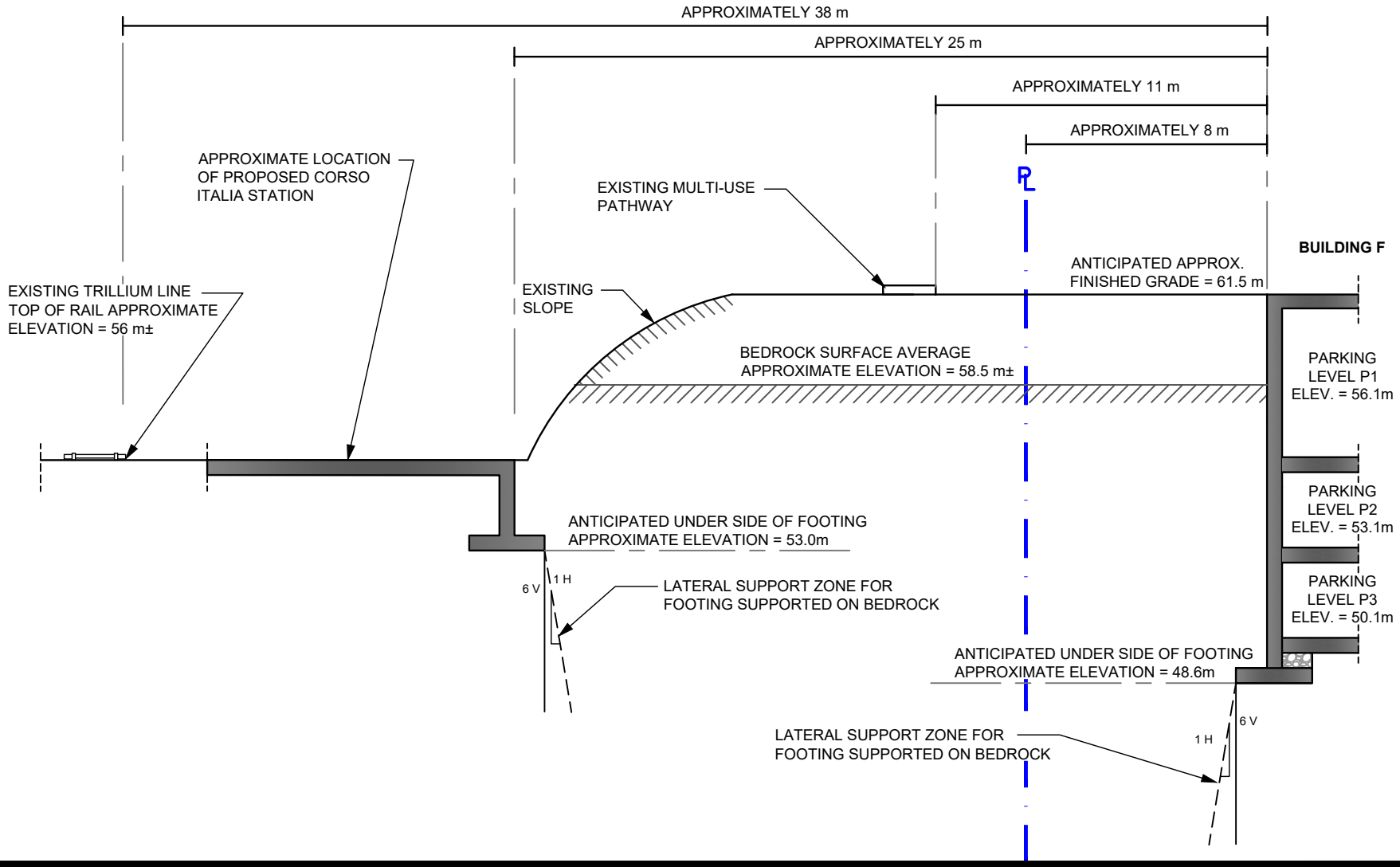

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OTTAWA COMMUNITY HOUSING

TRILLIUM LINE PROXIMITY STUDY
PROPOSED MIXED-USE DEVELOPMENT - BUILDING F
933 GLADSTONE AVENUE

OTTAWA, **ONTARIO**

Title:

CROSS SECTION D-D'

Scale: 1:200	**Date:** 08/2021
Drawn by: NFRV	**Report No.:** PG5929
Checked by: NP	**Drawing No.:** PG5929-5
Approved by: SD	**Revision No.:**

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METRIC CONVERSION

DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

GRID SCALE CONVERSION

DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.99995.

BEARING NOTE

BEARINGS ARE GRID, DERIVED FROM CAN-NET VRS NETWORK GPS OBSERVATIONS ON NCC HORIZONTAL CONTROL MONUMENTS 19773035 AND 19680191, CENTRAL MERIDIAN, 76° 30' WEST LONGITUDE MTM ZONE 9, NAD83 (ORIGINAL).

19773035 N:5006060.42 E:324888.04
19680191 N:5033564.26 E:388064.94

ELEVATION NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC (CGVD-1928:1978) AND ARE DERIVED FROM THE CITY OF OTTAWA VERTICAL CONTROL MONUMENTS No.'S 2011-0106 (ELEV.=62.968 M) AND 2011-0107 (ELEV=55.863).

UTILITY NOTE

LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE AND ARE PER THE CITY OF OTTAWA SHEETS AND MUST BE VERIFIED PRIOR TO CONSTRUCTION.

Stantec

Stantec Geomatics Ltd.
400 - 1331 Clyde Avenue
Ottawa ON
Tel. 613.722.4420
www.stantec.com

TOPOGRAPHIC PLAN OF SURVEY

LOTS 1, 2 & 3 BLOCK C(SOUTH WALNUT STREET)
LOTS 1, 2, 3 & 4 BLOCK C (NORTH WALNUT STREET)
LOTS 1, 2, 3, 4 & 5 BLOCK C (SOUTH LARCH STREET)
LOTS 1, 2, 3, 4 & 5 BLOCK C (NORTH LARCH STREET)
LOTS 1, 2, 3, 4 & 5 BLOCK C (SOUTH LAUREL STREET)
LOTS 1, 2, 3, 4 & 5 BLOCK B (NORTH LAUREL STREET)
LOTS 1, 2, 3, 4 & 5 BLOCK B (SOUTH OAK STREET)
PART OF LOTS 8, 9 & 10 (WEST CHAMPAGNE AVENUE)
PART OF LOTS 1, 2 & 3 BLOCK C (NORTH GLADSTONE AVENUE)
PART OF LOTS 5A, 5B & C
PART OF OAK STREET (CLOSED BY JUDGE'S ORDER INST. NO. OC574103)
PART OF LAUREL STREET (CLOSED BY JUDGE'S ORDER INST. NO. CR574103)
PART OF LAUREL STREET (CLOSED BY JUDGE'S ORDER INST. NO. LT1402120)
PART OF LARCH STREET (CLOSED BY JUDGE'S ORDER INST. NO. OC574103)
PART OF WALNUT STREET (CLOSED BY JUDGE'S ORDER INST. NO. CR179807)
PART OF REYNOLDS STREET
PART OF CHAMPAGNE AVENUE (CLOSED BY JUDGE'S ORDER INST. NO. LT1402120)
REGISTERED PLAN NO.73

CITY OF OTTAWA

Scale 1:300
5 0 5 10 15 20 METRES

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE DAY OF , 2017.

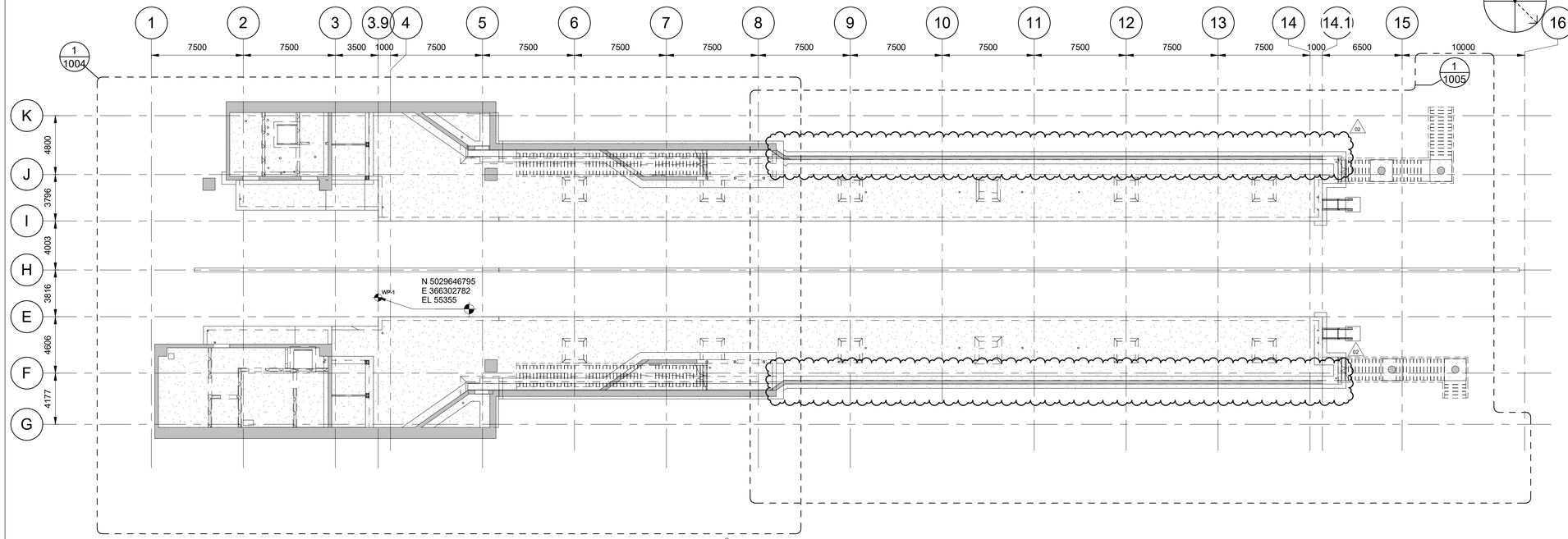
DATE

T. HARTWICK
ONTARIO LAND SURVEYOR

DRAWN: CT CHECKED: * PM: CT FIELD: ES/CA PROJECT No.: 161613791

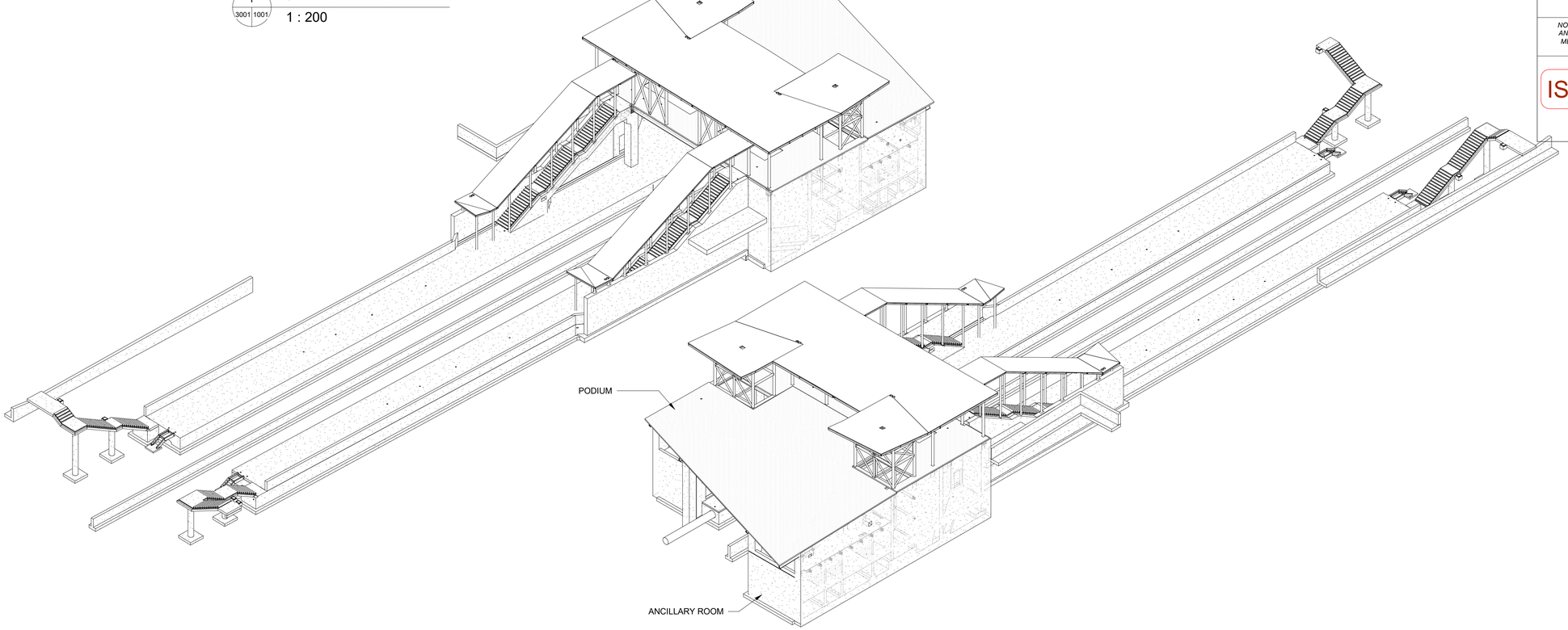
TITLEBLOCK: 790mm x 534mm

PLAN NORTH



1 / 3001 1001 OVERALL PLAN

1 : 200



OTrain STAGE 2 ETAPE

Ottawa

STRUCTURAL
CORSO ITALIA STATION

OVERALL PLAN

CONTRACT No.
LRT19-1025

DESIGNED	CHECKED
M. IRISH	S. IBRAHIM
DRAWN	SEALED
J. PIDLAOAN	R. GILLARD

DRAWING NUMBER
660373-1GSS-003-43DD-1001

MODEL NUMBER
660373-1GSS-003-43DM-1000

DESIGN/BUILDER

SNC·LAVALIN TransitNEXT

PRIMARY SEAL

LICENSED PROFESSIONAL ENGINEER
R. G. GILLARD
16129504
2021-03-29
PROVINCE OF ONTARIO

DESIGN FIRM

SNC·LAVALIN

SECONDARY SEAL (IF REQUIRED)

SCALE

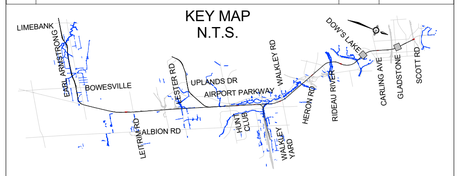
HORIZONTAL 1 : 100 FULLSIZE
1 : 200 HALF SIZE
0 1 2 4 8 m
VERTICAL 1 : 100 FULLSIZE
1 : 200 HALF SIZE

ASSET No.

ASSET GROUP

REV	DESCRIPTION	BY	DATE
00	ISSUED FOR CONSTRUCTION - EARLY WORKS	SI	2020-09-24
01	ISSUED FOR BUILDING PERMIT	SI	2020-11-27
02	ISSUED FOR FCR No. 660373-1GSS-003-40EI-0001	SI	2021-03-29

KEY MAP
N.T.S.

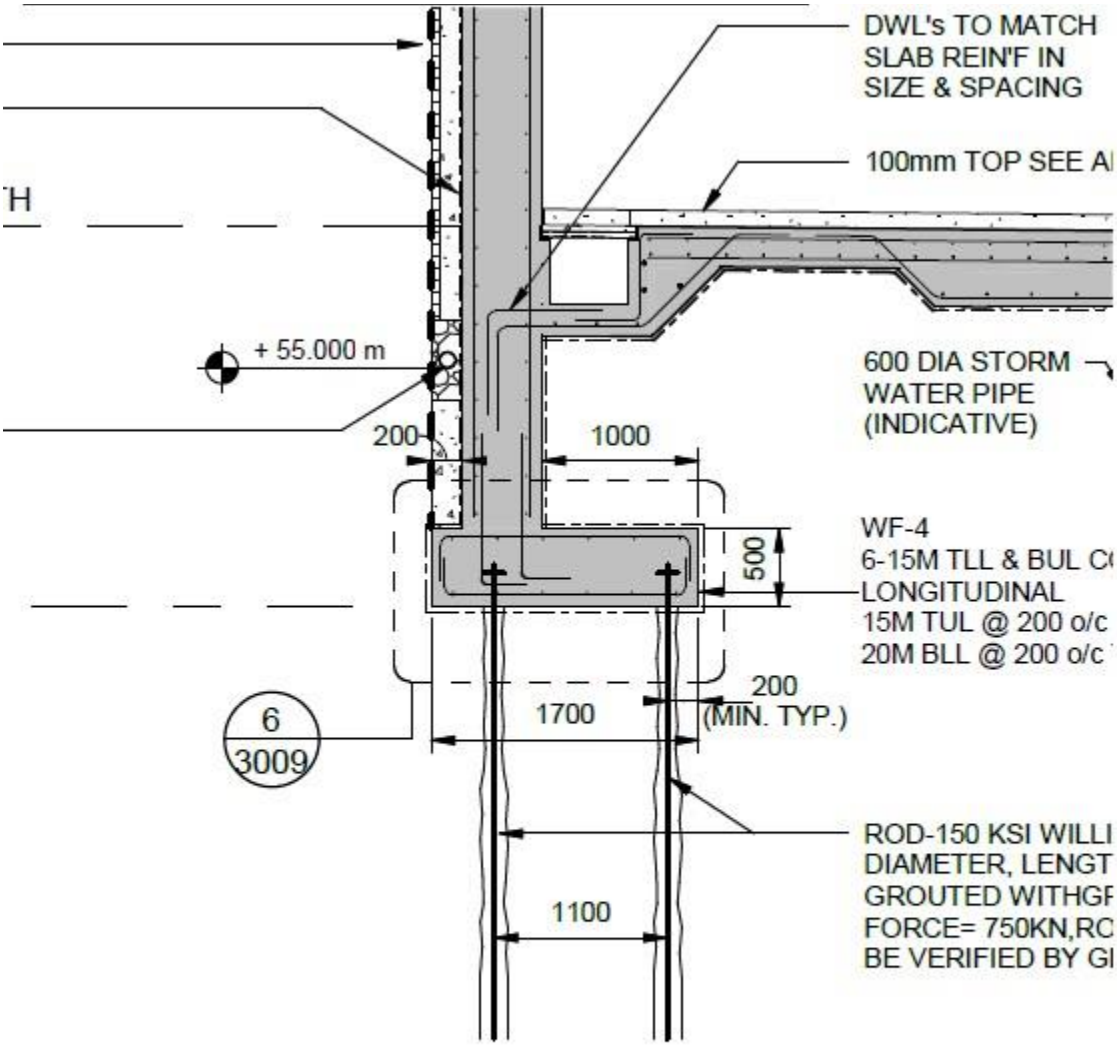


ISSUED FOR CONSTRUCTION

2021-03-29

02

Corso Italia Station Footing Detail



4
1002 3009

SECTION / DETAIL

1 : 50

OCH Gladstone Village

Structural Design Brief
100% Schematic Design

933 Gladstone Avenue
Ottawa, ON

July 30, 2021

RJC No. OTT.128889.0001
Revision # 00

Prepared for:

Diamond Schmitt Architects &
KWC Architects

Prepared by:
Read Jones Christoffersen Ltd.

Table of Contents

INTRODUCTION

This design brief is intended to summarize the primary structural design criteria and to describe the structural system for the purposes of costing and completion of the schematic design phase. The brief is to be read in conjunction with the drawings listed in Appendix B.

- Current design is based on architectural drawings received July 2, 2021
- Structural design continues to develop as the architectural design and program requirements progress. The drawings show the structural system in the current state of design.

PROJECT DESCRIPTION

The project consists of an 18 storey and 9 storey residential mid-rise towers linked by a 5 storey residential podium. At grade there is a large landscaped courtyard, common lobby and amenity spaces, residential units and a few commercial retail units. A single below grade parking structure covering the entire extent of the site supports the above grade structures.

GENERAL DESCRIPTION OF STRUCTURAL SYSTEMS

The primary structural system is a conventional reinforced cast-in-place (CIP) concrete structure. A description of the components for each system is described in the following sections.

FOUNDATIONS

Based on the provided preliminary geotechnical report prepared by Golder Associates Ltd dated June 2018, bedrock was encountered between 3.0m and 7.5m below existing grade at the location of the boreholes. Based on the elevation of the bedrock and depths associated with the below grade parking level, the foundations for the structure will be conventional spread and strip footings supported on bedrock.

SUBSTRUCTURE

The below grade parking structure will consist of a conventional non-structural slab-on-grade (SOG). The perimeter foundation walls will be conventional CIP concrete walls with an expected thickness between 300 to 400mm. The thickness of the foundation walls is dependent on the span or height of the below grade structure that will be refined as the design develops. It is assumed that perimeter drainage will be provided at the exterior of the foundation walls to create a free-draining system and designing for hydrostatic pressure on the foundation walls is not required.

SUPERSTRUCTURE

The above grade structure will consist of reinforced concrete (R/C) flat plate slabs, R/C columns and R/C shear walls. The double height amenity space at level 4 and 5 of the podium consists of structural steel framing. Structural steel is used in this space to provide long spans and open spaces to accommodate the programme.

The following are estimated sizes of the structural slabs, columns and walls throughout the building for the purpose of costing. These will need to be confirmed by analysis/design and will be refined as the design progresses and design inputs are verified.

Approximate Slab thicknesses:

- Typical interior residential floor slabs: 200 to 225mm
- Unoccupied roofs without PV panels or green roofs: 250 to 300mm
- Unoccupied roofs with PV panels or green roofs: 300 to 350mm
- Occupied roof terraces: 300 to 350mm
- Floors supporting Mechanical/Electrical equipment: 300 to 350mm
- Parking slab roof with heavy landscaping and access to trucks: 350 to 450mm
- Podium transfer slabs: 600 to 800mm
- 18 Storey Tower Transfer Beams/Slabs 1200 to 1500mm
- 9 Storey Tower Transfer Beams/Slabs 800 to 1000mm

Approximate column sizes

- Interior and edge columns: 300x1200mm
- Corner columns: 500x500mm or 600mm Dia

Approximate Shear wall thicknesses

18 Storey Tower:

- Core walls: 300 to 350mm
- Demising Shear walls: 350 to 450mm

9 Storey Tower

- Core walls: 250 to 300mm
- Demising Shear walls: 250 to 350mm

Refer to Appendix B for structural drawings and the proposed framing layout. Refer to Appendix C for concrete strengths and Appendix D for reinforcing ratios.

LATERAL SYSTEM

The seismic force resisting system (SFRS) is conventionally constructed reinforced concrete shear walls. This SFRS requires that the geotechnical Seismic Site Class be Site Class B or A which is designated for a structure founded on bedrock, however contradicts the existing preliminary geotechnical report which states Site Class C. An increase in the seismic site class from C to B or A requires a shear wave velocity test (MASW) and we are expecting this increase from the requested supplemental geotechnical investigations due to the structure being supported on bedrock.

If the seismic site class is to remain Site Class C as per the current preliminary geotechnical investigation, a moderately ductile shear wall SFRS will be required for the 18 storey building due to it exceeding the height limitations in the OBC for a conventional constructed system.

Refer to Appendix B for structural drawings and the proposed framing layout.

OTHER CONSIDERATIONS

The parking garage layout has been provided with a clear span of a minimum 6000mm along the entire length of the east foundation wall. This has been provided to allow for the possibility of a drive aisle for connection to future blocks on adjacent sites. It is assumed that knock-out panels will be required in the foundations walls at the ends of this future drive aisle.

ASSUMPTIONS

The following assumptions have been made with respect to the structural design of the building:

- Construction loads will not exceed the design loads noted on the drawings and in this document. Adequate shoring will be provided during construction to ensure this.
- Except where specifically noted otherwise, construction tolerances are as described in CSA A23.1/A23.2 for concrete construction and as per CSA S16.1 for steel construction.
- Permanent dewatering will be provided and maintained to eliminate hydrostatic pressure from foundation walls.
- We will receive a Seismic Site Class B or better from shear wave velocity testing by the geotechnical consultant following supplemental geotechnical investigations

RISK ASSESSMENT

The following is a list of items in the design process or inherent in this particular project which may create risk to the Owner and should be reviewed in more detail to mitigate this risk. This list will be refined as the design progresses.

- The project design is not yet complete. Structural design continues to evolve in parallel with the design by other consultants and through an evolution of the programme requirements. The project will go through various iterations which will affect the structural quantities before the final tender solution is arrived at. We recommend that a Design Contingency be carried to reflect the preliminary nature of the available information.
- Based on our experience, we recommend that a Construction Contingency be carried to cover the effect of unforeseen site conditions and unexpected construction process items such as varying founding conditions, construction sequencing, the need for temporary bracing or shoring, etc.
- We also recommend that an Escalation Contingency be carried to cover the effects of the escalation in construction costs from the time the cost estimate is prepared and the start of construction.

- The cost estimate shall also include allowances for secondary structure, special structures and atypical elements consistent with this building type. Some such elements are as follows:
    - Secondary framing for the support of cladding, louvers, screens and glazing.
    - Secondary framing for mechanical equipment and at electrical rooms.
    - Catwalks and other miscellaneous structural steel
    - Parapets and roof projections.
    - Housekeeping pads, ramps, curbs and the like.
    - Stairs, stair landings, and framing for elevators between floors.
    - Exterior structures such as retaining walls, planters, walkways, curbing and the like.
    - Window washing and fall arrest requirements.

APPENDIX A – SUMMARY OF DESIGN CRITERIA

Unless otherwise noted, the design criteria for this project are summarized as follows:

1.0 DESIGN CODES AND STANDARDS:

1. Ontario Building Code (OBC) 2017 [Note: Following references to "The Code", refer to this standard.]
2. CSA S16-14 – "Design of Steel Structures"
3. CSA A23.3-14 – "Design of Concrete Structures"
4. CSA A23.1/A23.2-14 "Concrete Materials and Methods of Concrete Construction/Methods of Testing for Concrete"

2.0 DESIGN LOADS – GENERAL

Design loads adhere to code requirements and are based on the intended building uses, building finishes and proposed building equipment. The importance factor for load types is based on the importance category. The building is designated as a 'Normal' importance building based on its use. The resulting Importance Factors are as follows:

	Importance Factor	
Load Type	Ultimate Limit States (ULS)	Serviceability Limit States (SLS)
Snow & Rain	1.0	0.9
Wind	1.0	0.75
Earthquake	1.0	N/A

2.1 Design Dead Loads:

Design dead loads are based on the roof assemblies and floor finishes noted on the architectural drawings at the time of design if available. They are not yet noted on the drawings. The following is typically assumed:

Typical Ceiling, Mechanical and Electrical (C,M&E)	0.25 kPa
C, M & E in Mechanical Penthouses	1.0 kPa
Floor finishes	0.1 kPa
Basic Partition Allowance	1.0 kPa
Block Wall Partition Allowance (determined by layout)	+/- 3.0 kPa
Cladding	+/- 1.5 kPa

2.2 Design Live Loads:

Specified Uniform Live Loads used for design are noted on plan or based on the following. Live load reduction factors are utilized to the extent allowed by the code.

Parking Level:

- Typical areas 2.4 kPa
- Mechanical/Electrical Areas 7.2 kPa

- Garbage Rooms 7.2 kPa
- Storage Areas 4.8 kPa

Ground Floor
- Residential Areas 1.9 kPa
- Typical areas 4.8 kPa
- Commercial Areas 4.8 kPa
- Mechanical/Electrical Areas 7.2 kPa
- Exterior Areas Accessible to Trucks 12.0 kPa
- Exterior Areas Not Accessible to Trucks 4.8 kPa

Upper Levels:
- Residential Areas 1.9 kPa
- Amenity/Storage Areas 4.8 kPa
- Mechanical/Electrical Areas 7.2 kPa
- Stairs and Corridors 4.8 kPa

Roof Levels and Mechanical Penthouse
- Occupancy Live Load 4.8 kPa
- Mechanical/Electrical Areas 7.2 kPa
- Basic Uniform Snow load plus rain load 2.32 kPa
  (Plus snow drift accumulation as per OBC)
- 24 hour rain load 0.86 kPa

Specified Concentrated Loads are as follows:
- Roofs 1.3 kN
- Floors 9.0 kN
- Loading Docks & Podiums with Truck Access 54 kN

2.3 Design Wind Loads

Design wind loads are calculated based on the code using a 1 in 50 year return wind reference velocity pressure using the climatic data for the city in which the building will be located. For this project in the City of Ottawa, q(1/50)=0.41

Wind uplift loads on roofs shall be 1.0 kPa (net factored load) unless otherwise noted.

2.4 Design Seismic Loads

Seismic design loads are calculated based on the code which is based on a 2% probability of exceedance in 50 years using design data for the city in which the building is located. For this project in the City of Ottawa: Sa(0.2) = 0.439, Sa(0.5) = 0.237, Sa(1.0) = 0.118, Sa(2.0) = 0.056, Sa(5.0) = 0.015, Sa(10.0) = 0.0055 and PGA = 0.281.

3.0 SERVICEABILITY LIMITS:

Building drifts, displacements, deflections and other serviceability criteria is in accordance with the code and as noted below:

3.1 Deflection Criteria

The structure shall be designed to minimize the effects of deflections including the effects of long-term creep in concrete. The limitations are as per CSA S16.1, Limit State Design of Steel Structure, for steel structures and CSA A23.3, Design of Concrete Structures, Concrete Structures.

Deflection Criteria Summary

- Concrete Structures - Live Load Deflection - Span/360
- Concrete Structures - Long-Term Deflection - Span/480
- Steel Structures - Live Load Deflection - Span/360
- Wind Storey Drift - Height/500
- Seismic Storey Drift - Height/40

3.2 Levelness of Floors

Floors shall be designed and finished to acceptable tolerances for levelness to minimize installation problems with finishes and equipment. Floor flatness tolerances shall be in accordance with CSA A23.1.

APPENDIX B – LIST OF STRUCTURAL DRAWINGS

DRAWING NO.	DRAWING NAME	DATE	REVISION NO.
SK-01	LEVEL P1 FLOOR PLAN	2021-07-23	1
SK-02	LEVEL 1 FLOOR PLAN	2021-07-23	1
SK-03	LEVEL 2-3 FLOOR PLAN	2021-07-23	1
SK-04	LEVEL 4 FLOOR PLAN	2021-07-23	1
SK-05	LEVEL 5 FLOOR PLAN	2021-07-23	1
SK-06	LEVEL 6-7 FLOOR PLAN	2021-07-23	1
SK-07	LEVEL 8 FLOOR PLAN	2021-07-23	1
SK-08	LEVEL 9 UP FLOOR PLAN	2021-07-23	1
SK-09	LEVEL 10/MPH FLOOR PLAN	2021-07-23	1
SK-10	MECHANICAL PENTHOUSE FLOOR PLAN	2021-07-23	1

APPENDIX C – STRUCTURAL MATERIALS

Unless otherwise noted, structural materials shall meet the following specifications and requirements:

1. Structural Steel

W Sections:	Grade 350W CAN/CSA-G40.21
WWF Sections:	Grade 350W CAN/CSA-G40.21
Channels, Angles & Plates:	Grade 300W CAN/CSA- G40.21
HSS Sections:	Grade 350W CAN/CSA-G40.21 (Class C U.N.O.)

2. **Steel Reinforcement for Concrete:** CSA G30 Series (fy=400MPa)

3. Reinforced Concrete

Reinforced concrete shall meet the requirements of CSA A23.1/A23.2-04 "Concrete Materials and Methods of Concrete Construction/Methods of Testing for Concrete" and shall generally adhere to the following requirements:

ELEMENT OR LOCATION	CONCRETE STRENGTH (F'C @ 28D)	NOTES
Footings & Footing Piers	35 MPa	
Foundation Walls	35 MPa	
Shear Walls	35 MPa	
Other Walls	35 MPa	
Columns	35 MPa	
Beams	35 MPa	
Slabs	35 MPa	

Notes: Where concrete is exposed to de-icing chemicals, C-1 concrete with a direct corrosion inhibitor (DCI) additive shall replace the concrete noted above. Concrete strength is the larger of 35MPa or the strength noted above.

APPENDIX D – ESTIMATE OF STRUCTURAL QUANTITIES

The following is an estimate of structural quantities based on preliminary designs and past project experience. These quantities are to be read in conjunction with the drawings provided where indicative member sizes are shown. The quantities and member sizes will be modified as the design progresses and adequate allowance must be made for building elements not yet developed but indicated on the drawings of the other consultants. The cost consultant and/or contractor shall review these quantities with past experience on similar projects to develop the project estimates. These quantities are for preliminary costing only.

1.0 Cast-In-Place Concrete

Refer to the drawings for concrete outlines and indicative element sizes and thicknesses. Refer to Appendix C – Structural Materials for basic concrete specifications.

2.0 Concrete Reinforcement

2.1	Spread Footings	85 kg/m^3
2.2	Strip Footings	85 kg/m^3
2.3	Foundation Walls	150 kg/m^3
2.4	Shear Walls	200 kg/m^3
2.5	Columns	220 kg/m^3
2.6	Transfer Beams	220 kg/m^3
2.7	Slabs	
2.7.1	Slab on Grade	40 kg/m^3
2.7.2	Ground Floor Slabs	130 kg/m^3
2.7.3	Transfer Slabs	180 kg/m^3
2.7.4	Typical Superstructure Slabs	100 kg/m^3
2.7.5	Terrace Area Slabs	140 kg/m^3
2.7.6	Roof Slabs	110 kg/m^3
2.7.7	Mechanical Penthouse Slabs	140 kg/m^3
2.7.8	Note: Allow for slab shear reinforcing (stud rails) at 25% of column locations from level 02 and above.	

Smith + Andersen
1100 – 100 Sheppard Ave. East, Toronto ON, M2N 6N5
416 487 8151 f 416 487 9104 smithandandersen.com

MECHANICAL REPORT

FOR
933 GLADSTONE AVENUE
OTTAWA COMMUNITY HOUSING
OTTAWA, ON

OUR PROJECT NUMBER:
21305.000.M.000

DATE:
2021-07-15

ISSUED / REVISION:
ISSUED FOR SD – REV 0

LIMIT OF LIABILITY ASSOCIATED WITH THIS DOCUMENT

HAZARDOUS MATERIAL

It is understood that hazardous materials may be present (e.g. asbestos, mould, PCB's, etc.) within the existing building. The identification of and abatement recommendations with respect to hazardous materials is outside the scope of services provided by Smith + Andersen.

THIRD PARTY USE

Any use that a third party makes of this document, or reliance on or decisions to be based on it, are the responsibility of such third party. Smith + Andersen accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based upon this document.

GENERAL LIMITS

The review of existing installations was general in nature and limited to casual, visual observation without removal of ceilings, chases, destructive testing or dismantling. The review was not exhaustive and was performed to acquire a general understanding of the condition of existing systems. Very limited existing drawings were made available for the review of existing systems.

This document has been prepared solely for the use of the Ottawa Community Housing and its design team associated with 933 Gladstone development. The material contained in this document reflects Smith + Andersen's best judgement in light of the information available at the time of preparation. There is no warranty expressed or implied. Professional judgement was exercised in gathering and assessing information. The recommendations presented are the product of professional care and competence and cannot be construed as an absolute guarantee.

Where equipment sizing is provided it should be considered order-of-magnitude only as the project details that may affect systems (e.g. envelope quality, occupancy loads, equipment loading) sizing have not been established or finalized.

1. INTRODUCTION

1.1. DESCRIPTION

1.1.1. A proposed Group C construction located in Ottawa, ON.

1.1.2. The building is considered a “High Building” by the definitions of the applicable building code (e.g. Ontario Building Code (OBC)).

1.1.3. The facility will be owned and operated by Ottawa Community Housing Corporation.

1.1.4. The building will be approximately 31125 square metres (SM) or 335000 square feet (SF) above grade and 18 stories tall with 1 stories below grade. Approximate building height is 60 metres 197 feet) from average grade to the floor of the roof level.

1.1.5. There will be approximately 344 suites

1.1.6. The facility includes the following unique features:

.1 The facility will be designed to passive house construction

.2 The facility will be designed with the ability to connect to a future district energy plant.

1.1.7. Notable Sustainable Design Features

.1 The base mechanical design incorporates energy conservation and sustainable design measures in order to reduce the building’s operating costs, lower the impact it will have on the environment and improve the quality of the indoor environment. Some of the measures incorporated or to be considered are as follows,

.2 WATER USAGE

.1 Low flow fixtures shall be used throughout to minimize water usage. Refer to the plumbing section for performance values.

.3 HEAT RECOVERY

.1 Make up air systems shall use heat recovery wheels to reclaim energy from general exhaust and sanitary systems.

.4 EQUIPMENT IMPROVEMENTS

.1 All mechanical cooling equipment shall be CFC and HCFC free.

.2 All new supply fans shall be selected to operate at a static efficiency of 60% or greater.

.3 Condensing boilers shall be used for heating water. Condensing boilers can improve combustion efficiencies over 90%.

.4 Low temperature heating systems shall be employed to improved condensing boiler efficiency.

.5 Magnetic bearing chillers for improved part load performance shall be used.

.6 Ultra-high efficiency motors shall be specified throughout.

.7 Variable frequency drives shall be used on pumping and fan systems to save considerable energy at part loads as described in the HVAC systems section

.5 INDOOR AIR QUALITY

.1 Ventilation systems shall meet the requirements of ASHRAE 62.1

.2 Indoor air quality shall meet ASHRAE 555

2. DESIGN STANDARDS

2.1. GENERAL

2.1.1. Mechanical systems shall be designed and installed to maximize usable space within the building while maintaining optimum service clearances for maintenance and repair.

2.1.2. All equipment and materials shall be designed and installed in a neat and orderly fashion. In finished areas all mechanical systems shall be concealed unless specifically exposed as part of the architectural design.

2.1.3. The mechanical design will follow the requirements of the Ottawa Community Housing Corporation design standard, unless otherwise directed.

2.2. LEED/ENERGY CONSERVATION

2.2.1. The project shall not follow LEED process.

2.2.2. The project shall follow the passive house standards, however, shall not seek certification.

2.3. CODES AND STANDARDS

2.3.1. Mechanical systems shall be in accordance with applicable codes and standards including, but not limited to:

- .1 Authorities Having Jurisdiction (local building department requirements, local fire department requirements, local by-laws)
- .2 National:
  - .1 Air Conditioning and Refrigeration Institute (ARI)
  - .2 American National Standards Institute (ANSI)
  - .3 American Standard for Testing and Materials (ASTM)
  - .4 American Society of Mechanical Engineers (ASME)
  - .5 American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE):
  - .6 Canadian/American Air Balance Council (CAABC)
  - .7 Canadian Standards Association (CSA):
  - .8 Model National Energy Code for Buildings (MNECB)
  - .9 Natural Gas Utilization Code
  - .10 National Fire Protection Association (NFPA)
  - .11 Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
- .3 Ontario
  - .1 Ontario Building Code (OBC)
  - .2 Ontario Fire Code (OFC)
  - .3 Ontario Electrical Safety Code
  - .4 Operating Engineers Act

2.4. OUTDOOR DESIGN CONDITIONS

2.4.1. The sizing of mechanical systems shall be based on the outdoor air conditions shown in the following table:

	Dry Bulb Deg.C (Deg.F)	Wet Bulb Deg.C (Deg.F)	
Cooling Ottawa	30.0 (86.0)	23.0 (73.4)	OBC 2.5%
Heating Ottawa	-27.0 (-16.6)		OBC 1%

2.5. VENTILATION FOR ACCEPTABLE INDOOR AIR

2.5.1. Ventilation to meet acceptable indoor air quality shall be in accordance with ASHRAE Standard 62 and the applicable building code.

2.5.2. Specific minimum outdoor air (OA) ventilation rates are identified in the following table and are equal to the sum of a per person rate and per SM (SF) rate:

	L/s (CFM) Per Person	L/s-SM (CFM/SF)	Minimum OA - ACH	Comment
Residential Suites (Condo)				See Note 1
Office	2.4 (5)	0.3 (0.06)		
Amenity	2.4 (5)	0.3 (0.06)		
Lobby/Circulation	0 (0)	0.3 (0.06)		
Shipping	0 (0)	0.6 (0.12)		
Enclosed Parking		3.81 (0.77)		
Storage	0 (0)	0.6 (0.12)		
Note 1: The OA will be driven by the exhaust rate to the suites. 25 cfm is required per bathroom and 50cfm for the kitchen area.				

2.6. INDOOR DESIGN CONDITIONS

2.6.1. The indoor space conditions shall be in accordance with the following table:

	Summer		Winter	
	Temperature Deg.C. (Deg.F.)	Relative Humidity Note 1	Temperature Deg.C. (Deg.F.)	Relative Humidity
Space Type 1	23.9 (75) +/-1 Deg.C.	60% +/-5%	22.2 (72) +/-1 Deg.C.	30% +/-5%
Space Type 2	23 (74) +/-1 Deg.C.	60% +/-5%	21 (70) +/-1 Deg.C.	Note 1,2
Space Type 3			4.4 (40) +/-1 Deg.C.	Note 2
Residential Suites	23 (74) +/-1 Deg.C.	60% +/-5%	21 (70) +/-1 Deg.C.	Note 1,2
Amenity	Space Type 2	Space Type 2	Space Type 2	Space Type 2
Parking	Space Type 3	Space Type 3	Space Type 3	Space Type 3
Note 1: Generally, traditional air conditioning dehumidification is not “active” and follows sensible cooling load. Shoulder season operation may result in larger humidity swings unless “active” dehumidification techniques are applied.				

Note 2: No humidification is provided since the building envelope does not have a continuous vapour barrier.

2.6.2. Non-standard indoor design conditions to be determined during programming.

2.6.3. During the programming stage, the equipment provided for each space shall be reviewed in order to establish required cooling. In the event that insufficient equipment information is available the design shall assume the following minimums loads:

	Lighting W/SM (W/SF)	Equipment W/SM (W/SF)	Comments
Suites	0 (0)	0 (0)	
Office	12 (1.1)	22 (2.0)	
Commercial	15 (1.4)	22 (2.0)	
Meeting/Multi-purpose	15 (1.4)	22 (2.0)	
Lobby/Circulation	5.4 (0.5)	5.4 (0.5)	

2.7. AIR FILTRATION DESIGN

2.7.1. The following air filtration levels are proposed for the new HVAC air handling systems indicated:

.1 Exhaust air systems: None

.2 Exhaust air systems c/w Heat Recovery MERV 7

.3 Supply air systems (Pre Filters): MERV 7

.4 Supply air systems (Final Filters): MERV 13

2.7.2. Kitchen exhaust (grease laden) that cannot be exhaust at a suitable location to avoid entrainment of odours shall be equipped with ecology units.

2.8. NOISE DESIGN CRITERIA

2.8.1. All mechanical systems and components shall be designed and installed with attention to reducing sound and vibration levels to meet noise criteria and provide a space that is comfortable, acoustically, for the occupants.

2.8.2. Noise levels due to mechanical equipment, ductwork, grilles, registers, terminal devices, and diffusers shall be design not to exceed the recommended ASHRAE limit listed below for the areas indicated:

	NC (low)	NC (high)	Comments
Office	30	35	
Suites	30	35	
Meeting/Multi-purpose	30	35	
Lobby/Circulation	35	40	
Property Line		45	

2.8.3. The identified noise criteria resulting from the operation of mechanical systems assumes a finished room with all the final architectural finishes (e.g. ceilings and floor finishes) and furniture in place.

2.8.4. The acoustic performance of the project including mechanical systems shall be reviewed by the acoustical consultant.

2.9. SYSTEM REDUNDANCY

2.9.1. There are no process critical systems requiring full redundancy.

2.9.2. There shall be N+1 redundancy (Components - N - have at least one independent backup component +1) applied to the following systems:

2.9.3. Heating water pump system;

2.9.4. Heating water boilers

2.9.5. Domestic water heaters

2.9.6. Storm sump pumps;

2.9.7. Sanitary sump pumps;

2.10. TENANT AREAS

2.10.1. Areas that will be fit-up under separate contract are referred to as “Tenant Areas” and include:

2.10.2. Ground Floor Retail.

2.10.3. The building includes provisions for future Tenant Areas for the following base building services:

.1 Valve/capped connection to domestic cold water.

.2 Capped connection to sanitary drain and vent.

.3 Valve/capped connection to heating water.

.4 Valve/capped connection to chilled water.

.5 Capped connection for outdoor ventilation air.

.6 Capped connection for washroom exhaust air.

.7 Capped connection for general exhaust air.

3. HVAC

3.1. GENERAL

3.1.1. The heating, ventilation and air conditioning (HVAC) design and installation shall conform to current applicable codes and standards and shall be sized by recognized computation procedures referenced in ASHRAE.

3.1.2. Distribution pumps shall be triplex system (three pumps sized at 50% of the peak design circulation rate).

3.1.3. Variable flow distribution systems shall utilize variable frequency drives (VFD) on the distribution pumps and two-way control valves at the terminal devices. Minimum system flow rates shall be maintained either by including three-way control valves at a sufficient number of terminal devices or by installing a two-way (bypass) control valve across the supply and return mains modulated by a differential pressure controller.

3.2. HEATING SYSTEMS

3.2.1. The central boiler plant shall consist of three ultra-high efficiency, condensing, gas-fired, forced draft boilers each sized for approximately 50% of the total heating water requirement. Each boiler shall be sized for approximately 930 kW (3,175,000 Btu/hr) output. Boilers shall be equal to Viessmann, DeDetrich, Reillo, Patterson-Kelley or Buderus.

3.2.2. Space will be provided and piping will be planned for a future district energy connection in the P1 level.

3.2.3. The heating plant shall be sized to serve:

.1 Perimeter envelope losses.

.2 Building air handling unit heating coils.

.3 Snow Melting systems (as required)

.4 Entrance heating.

3.2.4. The heating water pumping system shall be variable primary.

3.2.5. Secondary heating water pump sets (run/standby) shall vary flow in response to building requirements through the use of variable speed drives. Secondary systems shall be provided for:

.1 Perimeter heating (supply water temperature shall be adjusted in relationship with outdoor air through the building automation system).

.2 Building air handling unit heating coils (supply water temperature shall be adjusted in relationship with outdoor air through the building automation system).

3.2.6. The heating plant including boilers and distribution pumps shall be on **emergency power**.

3.2.7. Heating coils not subjected to below freezing conditions shall be serviced by the heating water system.

3.2.8. Heating coils subjected to below freezing conditions shall be serviced by a glycol heating system complete with plate and frame heat exchanger and glycol distribution pumps. Glycol shall be 50% glycol by volume.

3.2.9. Perimeter heating in the lobby and amenity areas shall be provided in-floor radiant heating, trench heating units, or wall fin within enclosures.

3.2.10. All vestibules, entrances and service spaces shall be heated by force flow heating water cabinets or unit heaters complete with two-way control valves connected to the BAS.

3.2.11. Loading dock and similar type doors shall be equipped with overhead air curtains that shall be switched to start when the door is opened.

3.2.12. Radiant floor heating systems and snow melting systems shall consist of high density cross-linked polyethylene tubing embedded into the flooring structure/system. System shall be complete with distribution manifolds, circuit isolation and balancing valves, and controls. Tubing shall be rated for not less than 82.2 deg. C. (180 deg. F.) working temperature and 100 psig working pressure.

3.2.13. Chemical treatment systems including pipe line filters shall be provided for all heating water systems.

3.3. COOLING SYSTEMS

3.3.1. A central chiller plant located in the mechanical penthouse shall produce chilled water for cooling.

3.3.2. There will be space and piping configuration planned for connection to a future district energy plant in the basement.

3.3.3. The chiller plant shall be located over a floating floor. Floating floor is not by Division 15

3.3.4. The chilled water plant shall be variable primary flow pumping system.

3.3.5. The chiller plant shall consist of:

.1 Magnetic Bearing Centrifugal compressors operating on HFC-134 refrigerant;

.2 Chiller-1 shall be able to produce L/min (320 USgpm) of chilled water from 13.9 to 5.6 deg.C. (57 to 42 deg.F.) for a nominal capacity is 702 kW (200 tons). Chiller shall have 100% load performance efficiency of no greater than 0.635 kw/ton and an IPLV of kW/ ton.

.3 Chiller-2 shall be able to produce L/min (320 USgpm) of chilled water from 13.9 to 5.6 deg.C. (57 to 42 deg.F.) for a nominal capacity is 702 kW (200 tons). Chiller shall have 100% load performance efficiency of no greater than 0.635 kw/ton and an IPLV of kW/ ton.

.4 Acceptable products (Magnetic Bearing): McQuay, Smardt, or Multi-Stack.

3.3.6. The chilled water pumps shall vary flow in response to the building requirements through the use of variable speed drives. The water pumping system shall be primary and consist of one pump per chiller complete with an automatic isolation valve at each chiller. A differential pressure controlled bypass shall maintain a minimum flow in the chiller plant.

3.3.7. The condenser water plant shall consist of :

.1 Two cross-flow induced draft cooling towers each designed for 2271 L/min (600 USgpm) of condenser water from 35.6 to 28.9 deg.C. (96 deg.F. to 84 deg.F.) with a design wet bulb temperature of 24.4 deg.C. (76 deg.F.).

.2 The cooling tower motors shall be equipped with variable frequency drives. Each tower is equipped with one fan.

.3 Acceptable products: Baltimore Aircoil (BAC) or Evapco.

.4 Cooling tower sump heaters shall be on **emergency power**.

3.3.8. One condenser water pump shall be provided for each and shall be sized for 2271 L/min (600 USgpm). Approximate power for the pumps is 20 hp.

3.3.9. The condenser water system shall be equipped with a bypass to divert water to the cooling tower sump should the condenser water return temperature falls below 18.3 deg.C. (65 deg.F.): Exception during Winter Cooling mode.

3.3.10. Chemical treatment system including pipe line filters shall be provided for the chilled water and condenser water systems. The condenser water system treatment shall be chemical free.

3.3.11. A side stream solids separator with separate circulation pump shall be provided for condenser water circuit to extract and filter 2.5% of the peak flow rate.

3.4. DEHUMIDIFICATION

3.4.1. No “active” dehumidification shall be provided. All cooling systems shall “passively” dehumidify by lowing supply air temperature and, consequently, dehumidifying the supply air.

3.5. HUMIDIFICATION

3.5.1. No humidification shall be incorporated in the air handling units.

3.6. AIR HANDLING SYSTEMS

3.6.1. Suite/Amenity Fan Coil Units

.1 Suites and Amenity spaces shall be provided with one of the following fan coil units:

.1 High-rise vertical, floor mounted (four-pipe) fan coil units with a full access panel in front of the units complete with supply and return grilles. Acoustically lined return opening shall be included;

.2 Horizontal, slab-hung fan coil units recessed into ceiling bulkheads complete with full access panels beneath units.

.3 In-wall mounted (four-pipe) fan coil units with a full access panel in front of the units complete with supply and return grilles. Equal to Jaga.

.2 One fan coil unit shall be provided per suite and ducted (within ceiling space or bulkheads) to each bedroom/living area.

.3 Units shall be pressure-rated for high-rise application, 1,723 kPa (250 psig), and complete with pre-piping packages (including drain riser) that allow for quick installation;

.4 Thermostat or BAS sensor shall be remote mounted;

3.6.2. Suite Ventilation/ Exhaust Enthalpy Recovery

.1 Conditioned (heated and partly cooled) ventilation/outdoor air shall be supplied to the corridors and suites to offset exhaust rates by a 100% outdoor air, variable air volume air handling unit with heat recovery sections to reclaim/reject waste heat from exhaust air streams.

.2 The bathroom exhaust and kitchen exhaust for each suite shall be centrally collected and exhausted via the air handling unit heat recovery section.

.3 Unit shall consist of dampers, filters, enthalpy wheel, chilled water cooling coil, glycol heating coil, supply fan and exhaust fan.

.4 Commercial units shall be equal to Swegon or Tempeff.

.5 System capacities shall be as follows:

	Airflow L/S (CFM)	Comments
ERV-1	4483 (9500)	Floors 8-18N
ERV-2	2360 (5000)	Floors 6-9S
ERV-3	2595 (5500)	Floors 4-7N
ERV-4	1890 (4000)	Floors 4-5S
ERV-5	2360 (5000)	Floors G,2,3S
ERV-5	1982 (4200)	Floors G,2,3N
ERV-6	2360 (5000)	Laundry Unit

.6 Kitchen range exhaust shall be recirculating charcoal hoods.

.7 Acoustical concerns shall be addressed as described in the Noise and Vibration Control Section.

3.6.3. Variable Constant Air Volume Units AHU-1

.1 Variable constant volume units shall be indoor and shall recirculate air from the space to the air handler unit, mix with outdoor air, filter, heat/cool and supply to the space. The units shall be capable of 100% outdoor air for lobby pressurization if the outside temperature conditions require.

.2 Unit shall consist of dampers, mixing section, filters, chilled water cooling coil, glycol heating coil, supply fan c/w VFD, and separate return fan c/w VFD.

.3 Commercial units shall be equal to McQuay, Trane, York, or Engineered Air.

.4 System capacities shall be as follows:

	Airflow L/S (CFM)	Comments

AHU-1	945 (2000)	

.5 Acoustical concerns shall be addressed as described in the Noise and Vibration Control Section.

3.6.4. Parking Ventilation

.1 A ventilation system consisting of supply and exhaust fans shall be supplied for the parking area. The ventilation rate shall be the minimum identified Building Code rate. Parking exhaust fans shall be on **emergency power**.

.2 The parking ventilation system shall be started and stopped by a carbon monoxide (CO) detection and/or nitric oxide (NO) system. Exhaust fans shall be interlocked with the supply fan. When any CO/NO sensor detects 50 ppm the lead exhaust fan shall start and the supply fan shall operate at low speed. When any CO/NO sensor detects 100 ppm, the lag exhaust fan shall start and the supply fan shall operate at high speed.CO/NO system shall be equal to BW Technologies DC-420. Sensors shall be located 1,500 mm (60 inches) above the finish floor. Sensors shall have an accuracy of 1 ppm and shall have a 0-100 ppm range.

.3 Parking elevator lobbies shall be pressurized with ventilation air fed from heating only glycol outdoor air make-up units.

.4 Parking garage will be heated to above freezing temperatures using glycol unit heaters.

3.6.5. Loading Dock Ventilation

.1 A ventilation system consisting of supply and exhaust fans shall be supplied for the loading dock areas. The ventilation rate shall be the minimum identified Building Code rate.

.2 The ventilation system shall be started and stopped by a carbon monoxide (CO) detection and/or nitric oxide (NO) system. Exhaust fans shall be interlocked with the supply fan. When any CO/NO sensor detects 50 ppm the lead exhaust fan shall start and the supply fan shall operate at low speed. When any CO/NO sensor detects 100 ppm, the lag exhaust fan shall start and the supply fan shall operate at high speed. CO/NO system shall be equal to BW Technologies DC-420. Sensors shall be located 1,500 mm (60 inches) above the finish floor. Sensors shall have an accuracy of 1 ppm and shall have a 0-100 ppm range. Loading dock exhaust fans shall be on **emergency power**.

.3 Loading dock entrances shall be provided with local overhead door heaters with additional unit heaters to provide the ambient level of heating. Heaters shall be supplied from a glycol heating loop connected to the main heating system through a glycol/hot water heat exchanger.

3.6.6. Miscellaneous Systems

.1 Elevator machine and controller rooms shall be provided with fan coil units for cooling. Hydraulic and machine-less elevator machine rooms shall be exhausted to maintain at a negative pressure to maintain ventilation air into the room.

.2 Ventilation systems, comprising filtered outdoor and return air and an exhaust air fan, shall be provided for the mechanical and electrical rooms.

.3 Garbage rooms will be provided with ERVs for supply and exhaust.

.4 Laundry exhaust system shall be provided for the laundry room. A variable volume laundry exhaust system complete with lint removal shall be provided.

.5 Below grade stairs (from parking to exit to outdoors) shall be provided with stair pressurization fans in accordance with Code. Fans shall start on a fire alarm condition. Below grade stair pressurization fans shall be sized for 470 L/s (1,000 cfm) per floor at 248 pa. (1 in.WC) external static pressure. Fan and duct system shall be contained in a fire-rated enclosure from outdoor intake to discharge near or at the bottom of the stair.

3.7. NOISE AND VIBRATION CONTROL

3.7.1. All mechanical equipment shall be equipped with vibration isolation control measures to reduce the transfer of vibration generated noise into the building structure.

3.7.2. All supply, return and exhaust air system shall be equipped with silencers to reduce the duct borne equipment noise in the occupied spaces to acceptable NC levels. Attenuators are acceptable on variable air volume (VAV) boxes and fan powered VAV boxes provided acceptable to the acoustic consultant.

3.8. HVAC SYSTEMS INSULATION

3.8.1. Insulation for HVAC systems shall be in accordance with ASHRAE 90.1.

4. PLUMBING AND DRAINAGE

4.1. GENERAL

4.1.1. The Plumbing System shall conform to the Ontario Building Code (OBC).

4.1.2. All exterior site services including external cisterns shall be provided under the “Site Works” division or “Civil” contract. Scope of work for this Division shall end at 1500 mm (60 inch).

4.1.3. Above floor storm drains, sanitary drains and vents, 65 mm (2-1/2 inch) and larger shall be cast iron.

4.1.4. Above floor sanitary drains and vents, 50 mm (2 inch) and smaller shall be hard temper DWV copper drainage tubing.

4.1.5. Buried storm piping within the building shall be PVC.

4.1.6. Buried sanitary piping within the building shall be PVC.

4.1.7. Domestic water piping shall be copper type L.

4.1.8. Domestic water within suites shall be distributed from a common suite manifold, through the slab with PEX piping to the fixtures. All PEX piping within the slabs shall be complete with conduit to permit removal and future replacement. At each manifold, provide a domestic hot water and domestic cold water meter.

4.1.9. Valves shall be Crane or equal of type and construction to suit service and working pressures.

4.1.10. For all services 50 mm (2 inch) and smaller 4,136 kPa (600 psig) WOG ball valves shall be used.

4.2. STORM SYSTEMS

4.2.1. A complete system of roof drains and storm drainage piping shall be provided. All storm drain piping will be insulated.

4.2.2. The “Civil” consultant shall prepare the storm water management (SWM) approach for the site, which may determine that a retention storm cistern is required.

4.3. SANITARY SYSTEMS

4.3.1. A complete system of plumbing fixtures and sanitary drainage and vent piping shall be provided. All Sanitary drainage and vent piping will be insulated.

4.3.2. New above grade drains shall be collected and drained by gravity to site sanitary sewers. Drains below the municipal services invert elevations shall be collected in sump pits complete with duplex submersible pumps. Pits shall be pumped into the gravity drainage piping. Sump pumps shall be on **emergency power** (if available).

4.4. GROUND WATER DISCHARGE

4.4.1. Foundation drainage (Weeping Tile) shall be provided under the “Site Works” division.

4.4.2. Weeping tile shall be collected in settling sumps and transferred to sump pits complete with duplex submersible pumps. Pits shall be pumped into site services storm drainage system or sanitary drainage cistern as determined by the Geotechnical consultant. Sump pumps shall be on **emergency power**.

4.5. PLUMBING FIXTURES

4.5.1. Plumbing fixtures will follow the requirements of the OCH building standard.

4.5.2. Refer to Architectural section for description of washroom accessories. All washroom fixtures specified shall be AODA compliant.

4.5.3. Plumbing fixtures shall be water conserving type. Minimum (Refer to LEED/ENERGY CONSERVATION) baseline requirements:

	Metric	Imperial	Comments
Water Closets	4.8 Litres per flush	1.28 Gallons per flush	
Urinals	1.9 Litres per flush	0.5 Gallons per flush	
Lavatories (Public)	1.5 LPM @ 414 kPa	0.4 GPM @ 60 psig	
Lavatories (Private)	5.7 LPM @ 414 kPa	1.5 GPM @ 60 psig	
Kitchen Faucet	6.7 LPM @ 414 kPa	1.75 GPM @ 60 psig	
Showerheads	7.6 LPM @ 550 kPa	2.0 GPM @ 80 psig	

4.6. DOMESTIC COLD WATER

4.6.1. A 200 mm (8 inch) domestic water service shall be brought into the building for domestic water and fire services. The domestic water and fire services shall be isolated from the municipal water supply by approved backflow prevention devices.

4.6.2. A domestic cold water booster system shall be provided to maintain a minimum pressure of 310 kPa (45 psig) in the mechanical penthouse. Booster system shall consist of three pumps sized for 35% of the peak flow and equipped with variable speed drives. The domestic cold water booster system shall be on **emergency power**.

4.6.3. A replaceable bladder expansion tank suitable for domestic cold water shall be installed on the highest point of the domestic cold water system to reduce potential of water hammer and pump cycling on low load.

4.7. DOMESTIC HOT WATER

4.7.1. Domestic hot water shall be generated in part by a waste water heat reclaim system. Waste water heat reclaim system shall be comprised of a 3000 Gallon waste water storage tank and by 4x heat pump units equal to Piranha T15. Each PIRANHA unit would require a wastewater lift pump for each unit, as well as a duplex sludge pump system within the wastewater storage tank. The waste water heat recovery system is anticipated to makeup 48% of the domestic water load. The remainder of the domestic hot water load will be supplemented by 3x225 gallon tanks, each with a hot water coil and a supplementary gas fired heating section sized for 292 kW (1000 MBH) equal to PVI.

4.7.2. A replaceable bladder expansion tank suitable for domestic hot water shall be installed on the domestic hot water system to accommodate thermal expansion. A thermal/pressure relief valve shall be install to accommodate thermal expansion.

4.7.3. A recirculation loop and recirculation pump shall maintain flow in the domestic hot water system to maintain hot water at the fixtures at all time. A recirculation loop and recirculation pump with hot water heat exchanger, sized to accommodate piping thermal losses, shall be installed on pressure-independent loops to maintain hot water at the fixtures at all time.

4.8. NATURAL GAS

4.8.1. Natural gas shall be distributed to the terrace area and boiler room as required. All gas piping shall be schedule 40. Piping 64 mm (2-1/2 inch) and larger shall be welded. All gas piping shall be painted yellow in its entirety including concealed areas.

4.8.2. A high pressure risers 34.5 kPa (5 psig) shall serve the mechanical penthouse. A low pressure PRV station at approximately 1,744 to 2,740 Pa (7 to 11 in.WC.) shall be provided to serve the terrace.

4.8.3. Natural gas service for emergency generators shall be piped independently from the incoming service connection (downstream of the meter) to the generator.

.1 A supervised, Position Indicating Valve (PIV) shall be installed at the incoming gas station with contact that will initiate a trouble alarm condition at the generator control panel or fire alarm when the valve is closed.

.2 Dedicated generator gas supply shall be in a fire rated shaft with minimum vent opening of 25 mm (1 inch) as per CSA B149.1. The vented shaft shall be fire rated to match the floor slab rating. Any horizontal dedicated generator gas pipe shall be fire rated to match the floor slab rating.

.3 In accordance with CSA-B149.1-15 item 6.18 there shall be an isolation valve at the generator.

.4 Any isolation valves between the incoming gas service and the generator shall be supervised (monitored open-closed) at the fire alarm.

4.9. INSULATION

4.9.1. Insulation for plumbing systems shall be in accordance with ASHRAE 90.1.

4.9.2. All exposed insulation shall be complete with PVC jacket or canvas lagging suitable for painting.

5. FIRE PROTECTION AND LIFE SAFETY SYSTEMS

5.1. GENERAL

5.1.1. The Fire Protection System shall conform to the Ontario Building Code (OBC).

5.2. SPRINKLER

5.2.1. A wet pipe, hydraulically sized sprinkler system shall be installed for the building. Sprinkler design shall be to NFPA 13.

5.2.2. Sprinkler heads shall be:

.1 Upright brass type where no ceiling exists.

.2 Concealed type where ceilings occur.

.3 Provided with guards in exposed areas where heads are susceptible to damage.

.4 Sidewall or concealed in suites.

5.2.3. All piping 65 mm (2-1/2 inch) and larger shall be schedule 40 with Victaulic fittings.

5.2.4. All piping 50 mm (2 inch) and smaller shall be screwed.

5.2.5. The following sprinkler zones and coverage is anticipated.

Area	Type	Hazard	Remarks
Indoor parking garage	Dry	Ordinary GR2	
Multipurpose, Suites	Wet	Light	
Exterior Canopies	Dry	Light	Galvanized piping
Mechanical Rooms, Storage Rooms	Wet	Ordinary GR 1	

5.2.6. All supervised valves shall have end switches. Division 16 shall wire valves and switches into the main fire alarm panel.

5.2.7. Window sprinkler systems shall be provided for any rated glazing. Window sprinkler zone demand shall be added to the building sprinkler demand requirement. Window sprinkler zone demand shall be based on seven (7) sprinkler heads flowing at 76 L/Min (20 USGPM) per head.

5.2.8. Retail and/or Tenant areas shall be provided with upright sprinklers on a “grid” pattern to meet occupancy requirements.

5.3. STANDPIPE SYSTEMS

5.3.1. The building exceeds the area restrictions of the Ontario Building Code (OBC), and as such, requires a fire standpipe system complete with fire hose cabinets equipped with 38mm (1-1/2”) hose reels and 65mm (2-1/2”) hose connections.

5.3.2. Listed pressure reducing devices shall be installed where pressure exceeds 689 kPa (100 psig) at 38mm (1-1/2”) hose reels and exceeds 1,206 kPa (175 psig) at 65mm (2-1/2”) hose connections.

5.3.3. All fire hose cabinets on the ground floor (excluding when in service areas) shall have a brushed 304 stainless steel finish. Fire hose cabinets in other areas shall have prime painted steel doors. Fire hose cabinets shall be equipped with a fire extinguisher.

5.3.4. In lieu of fire hose cabinets in the tower, hose valves located in exit stairs shall be provided.

5.3.5. The parking garage shall be equipped with a dry standpipe system. An air dryer shall be installed on the compressed air supply to reduce moisture within the system. Drum drips on the standpipe system shall be electrically traced.

5.3.6. Vertical and horizontal standpipe piping shall be enclosed in 2hr fire rated enclosure. Where accepted by local authority having jurisdiction (e.g. Ontario), vertical standpipe does not require a fire rating provided it is located within a stairwell or service area having 2hr fire separate from the remainder of the floor.

5.4. SPRINKLER AND STANDPIPE WATER SERVICES

5.4.1. A ULC listed, combined sprinkler/standpipe pump shall boost incoming service water to the required pressure level for fire protection.

5.4.2. Fire pumps shall be complete with jockey pump, bypass, and test header piped to a street location.

5.4.3. Fire department siamese connection shall be provided for the sprinkler and standpipe system and shall be located near the main fire department entrance and not to exceed 45 metre (150 feet) from a fire hydrant. There shall be an additional one provided on the secondary street to meet NFPA 20 requirements for high rise buildings as required by the AHJ.

5.4.4. Combined Sprinkler/Standpipe risers shall be complete with 75 mm (3 inch) drain risers to permit testing of pressure reducing devices, flow switches and annunciation.

5.4.5. Fire department Siamese connection shall be provided for the sprinkler system.

5.5. PORTABLE FIRE EXTINGUISHERS

5.5.1. General areas including offices shall be covered by water type extinguishers. Mechanical rooms, electrical rooms and similar spaces shall be provided with chemical fire extinguishers.

5.6. ADDITIONAL MEASURES FOR BUILDING FIRE SAFETY

5.6.1. High Buildings

.1 As the building does not meet fall under the Ontario Building Code (OBC) "Additional Requirements for High Buildings" venting to aid fire-fighting is not required. An independent code review shall confirm this at a later date.

.2 As a fully sprinkler building, under Measure A of SB-4 Fire Safety in High Buildings, the following additional requirement shall be implemented:

.1 Venting to aid fire-fighting system is required.

.2 Below grade exits shall be separate from above grade exits and shall be pressurized.

.3 Air moving fans (serving more than two levels) shall be stopped during a fire event.

5.6.2. Interconnected Floor Spaces/Smoke Control

.1 The building is not expected to require a smoke control system typically related to interconnected floor spaces. An independent code review shall confirm this at a later date.

5.7. NATURAL GAS GENERATOR SYSTEMS

5.7.1. The emergency generator shall be a pre-packaged, exterior unit complete with all required ventilation and integral fuel storage.

5.8. SYSTEMS ON EMERGENCY POWER

5.8.1. The following is a summary of systems anticipated to be on **emergency power**:

System	Life Safety Emergency Power	Normal Emergency Power
Ground Water Sumps		Yes
Sanitary sumps		Yes
Bas (ups)		Yes
Fire pump package	Yes	
Boiler controls		Yes
Boiler pumps		Yes
Venting to aid firefighting exhaust fans	Yes	
Below grade stair pressurization fans	Yes	
Domestic water pumps		Yes
Comfort cooling systems and pumps		No
Electric tracing		Yes

5.9. SEISMIC REQUIREMENTS

5.9.1. The building shall have a Relevant Importance Category of:

.1 Normal: All buildings except those listed in the Importance Categories Low, High and Post-disaster (I_E = 1.0).

5.9.2. The mechanical systems and components will be designed in accordance with the seismic and wind restraint requirements for the project.

6. SYSTEM CONTROLS

6.1. GENERAL

6.1.1. Building Automation System (BAS)

6.1.2. A microprocessor system incorporating direct digital control shall be installed to control and monitor the mechanical systems. The BAS shall be BACNET compliant.

6.1.3. The BAS shall control and monitor air handlers, exhaust fan, heating and cooling equipment, and terminal units. The BAS shall interface with chillers, cooling towers, and boilers. The BAS shall monitor sump pits, temperature in critical common areas, etc.

6.1.4. The building operator's terminal shall be located in the building operator's room.

7. AIR AND WATER BALANCING

7.1.1. All air and water systems shall be balanced prior to building turn-over. Balancing reports shall be submitted for review by the consultant and owner.

8. COMMISSIONING

8.1. CONTRACTOR COMMISSIONING

8.1.1. Contractor shall perform equipment testing (piping, ductwork) and obtain sign-offs, equipment start-up and check sheet (with manufacturers), arrange for training on equipment (provided to owner) and coordinate with independent commissioning agent.

8.2. INDEPENDENT COMMISSIONING

8.2.1. To be determined.

9. MECHANICAL AND ELECTRICAL COORDINATION

9.1.1. Motor starters shall be supplied and installed by Division 16. Starters shall be grouped into motor control centres or starter racks where feasible. Power wiring (line side and load side) shall be by Division 16.

9.1.2. Variable speed drives shall be supplied and installed by Division 15. Power wiring (load and line) shall be by Division 16.

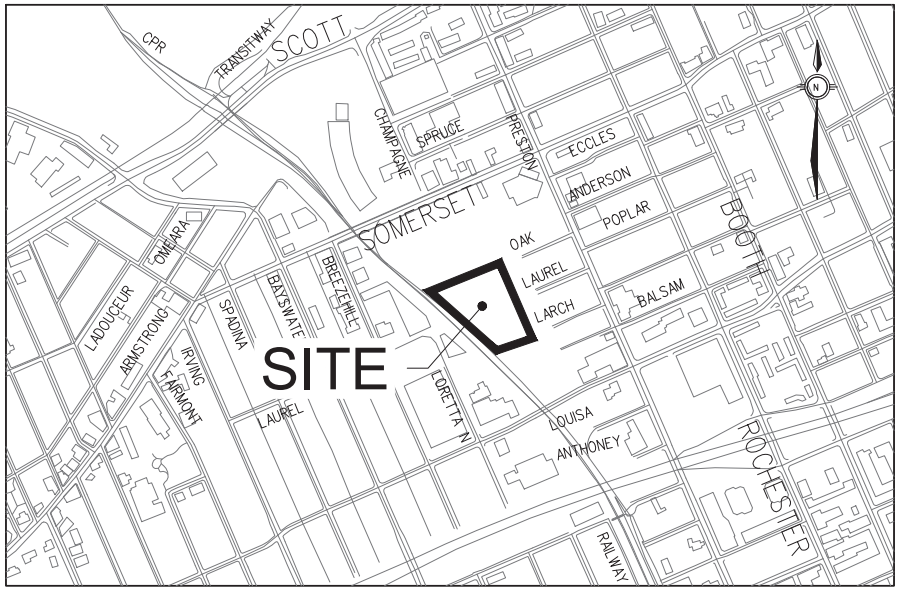
9.1.3. Control wiring shall be by Division 15.

9.1.4. All fire alarm wiring shall be by Division 16. All smoke detectors including duct-mounted smoke detectors, integral with the fire alarm system, shall be supplied and installed by Division 16.

END OF MECHANICAL DESIGN BRIEF

Document2

SAVEAS…XXX-X\SPEC\OUTLINE\XXXXX.XXX.M.XXX.DB001



GLADSTONE VILLAGE
933 GLADSTONE AVENUE

MORRISON HERSHFIELD

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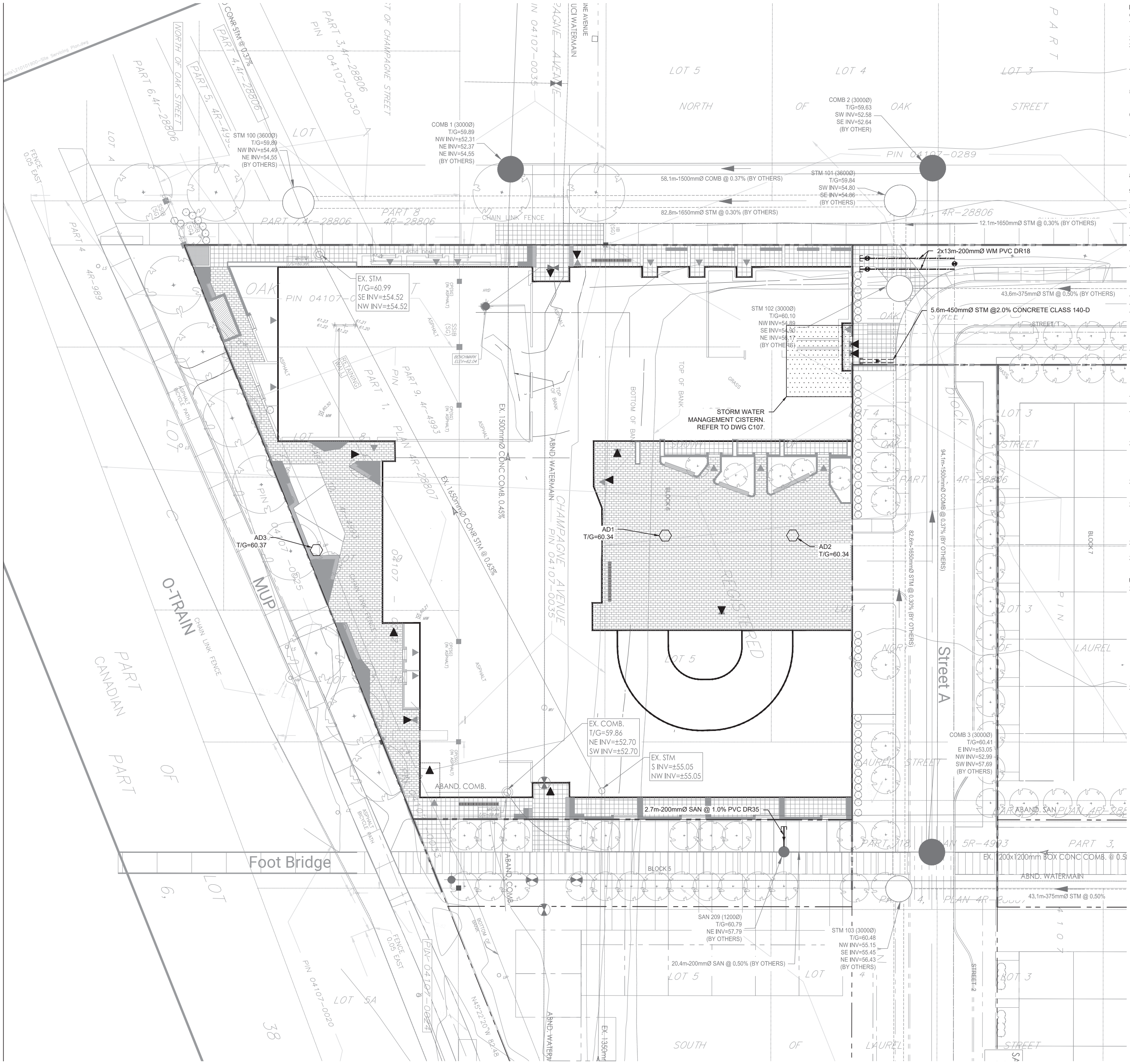
ISSUED FOR SITE PLAN APPROVAL
SEPTEMBER 2021



NOTES:

GENERAL

1. COORDINATES ARE IN MTM ZONE 9 (76°30' WEST LONGITUDE) NAD-83 (ORIGINAL)
2. SERVICES ARE TO BE CONSTRUCTED TO 1.0m FROM FACE OF BUILDING.
3. CONTRACTOR TO VERIFY ALL EXISTING UTILITY ELEVATIONS AT CONNECTION AND CROSSING LOCATIONS PRIOR TO CONSTRUCTION AND ADVISE THE ENGINEER OF ANY DISCREPANCIES.
4. UNLESS DIRECTED OTHERWISE ANY DAMAGED ASPHALT OR CURB (REGARDLESS OF WHETHER WITHIN OR EXTERNAL TO THE SITE) SHALL BE REINSTATED IN ACCORDANCE WITH CITY STD. DET. R10 AND S1.
5. UNLESS DIRECTED OTHERWISE THE CONTRACTOR SHALL REINSTATE ALL SIGNS, LIGHTING AND OTHER STREET FURNITURE DISTURBED BY THE WORK.
6. THE CONTRACTOR SHALL DEVELOP AND IMPLEMENT TRAFFIC MANAGEMENT PLANS FOR WORK IN RIGHT OF WAY IN ACCORDANCE WITH OTM BOOK 7.
7. CLAY SEALS SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STANDARD DETAIL S8 AND SHALL BE INSTALLED AT 50m INTERVALS IN ALL PIPE TRENCHES. CLAY SEAL TO EXTEND FULL TRENCH WIDTH AND FROM BOTTOM OF TRENCH EXCAVATION TO UNDERSIDE OF ROAD STRUCTURE, WITH A MINIMUM THICKNESS OF 1m ALONG PIPE.
8. THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY SERVICING NEEDED, AND SHALL ALSO COORDINATE WITH OTHER TRADES AS NECESSARY.
9. TOPOGRAPHICAL SURVEY PREPARED BY STANTEC DATED DEC 21, 2021.

SEWERS

10. ALL STORM SEWERS, SANITARY SEWERS AND CATCH BASINS LEADS SHALL BE PVC DR 35 UNLESS OTHERWISE SPECIFIED.
11. REFER TO DETAIL 1 ON DRAWING C004 FOR SEWER INSTALLATION.
12. CONTRACTOR SHALL MAINTAIN EXISTING SEWER FLOWS DURING ONSTRUCTION IN ACCORDANCE WITH CITY OF OTTAWA SPECIFICATIONS.
13. ALL MAINTENANCE HOLES, CATCHBASINS AND AREA DRAINS SHALL BE ADJUSTED TO POST-CONSTRUCTION GRADE.
14. LEAKAGE TEST (SANITARY SEWER ONLY) AND CCTV INSPECTION SHALL BE COMPLETED AS PER CITY OF OTTAWA SPECIFICATIONS PRIOR TO THE INSTALLATION OF BASE COURSE ASPHALT.

WATERMAINS

15. REFER TO DETAIL 2 ON DRAWING C003 FOR WATERMAIN INSTALLATION.
16. ALL WATERMAIN MATERIALS AND CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH THE 2017 EDITION OF THE CITY OF OTTAWA STANDARD SPECIFICATIONS AND STANDARD DRAWINGS. PVC PIPE TO BE CLASS 150 DR18 TO LATEST EDITION OF A.W.W.A. SPECIFICATION C900 AND CSA B137.3 LATEST AMENDMENT WITH GASKETED BELL AND SPIGOT COUPLINGS.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A WATER PERMIT AS REQUIRED FROM THE CITY OF OTTAWA, AND COMPLYING WITH ALL CITY OF OTTAWA REQUIREMENTS. THE CITY MAY REQUIRE THAT CERTAIN ACTIVITIES (E.G. VALVE OPERATION, CONNECTION OF NEW WATER SERVICE TO EXISTING WATERMAIN, DISINFECTION) BE CARRIED OUT ONLY BY CITY FORCES.
18. ALL VALVES 300mm DIAMETER AND SMALLER SHALL INCLUDE A VALVE BOX AS PER W24.
19. THE NEW WATERMAIN IS TO BE INSTALLED WITH A MINIMUM OF 2.4m COVER (INCLUDING HYDRANT LEAD). WHERE 2.4m COVER IS NOT POSSIBLE, PROVIDE INSULATION IN ACCORDANCE WITH CITY OF OTTAWA STANDARD DETAILS W22 & W23.
20. THRUST RESTRAINT SHALL BE PROVIDED BY BOTH RESTRAINING/RETAINING RINGS AND THRUST BLOCKS AT ALL DEAD END CAPS, PLUGS, VALVES, BENDS AND REDUCERS AS PER CITY OF OTTAWA STANDARD DETAILS W25.3, W25.4, W25.5 AND W25.6. ALL TEMPORARY THRUST RESTRAINTS ARE THE RESPONSIBILITY OF THE CONTRACTOR.
21. TRACER WIRE SHALL BE PROVIDED FOR ALL NEW PVC WATERMAINS IN ACCORDANCE WITH THE SPECIFICATIONS AND CITY OF OTTAWA STANDARD DETAIL W36.
22. CATHODIC PROTECTION SHALL BE PROVIDED FOR ALL NEW WATERMAINS IN ACCORDANCE WITH THE SPECIFICATIONS AND CITY OF OTTAWA STANDARD DETAILS W39, W40, W41, W42 AND W47. CATHODIC PROTECTION OF EXISTING WATERMAINS SHALL ALSO BE PROVIDED AT CONNECTIONS BETWEEN EXISTING AND NEW WATERMAINS.
23. ADJUST ALL VALVE CHAMBERS, VALVE BOXES AND HYDRANTS TO FINISHED GRADE.
24. WATERMAIN SHUTDOWNS SHALL BE SCHEDULED A MINIMUM OF 72 HOURS IN ADVANCE

UTILITY NOTE

25. THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND ANDOVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWING,AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM. THE CONTRACTOR WILL BE RESPONSIBLE FOR SUPPORTING AND PROTECTING ANY EXISTING UTILITIES, AS REQUIRED, IN ACCORDANCE WITH THE UTILITY OWNERS' REQUIREMENTS. CONTRACTOR IS REQUIRED TO OBTAIN LOCATES, IN ADVANCE OF EXCAVATION WORK, AND FORWARD COPIES OF THE LOCATES TO THE CONSULTANT AND THE OWNER PRIOR TO EXCAVATION.
26. ALL CROSSING OF EX. UTILITIES TO BE IN ACCORDANCE WITH CITY STD. DET. S10

LEGEND

- NEW AREA DRAIN (REFER TO MECHANICAL FOR CONTINUATION)
- NEW STORM SEWER
- NEW SANITARY SEWER
- NEW WATERMAIN
- NEW WATER VALVE AND VALVE BOX (W24)
- EXISTING STORM MANHOLE BY OTHERS
- EXISTING SANITARY MANHOLE BY OTHERS
- EXISTING STORM SEWER BY OTHERS
- EXISTING SANITARY SEWER BY OTHERS
- EXISTING WATERMAIN BY OTHERS
- NEW ENTRANCE
- STORMWATER MANAGEMENT CISTERN

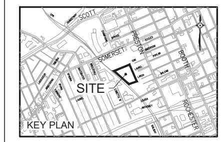
1:250
HORIZONTAL
0m 5 10

diamond schmitt

KWC

MORRISON HERSHFIELD

200-2932 BASELINE ROAD, OTTAWA, ON K2H 1B1



ISSUED

No.	Date	Description
1	2021 AUG 03	ISSUED FOR 100% SD
2	2021 SEP 08	ISSUED FOR SITE PLAN APPROVAL

LICENSED PROFESSIONAL ENGINEER
J.G. FOOKES
Sept 08, 2021
PROVINCE OF ONTARIO

CONTRACTOR MUST CHECK & VERIFY ALL DIMENSIONS ON THE JOB.

DO NOT SCALE DRAWINGS.

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNTIL SIGNED BY THE ARCHITECT.

GLADSTONE VILLAGE PHASE 1

933 Gladstone Avenue - Phase 1
211006

SITE SERVICING PLAN

Scale: 1:250
Project No: 210101900
Date: 08/09/21

C001

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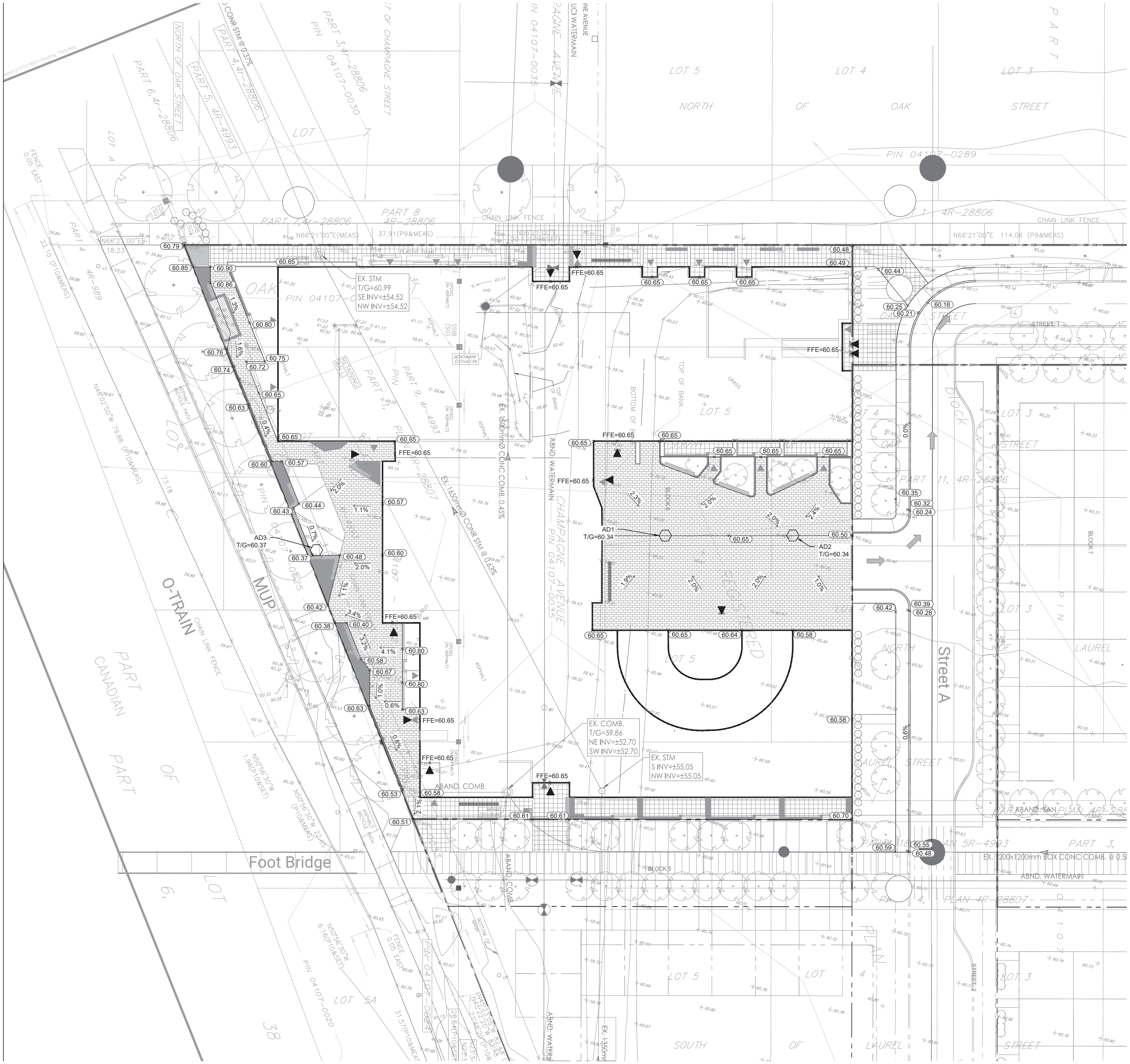


NOTES:
GRADING

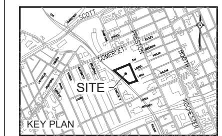
1. ALL ELEVATIONS ARE IN METERS UNLESS OTHERWISE NOTED.
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS.
3. REINSTATE ALL DISTURBED/DAMAGED AREAS TO THEIR ORIGINAL CONDITION OR BETTER.
4. PROVIDE POSITIVE DRAINAGE, MATCHING EXISTING OVERALL DRAINAGE PATTERN INDICATED.
5. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA AND/OR ONTARIO PROVINCIAL STANDARDS.
6. SUBGRADE FOR THE PAVED AREAS SHALL BE PROOF ROLLED WITH A LARGE (10 TONNE MINIMUM) STEEL DRUM ROLLER UNDER DRY CONDITIONS. ANY SOFT AREAS EXPOSED FROM THE PROOF ROLLING SHOULD BE SUBEXCAVATED TO A DEPTH OF 500mm AND REPLACED WITH COMPACTED SUBGRADE FILL.
7. ALL AREAS SHALL DRAIN AT A MINIMUM OF 1%. ANY DISCREPANCIES PREVENTING THIS SHALL BE REPORTED TO THE ENGINEER PRIOR TO CONTINUING WORK.
8. BLEND NEW EARTHWORK INTO EXISTING, PROVIDING VERTICAL CURVES OR ROUNDING AT ALL TOP AND BOTTOM OF SLOPES.
9. CONCRETE SIDEWALKS SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STANDARD DRAWING SC1.4 AND SC4.
10. CONCRETE BARRIER CURBS SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STANDARD DRAWING SC1.1.
11. SAW CUT AND KEY GRIND ASPHALT AT ALL TIE-INS PER CITY OF OTTAWA STANDARD R10.
12. REINSTATE LINE PAINTING.
13. REFER TO GEOTECHNICAL INVESTIGATION REPORT PREPARED BY XXXX FOR SUBSURFACE CONDITONS, CONSTRUCTION RECOMMENDATIONS AND GEOTECHNICAL INSPECTION REQUIREMENTS. THE GEOTECHNICAL CONSULTANT SHALL REVIEW EXCAVATIONS PRIOR TO THE PLACEMENT OF GRANULAR MATERIAL.

LEGEND

- NEW AREA DRAIN
- 74.78 PROPOSED ELEVATION
- EXTRAPOLATED EXISTING ELEVATION
- 2.0% PROPOSED SLOPE DIRECTION
- MAJOR OVERLAND FLOW PATH
- PAVERS - REFER TO LANDSCAPE
- LANDSCAPED ISLAND - REFER TO LANDSCAPE

diamond schmitt KWC

MORRISON HERSHFIELD
200-2932 BASELINE ROAD, OTTAWA, ON K2H 1B1



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No.	Date	Description
1	2021 AUG 03	ISSUED FOR 100% SD
2	2021 SEP 08	ISSUED FOR SITE PLAN APPROVAL

LICENSED PROFESSIONAL ENGINEER
J.G. FOOKES
Sept 08, 2021
PROVINCE OF ONTARIO

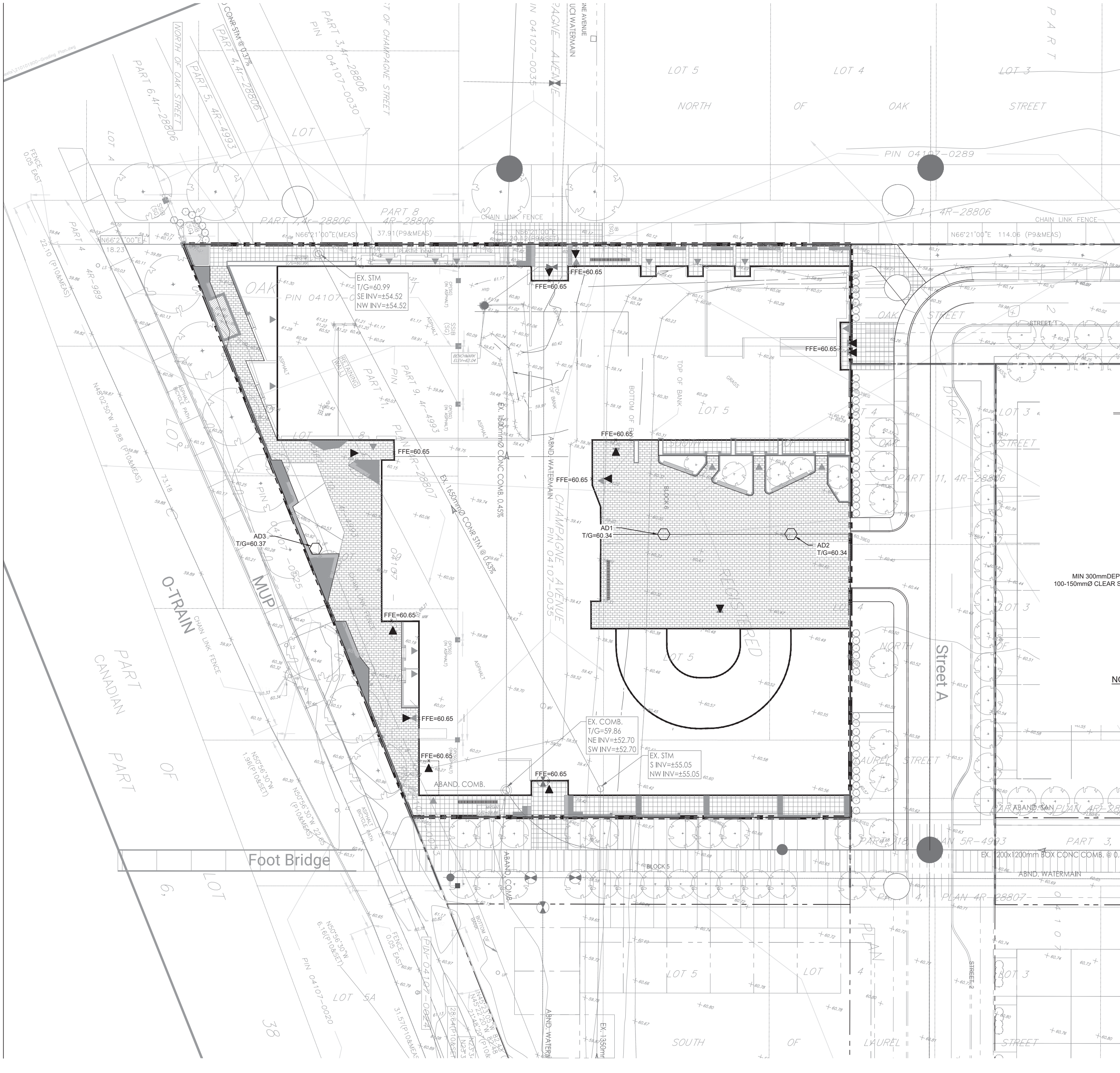
GLADSTONE VILLAGE PHASE 1

933 Gladstone Avenue - Phase 1
211006

GRADING PLAN

Scale: 1:250
Project No: 210101900
Date: 08/09/21

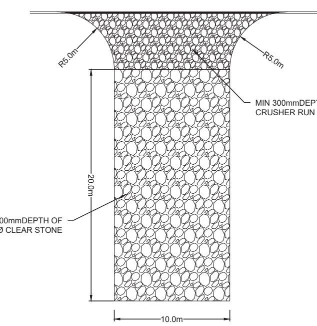
C002



EROSION AND SEDIMENT CONTROL

1. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OFTHE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE, DURING CONSTRUCTION ACTIVITIES.THIS INCLUDES LIMITING THE AMOUNT OF EXPOSED SOIL, USING CATCH BASIN SEDIMENT PROTECTION AND INSTALLING SILT FENCES AND OTHER EFFECTIVE SEDIMENT TRAPS. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
2. EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE IMPLEMENTED PRIOR TO CONSTRUCTION AND REMAIN IN PLACE UNTIL VEGETATION IS ESTABLISHED.
3. REGULAR INSPECTION AND MAINTENANCE OF THE EROSION AND SEDIMENT MEASURES SHALL BE UNDERTAKEN. THE IMPLEMENTATION AND ADJUSTMENT AND/OR CORRECTIVE MAINTENANCE OF THE EROSION AND SEDIMENT MEASURES IS AN INTEGRAL PART OF THE PLAN AND MUST BE PERFORMED.
4. CONTRACTOR IS RESPONSIBLE TO KEEP THE ROADS FREE AND CLEAN FROM MUD AND DEBRIS. AS A MINIMUM THIS SHALL INCLUDE SWEEPING LIBRARY ROAD DAILY DURING EXCAVATION WORK.
5. THE SEDIMENT AND EROSION CONTROL MEASURES MAY BE MODIFIED IN THE FIELD AT THE DISCRETION OF THE CITY OF OTTAWA SITE INSPECTOR OR CONSERVATION AUTHORITY.

TEMP. ASPHALT RAMP OR CURB CUT



NOTES:
1. INSTALL AT ALL SITE ACCESS LOCATIONS.
2. TEMPORARY CONSTRUCTION ACCESS SHALL BE REMOVED ON COMPLETION OF THE WORK AND ALL DISTURBED AREAS SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION.

LEGEND

LIGHT DUTY SILT FENCE BARRIER (PER OPSD 219.110)

1:250
HORIZONTAL
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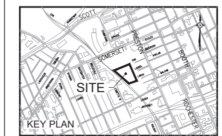
diamond schmitt
KWC

MORRISON HERSHFIELD
200-2932 BASELINE ROAD, OTTAWA, ON K2H 1B1



ISSUED

No.	Date	Description
1	2021 SEP 08	ISSUED FOR SITE PLAN APPROVAL

J.G. FOOKES
Sept 08, 2021
LICENSED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

CONTRACTOR MUST CHECK & VERIFY ALL DIMENSIONS ON THE JOB.
DO NOT SCALE DRAWINGS.

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GLADSTONE VILLAGE
PHASE 1
933 Gladstone Avenue - Phase 1
211006

EROSION AND SEDIMENT CONTROL PLAN

Scale: 1:250
Project No: 210101900
Date: 08/09/21

C003

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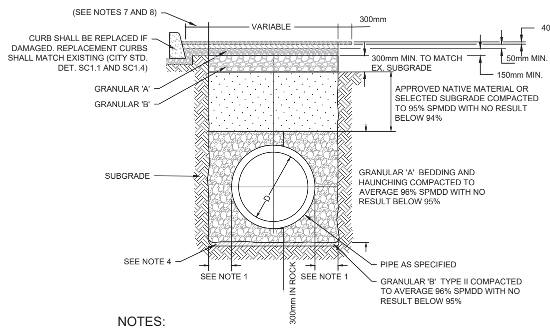


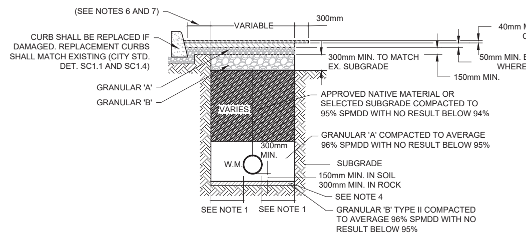
NOTES:

1.

PIPE INSIDE DIAMETER (mm)	CLEARANCE (mm)
900 OR LESS	CONC 450 PVC 450
OVER 900	500

2. FINAL BACKFILL - APPROVED NATIVE MATERIAL OR SELECT SUBGRADE
3. ALL DIMENSION ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.
4. WHEN NECESSARY POOR SOILS SHALL BE EXCAVATED TO CREATE A FOUNDATION THAT SHALL BE FILLED TO THE BOTTOM OF THE BEDDING WITH GRANULAR 'B'.
5. THE USE OF CLEAR CRUSHED STONE AS A BEDDING LAYER IS NOT PERMITTED ANYWHERE ON THIS SITE.
6. ALL EXISTING ASPHALT AND CONCRETE REMOVAL LIMITS TO BE SAWCUT.
7. 300 MM KEY TO BE SAWCUT AND REMOVED OR MILLED.
8. ROAD REINSTATEMENT ON THE CURB SIDE OF THE TRENCH EXCAVATION SHALL EXTEND TO THE CURB FACE.
9. TACK COAT SHALL BE APPLIED TO ALL MILLED SURFACES

1 C101 SEWER AND WATERMAIN INSTALLATION TYPICAL DETAIL
N.T.S.



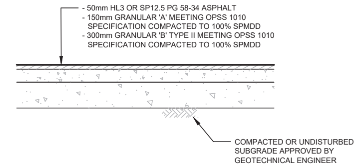
NOTES:

1.

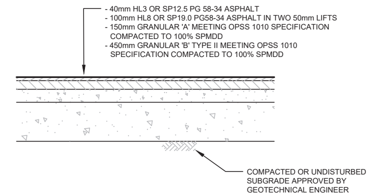
PIPE INSIDE DIAMETER (mm)	CLEARANCE (mm)
900 OR LESS	450
OVER 900	500

2. ALL EXISTING ASPHALT REMOVAL AND CONCRETE LIMITS TO BE SAWCUT.
3. TRENCH SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STANDARD DETAIL W17.
4. WHEN NECESSARY POOR SOILS SHALL BE EXCAVATED TO CREATE A FOUNDATION THAT SHALL BE FILLED TO THE BOTTOM OF THE BEDDING WITH GRANULAR 'B'.
5. THE USE OF CLEAR CRUSHED STONE AS A BEDDING LAYER IS NOT PERMITTED ANYWHERE ON THIS SITE.
6. 300mm KEY TO BE SAWCUT AND REMOVED OR MILLED.
7. ROAD REINSTATEMENT ON THE CURB SIDE OF THE TRENCH EXCAVATION SHALL EXTEND TO THE CURB FACE.
8. TACK COAT SHALL BE APPLIED TO ALL MILLED SURFACES.

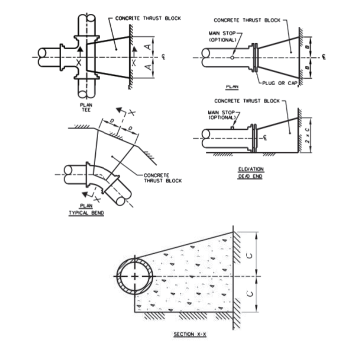
2 C101 SEWER AND WATERMAIN INSTALLATION TYPICAL DETAIL
N.T.S.



3 C101 LIGHT DUTY PAVEMENT
N.T.S.



4 C101 HEAVY DUTY PAVEMENT
N.T.S.



NOTES:

1. CONCRETE SHALL BE PLACED TO WITHIN 50mm OF FACE OF THE BELL.
2. BOND BREAKER TO BE USED BETWEEN CONCRETE AND FITTINGS.
3. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.
4. REFER TO W25.4 FOR ADDITIONAL REQUIREMENTS.
5. THRUST BLOCKS SHALL BE 20 MPa. CONCRETE AND AS SHOWN ON ABOVE DRAWINGS UNLESS OTHERWISE DIRECTED BY THE CONTRACT ADMINISTRATOR. THE BLOCK SHALL BE CENTERED ON THE THRUST FORCE AND SHALL ALSO PARTIALLY CRADLE THE FITTING TO DISTRIBUTE THE FORCE. THE SIDES OF THE BLOCK SHALL BE 80mm FROM THE JOINT ON EITHER SIDE OF THE BEND OR TEE.
6. THE CONCRETE WHERE POSSIBLE SHALL BE PLACED AGAINST UNDISTURBED SOIL AT THE BOTTOM AND SIDE OF THE TRENCH. WHERE IT IS NOT POSSIBLE, THE FILL BETWEEN THE BEARING SURFACE AND THE UNDISTURBED SOIL MUST BE COMPACTED IN ACCORDANCE WITH D-029.
7. EXCEPT FOR THE ADDITION OF WATER, CONCRETE FOR THRUST BLOCKS SHALL COME PREMIXED FROM CONCRETE SUPPLIER, AS 'READY MIX' FROM A CONCRETE TRUCK. ON-SITE MIXING OF CEMENT, SAND AND AGGREGATE ETC. BY THE CONTRACTOR, FOR THE PURPOSE OF MAKING CONCRETE THRUST BLOCKS/ ANCHORS WILL NOT BE ACCEPTED.

Ottawa — CONCRETE THRUST BLOCKS FOR PVC AND DI PIPE 400mm AND UNDER
DATE: MAY 2001 · REV. DATE: MARCH 2016 · DWG. No.: W25.3

TABLE OF RESTRAINED LENGTHS FOR DI AND PVC WATERMAIN PIPE IN STANDARD GRANULAR 'A' EMBEDMENT IN SOILS OF BEARING CAPACITY OF 100 KPa AND OVER

REDUCERS — LARGER DIAMETER SIDE (TO BE RESTRAINED)

SMALLER DIAMETER (UNRESTRAINED)	100mm	150mm	200mm	250mm	300mm	400mm
100mm	N/A	3	6	8	10	14
150mm	N/A	N/A	4	6	9	13
200mm	N/A	N/A	N/A	3	6	11
250mm	N/A	N/A	N/A	N/A	4	9
300mm	N/A	N/A	N/A	N/A	N/A	7
400mm	N/A	N/A	N/A	N/A	N/A	N/A

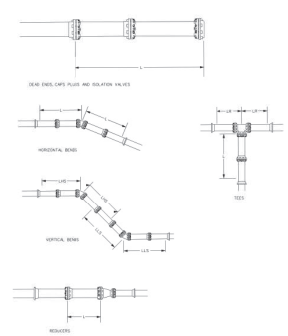
PIPE DIAMETER

	100mm	150mm	200mm	250mm	300mm	400mm
DEAD ENDS, CAPS, PLUGS, VALVES						
BEFORE CAPS AND EITHER SIDE OF VALVES - L	5	6	9	10	12	16
VERTICAL BENDS						
LENGTH HIGH SIDE - LHS	3	4	5	6	7	9
LENGTH LOW SIDE - LLS	1.5	2	2.5	3	3.5	4.5
TEES						
LENGTH ALONG THE BRANCH - L	1	1	1	1	1	1
LENGTH ALONG THE RUN - Lr	3	3	3	3	3	3
HORIZONTAL BENDS						
11.25, 22.5, AND 45 DEGREE BENDS	1	1.5	1.5	2	2	2.5

NOTES:

1. THE ABOVE RESTRAINED LENGTHS MEET OR EXCEED THE WATERMAIN DESIGN CRITERIA FOR FUTURE ALTERATIONS AUTHORIZED UNDER A DRINKING WATER WORKS PERMIT.
2. THE ASSUMPTIONS MADE FOR THE ABOVE CALCULATIONS ARE AS FOLLOWS:
   a) MAXIMUM OPERATING PRESSURE OF 100 psi.
   b) MAXIMUM SURGE PRESSURE WITH A FLOW VELOCITY CHANGE OF 0.6 m/s OF 115 psi (115 psi FOR CLASS 52 DI AND FOR PVC MAX. SURGE IS 35 psi)
3. FOR SOFTWARE CALCULATIONS A TEST PRESSURE OF 150 psi AND A SAFETY FACTOR OF 1.5 WAS USED WHICH RESULTS IN 225 psi MAXIMUM PRESSURE.
4. TYPE 5 TRENCH BEDDING.
5. DEPTH TO BURY 2.4 METRES EXCEPT FOR VERTICAL BENDS WHERE THE HIGH SIDE IS AT 1.8 METRES.
6. EMBEDMENT MATERIAL GRANULAR 'A' WITH CHARACTERISTICS OF ASTM D2487 GP.
7. GP SOILS ARE DESCRIBED AS POORLY GRADED GRAVEL AND SAND-GRAVEL MIXES WITH LITTLE OR NO FINES.
8. (Lr) MUST BE OF SOLID PIPE WITHOUT JOINTS, FITTINGS, ETC.
9. THE TABLES APPLY TO BOTH DUCTILE IRON AND PVC. WHERE ONE LENGTH EXCEEDED THE OTHER THE LONGER LENGTH WAS USED.
10. RESTRAINED LENGTHS ARE IN METRES.

Ottawa — TABLES OF RESTRAINED LENGTHS FOR PVC AND DI PIPE 400mm AND UNDER
DATE: MAY 2001 · REV. DATE: MARCH 2011 · DWG. No.: W25.6



NOTES:

1. ANY JOINT THAT FALLS WITHIN THE RECOMMENDED LENGTH (L) SHALL BE RESTRAINED. SEE DRAWING W25.6
2. TO REDUCE THE NUMBER OF RESTRAINERS REQUIRED THE USE OF FULL PIPE LENGTHS IS RECOMMENDED IN THESE AREAS.

Ottawa — RESTRAINING AND RETAINING RINGS FOR PVC AND DI PIPE 400mm AND UNDER
DATE: MAY 2001 · REV. DATE: NONE · DWG. No.: W25.5

1. SOIL DESCRIPTION: VERY FINE SANDS, SANDY CLAYS, CLAYS.
SOILS WITH TYPICAL BEARING STRENGTH OF 100 TO 199 KPa

PIPE DIAMETER	DIMENSION NOTED ON W25.3			
	A	B	C	D
102	250	250	200	200
152	400	400	250	300
203	550	550	300	450
254	650	650	400	500
305	800	800	450	650
406	1050	1050	600	850

2. SOIL DESCRIPTION: SILTY SAND GRAVELS OR CLAYEY SAND GRAVEL MIXTURES, MODERATE AMOUNT OF FINES.
SOILS WITH TYPICAL BEARING STRENGTH OF 200 TO 299 KPa

PIPE DIAMETER	DIMENSION NOTED ON W25.3			
	A	B	C	D
102	200	200	150	150
152	250	250	200	200
203	350	350	250	270
254	450	450	300	350
305	500	500	350	400
406	750	750	400	600

3. SOIL DESCRIPTION: SANDS, GRAVELS AND GRAVEL-SANDMIXTURES, LITTLE OR NO FINES.
SOILS WITH TYPICAL BEARING STRENGTH OF 300 KPa AND OVER

PIPE DIAMETER	DIMENSION NOTED ON W25.3			
	A	B	C	D
102	150	150	150	150
152	200	200	200	200
203	300	300	200	230
254	400	400	250	270
305	450	450	300	300
406	650	650	350	450

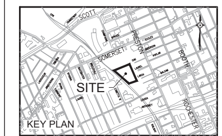
NOTES:

1. THE ABOVE THRUST BLOCK DIMENSIONS MEET OR EXCEED THE WATERMAIN DESIGN CRITERIA FOR FUTURE ALTERATIONS AUTHORIZED UNDER A DRINKING WATER WORKS PERMIT.
2. THE ASSUMPTIONS MADE FOR THE ABOVE CALCULATIONS ARE AS FOLLOWS:
   a) MAXIMUM OPERATING PRESSURE OF 100 psi.
   b) MAXIMUM SURGE PRESSURE WITH A FLOW VELOCITY CHANGE OF 0.6 m/s OF 115 psi (115 psi FOR CLASS 52 DI AND FOR PVC MAX. SURGE IS 35 psi)
3. THE TABLES APPLY TO BOTH DUCTILE IRON AND PVC. WHERE ONE LENGTH EXCEEDED THE OTHER THE LONGER LENGTH WAS USED.
4. DIMENSIONS MAY BE ADJUSTED SO LONG AS THE BEARING SURFACE AREA OF THE THRUST BLOCK IS NOT REDUCED.
4. TO BE USED IN CONJUNCTION WITH W25.3.

Ottawa — THRUST BLOCK DIMENSION TABLES FOR PVC AND DI PIPE 400mm AND UNDER
DATE: MAY 2001 · REV. DATE: MARCH 2011 · DWG. No.: W25.4

diamond schmitt KWC

MORRISON HERSHFIELD
200-2932 BASELINE ROAD, OTTAWA, ON K2H 1B1



ISSUED

No.	Date	Description
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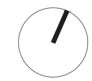
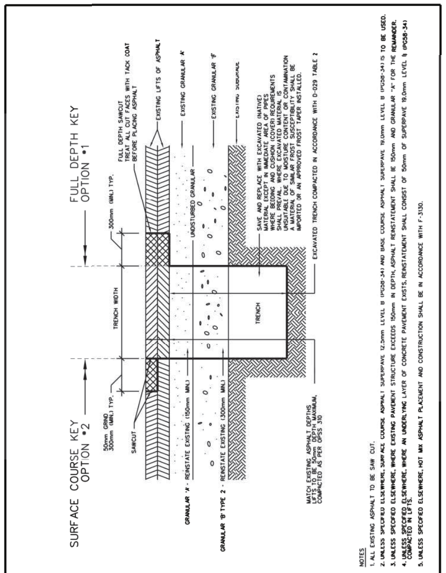


GLADSTONE VILLAGE
PHASE 1
933 Gladstone Avenue - Phase 1
211006

DETAILS 1

Scale: N/A
Project No: 210101900
Date: 08/09/21

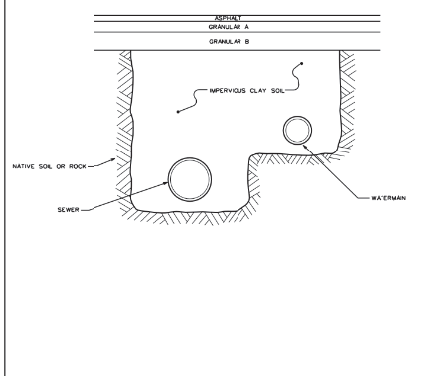
C101



N.T.S.

STANDARD TRENCH REINSTATEMENT IN PAVED SURFACE

DATE:	MAY 2001
REV. DATE:	MARCH 2017
DWG. No.:	R10

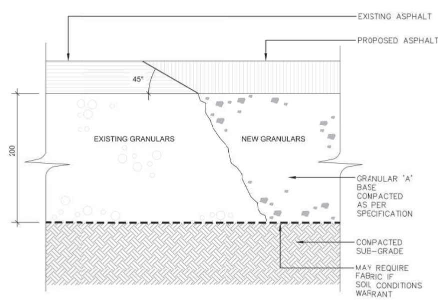


NOTES:

1. CLAY SEAL TO EXTEND FROM BOTTOM OF TRENCH EXCAVATION TO UNDERSIDE OF ROAD STRUCTURE.
2. CLAY SEAL TO EXTEND FULL TRENCH WIDTH TO EXISTING NATIVE SOILS WITH A MINIMUM THICKNESS OF 1.0m ALONG PIPES.
3. CLAY SEAL TO BE LOCATED SO THAT NO PIPE JOINTS ARE WITHIN THE CLAY SEAL MATERIAL.

CLAY SEAL FOR PIPE TRENCHES

DATE:	MAY 2001
REV. DATE:	MARCH 2006
DWG. No.:	S8

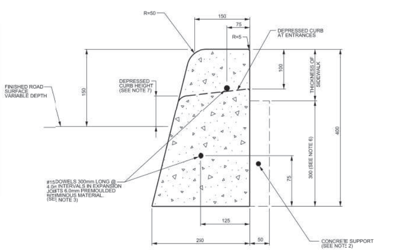


NOTE:

1. SLOPE OF PAVEMENT TO MEET/MATCH EXISTING GRADES AT JUNCTION. REFER TO GRADING PLAN FOR NEW CROSS SLOPE.
2. REMOVE CONTAMINATED GRANULARS

TITLE: ASPHALT REINSTATEMENT

DATE:	JAN 2015
REV:	
DWG No:	R25



CONCRETE BARRIER CURB

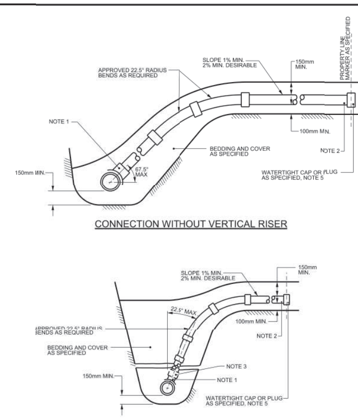
NOTES:

1. THE FULL CURB DEPTH SHALL BE CARRIED THROUGH THE DEPRESSED ACCESS CROSSING.
2. A CONCRETE SUPPORT IS REQUIRED WHEN BUILT ADJACENT TO THE SIDEWALK.
3. IF AN EXTRUSION CURBING MACHINE IS USED, THE EXPANSION BITUMINOUS MATERIAL AND THE #15 DOWELS ARE TO BE PLACED AT THE END OF THE EXTRUSION.
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
5. DUMMY JOINTS SHALL BE 25mm DEEP, FRONT, BACK AND TOP OF SECTION AT 2m SPACING.
6. FOR DEPRESSED CURB AT ENTRANCES USE 250.
7. DEPRESSED CURB HEIGHT - FOR PEDESTRIAN CURB RAMPS 0 TO 6 mm AND FOR PRIVATE ENTRANCES 0 TO 25mm.

N.T.S.

CONCRETE BARRIER CURB FOR GRANULAR BASE PAVEMENT (MODIFIED OPSD-600.110)

DATE:	JANUARY 2003
REV. DATE:	MARCH 2014
DWG. No.:	SC1.1



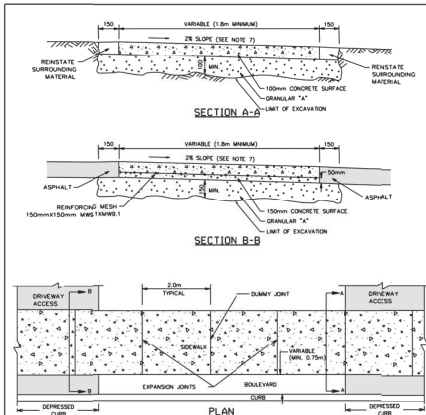
NOTES:

1. ALL DIAMETERS OF SERVICE CONNECTIONS THAT HAVE NOMINAL DIAMETERS NO GREATER THAN 50% OF THE NOMINAL DIAMETER OF THE RIGID SEWER PIPE SHALL BE MADE USING A BELL END INSERT AS PER S11.2 OR AN APPROVED RUBBER GASKETED INSERT, INSTALLED ABOVE THE SPRING LINE.
2. SANITARY SERVICES TO BE 135mm AND STORM SERVICES TO BE 100mm FOR NEW RESIDENCES UNLESS SPECIFIED OTHERWISE. SERVICE PIPE AND RADIUS BENDS TO BE APPROVED CSA B182.2, SDR28 PRODUCTS UNLESS SPECIFIED OTHERWISE.
3. APPROVED CONTROLLED SETTLEMENT JOINTS OPTIONAL FOR SERVICE CONNECTIONS TO MAIN SEWERS UP TO 5m DEEP. WHERE APPROVED, CONNECTIONS TO SEWERS OVER 5m DEEP REQUIRE APPROVED CONTROLLED SETTLEMENT JOINTS.
4. VERTICAL RISER SHALL BE SAME AS SERVICE PIPE UNLESS OTHERWISE SPECIFIED.
5. CAP OR PLUG AT THE PROPERTY LINE SHALL BE ADEQUATELY BRACED TO WITHSTAND TESTING PRESSURE.
6. FOR NEW CONSTRUCTION, INSERTS MUST BE INSTALLED ON THE MAIN PIPE BEFORE THAT PIPE IS LAID. FOR SERVICES/BRANCHES 375mm DIA. OR LESS, APPROVED "CORED TEES" MAY BE USED.
7. APPROVED CUT-IN TOOL MUST BE USED FOR FIELD MADE CONNECTIONS.
8. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

N.T.S.

SEWER SERVICE CONNECTIONS FOR RIGID MAIN SEWER PIPE (MODIFIED OPSD-1006.010)

DATE:	MARCH 2006
REV. DATE:	MARCH 2014
DWG. No.:	S11



NOTES:

1. CONCRETE AND GRANULAR "A" IS TO BE INCREASED TO 150mm AT THE ENTRANCE AND 150x150mm MW9.1 x MW9.1 REINFORCING MESH IS TO BE PLACED MID DEPTH WITHIN DRIVEWAY ACCESS.
2. TRANSVERSE EXPANSION JOINTS ARE REQUIRED AT THE ENDS, THE MIDPOINT, AT INTERVALS OF 4m MAXIMUM, AND ALSO TO ISOLATE OBSTRUCTIONS FROM SIDEWALK, HYDRANTS, POLES, BUILDINGS, ETC.
3. WHEN THE OVERALL SIDEWALK WIDTH EXCEEDS 2.5m, A LONGITUDINAL CONSTRUCTION JOINT SHALL BE CREATED AT ITS MIDPOINT.
4. EDGES AND JOINTS ARE TO BE FINISHED WITH A 75mm EDGING TOOL.
5. ALL CONCRETE SIDEWALKS ARE TO HAVE A BROOM FINISH UNLESS OTHERWISE SPECIFIED.
6. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
7. THE MAXIMUM SLOPE IS NOT TO EXCEED 2%.
8. INSTALL DUMMY TRANSVERSE JOINTS AS REQUIRED SO THERE IS A MAXIMUM SPACING OF 2m BETWEEN ALL JOINTS.
9. SIDEWALK NOT TO BE DEPRESSED ACROSS DRIVEWAY ACCESSES.
10. EXPANSION AND DUMMY JOINTS AS PER SC5

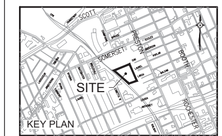
TYPICAL CONCRETE SIDEWALK IN BOULEVARD

DATE:	MAY 2001
REV. DATE:	MARCH 2016
DWG. No.:	SC4

diamond schmitt

MORRISON HERSHFIELD

200-2932 BASELINE ROAD, OTTAWA, ON K2H 1B1



ISSUED

No.	Date	Description
1	2021 SEP 08	ISSUED FOR SITE PLAN APPROVAL

LICENSED PROFESSIONAL ENGINEER J.G. FOOKES Sept 08, 2021 PROVINCE OF ONTARIO

CONTRACTOR MUST CHECK & VERIFY ALL DIMENSIONS ON THE JOB.

DO NOT SCALE DRAWINGS.

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNTIL SIGNED BY THE ARCHITECT.

GLADSTONE VILLAGE PHASE 1

933 Gladstone Avenue - Phase 1

211006

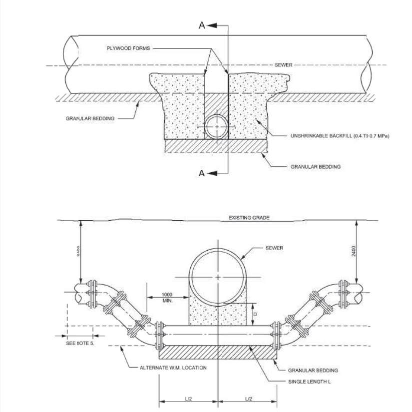
DETAILS 2

Scale: N/A
Project No: 210101900
Date: 08/09/21

C102

BIM 360://211006-Gladstone-R21/211006-ARCH-DSA-Building-R21.rvt

2021-07-29 10:25:29 AM



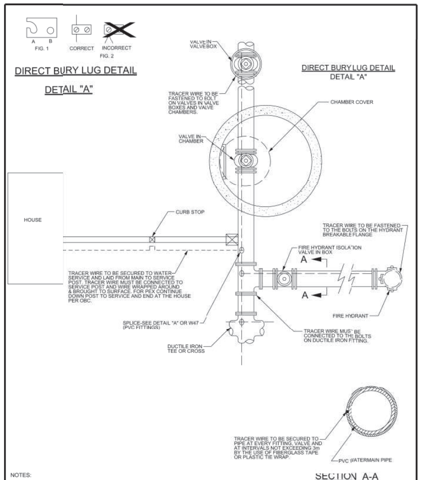
SECTION A - A

NOTES:

FOR WATERMAIN 100mm (NOMINAL) TO 400mm (NOMINAL)

1. BARREL TO INVERT SEPARATION (D) SHALL BE 500mm MINIMUM.
2. THRUST BLOCKS FOR MAINS LARGER THAN 400mm (NOMINAL) SHALL BE PER SPECIAL DESIGN.
3. FOR 300mm (NOMINAL) AND 400mm (NOMINAL) MAINS, BENDS SHALL BE MAX. 22° 30'.
4. CONCRETE FOR THRUST BLOCKS SHALL BE 20 MPa.
5. REFER TO W25.6 FOR RESTRAINED LENGTH REQUIREMENTS.
6. REFER TO W25.3 AND W25.4 FOR THRUST BLOCK REQUIREMENTS.
7. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
8. DESIGNED TO MEET THE INTENT OF THE MOE WATERMAIN DESIGN CRITERIA JUNE 2012.

Ottawa | WATERMAIN CROSSING BELOW SEWER | DATE: MAY 2001 | REV. DATE: MARCH 2013 | DWG. No: W25



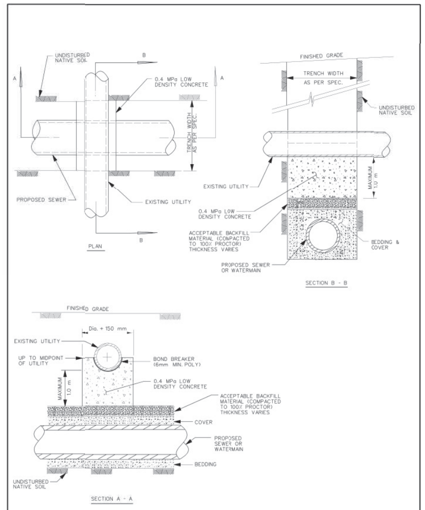
SECTION A-A

NOTES:

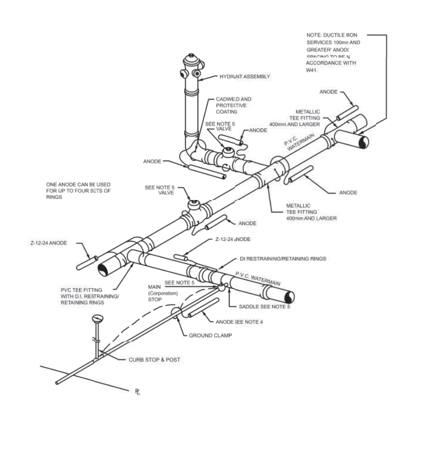
1. ALL CONNECTIONS MUST BE WATERPROOFED.
2. SPLICING OF MAIN TRACER WIRE IS NOT ALLOWED UNLESS SPECIFIED OR APPROVED.
3. TRACER WIRE CONTINUITY OF CURRENT MUST BE TESTED AND VERIFIED.
4. FOR PVC TO DUCTILE IRON CONNECTIONS, THE TRACER MUST BE ATTACHED TO THE DUCTILE IRON PIPE BY CADWELD.
5. FOR SPLICES WITH DIRECT BURY LUGS STRIP BOTH UNCUT MAIN AND CUT TAP WIRE TO WIDTH OF LUG (16mm). PLACE MAIN WIRE INTO SIDE A (FIG. 1) AND TAP WIRE INTO SIDE B. TORQUE EACH SCREW TO 35 LB-IN. REMOVE SEALANT COVER AND DISCARD. CLOSE HOUSING, ALIGNING WIRES UNTIL HOUSING LID IS FULLY LATCHED.

N.T.S.

Ottawa | TRACER WIRE INSTALLATION | DATE: MAY 2001 | REV. DATE: MARCH 2014 | DWG. No.: W36



Ottawa | SUPPORT DETAIL FOR EXISTING UTILITY CROSSING SEWER OR WATERMAIN TRENCH | DATE: MAY 2001 | REV. DATE: NONE | DWG. No.: S10



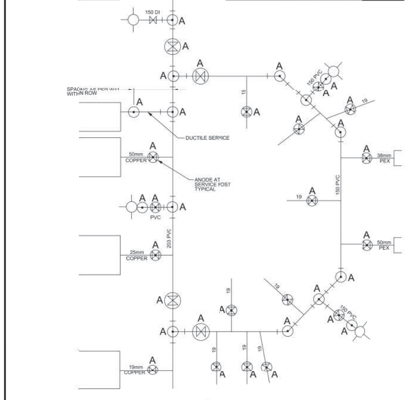
NOTES:

1. ANODE CONNECTING WIRE TO BE LOOPED AROUND PIPES / FITTINGS AND KNOTTED.
2. PROTECTIVE COATING TO BE APPLIED TO ALL CADWELDS.
3. ANODE TYPE & SPACING AS PER W42.
4. CONNECT ANODE TO COPPER SERVICES USING A GROUND CLAMP AND FOR PEX SERVICES CONNECT ANODE TO TRACER WIRE TERMINALS ON BOTH MAIN AND CURB STOPS.
5. PROTECT AUXILIARY VALVES, ISOLATION VALVES, SADDLES AND MAIN STOPS WITH A PETROLATUM WAX TAPE COATING SYSTEM. FOR PEX SERVICES ALSO WAX TAPE CURB STOP UP TO THE BASE OF THE TEE HEAD.
6. ALL DIMENSIONS ARE IN MILLIMETERS.

N.T.S.

Ottawa | CATHODIC PROTECTION FOR PVC WATERMAIN SYSTEMS | DATE: MAY 2001 | REV. DATE: MARCH 2019 | DWG. No.: W40

SIZE (mm)	ANODE TYPE	WEIGHT (Kg)
19 TO 50 COPPER SERVICE	Z-12-24	5.4
38 TO 50 PEX SERVICE	Z-12-24	5.4
100 TO 300 DI SERVICE	Z-24-48	10.9
100 TO 300 DI FITTINGS	Z-12-24	5.4
100 TO 250 VALVES	Z-12-24	5.4
HYDRANT ASSEMBLY	Z-24-48	10.9
400 DI SERVICE/FITTINGS/VALVES	Z-24-48	10.9

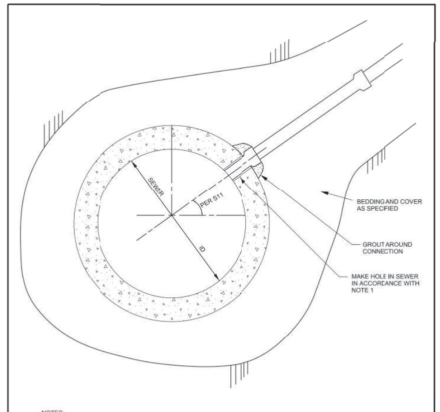


NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

N.T.S.

Ottawa | TYPICAL ANODE INSTALLATION PVC WATERMAIN | DATE: MAY 2001 | REV. DATE: MARCH 2014 | DWG. No.: W42



NOTES:

1. OPENING IN PIPE SHALL BE A ROUND MACHINE CUT HOLE.
2. INSERT TO CONSIST OF THE BELL END OF AN APPROVED SERVICE PIPE. LENGTH TO BE LIMITED SUCH THAT NO PART OF THE INSERT PROTRUDES INTO THE OPENING OF THE PIPE.
3. WRAP APPROVED WATER-TIGHT SEALANT AROUND THE SPIGOT PORTION OF THE BELL END PRIOR TO INSERTING. USE ENOUGH SEALANT TO ENSURE A TIGHT WATER-TIGHT CONNECTION THAT WILL HOLD THE BELL IN POSITION.
4. GROUT AROUND THE BELL END TO PROTECT THE SEALANT AND SUPPORT THE BELL.
5. ALL OTHER NOTES OF S11 APPLY.
6. SEE MS-22.15 FOR APPROVED SEALANT PRODUCTS.

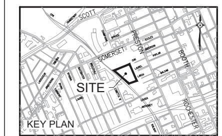
N.T.S.

Ottawa | SEWER SERVICE CONNECTIONS FOR RIGID MAIN SEWER PIPE USING BELL END INSERT METHOD | DATE: MARCH 2011 | REV. DATE: | DWG. No.: S11.2

diamond schmitt

MORRISON HERSHFIELD

200-2932 BASELINE ROAD, OTTAWA, ON K2H 1B1



ISSUED

No.	Date	Description
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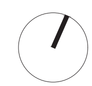

CONTRACTOR MUST CHECK & VERIFY ALL DIMENSIONS ON THE JOB.

DO NOT SCALE DRAWINGS.

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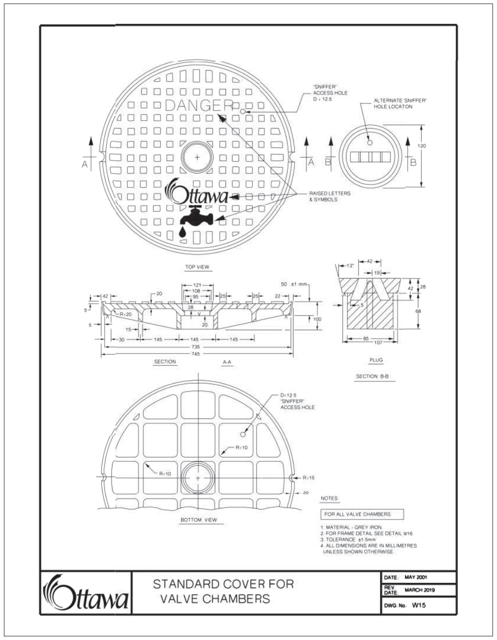
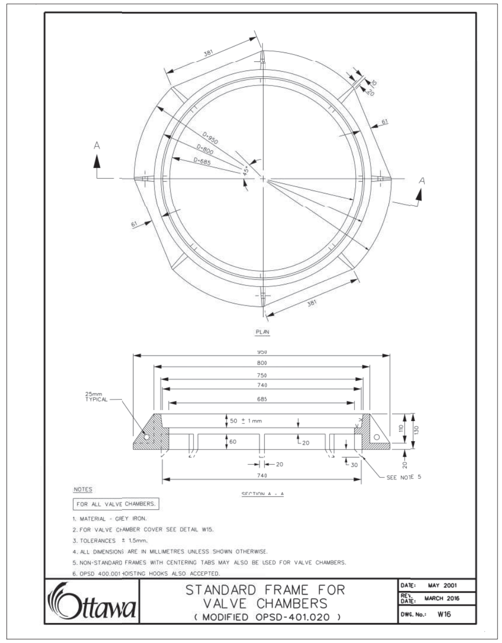
GLADSTONE VILLAGE
PHASE 1
933 Gladstone Avenue - Phase 1
211006

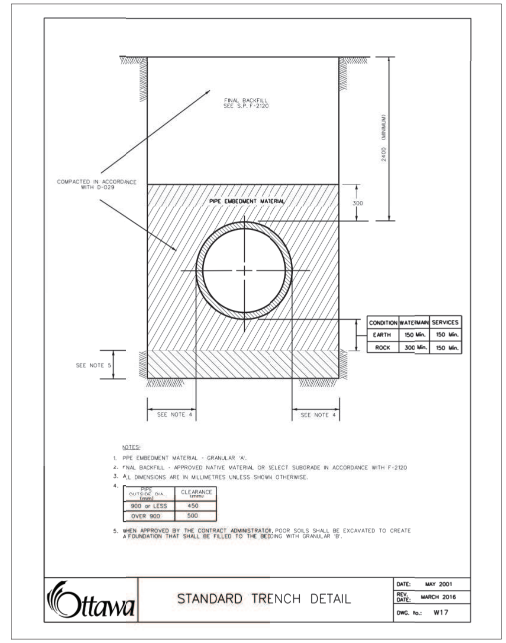
DETAILS 3

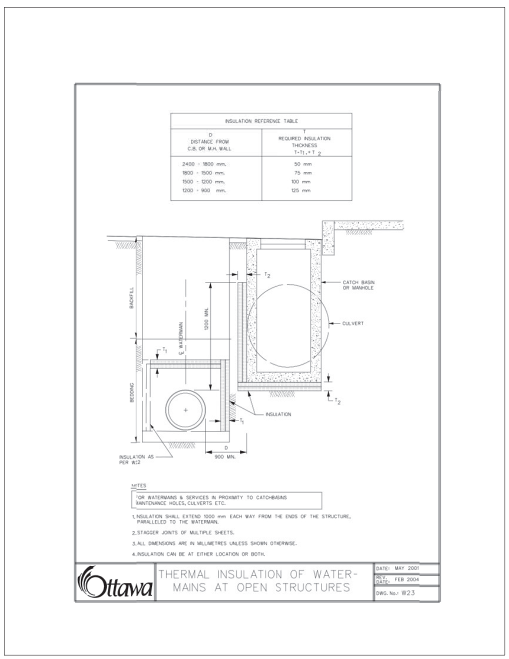
Scale: N/A
Project No: 210101900
Date: 08/09/21

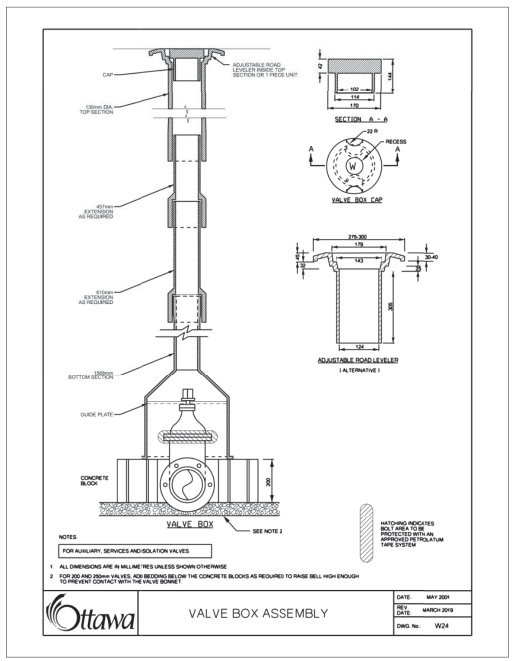
C103

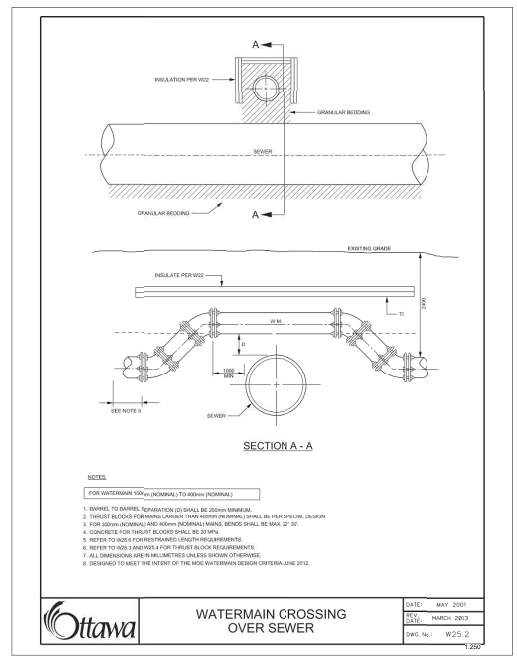






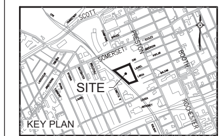






diamond schmitt
KWC

MORRISON HERSHFIELD
200-2932 BASELINE ROAD, OTTAWA, ON K2H 1B1



ISSUED

No.	Date	Description
1	2021 SEP 08	ISSUED FOR SITE PLAN APPROVAL

J.G. FOOKES
Sept 08, 2021
LICENSED PROFESSIONAL ENGINEER PROVINCE OF ONTARIO

CONTRACTOR MUST CHECK & VERIFY ALL DIMENSIONS ON THE JOB.

DO NOT SCALE DRAWINGS.

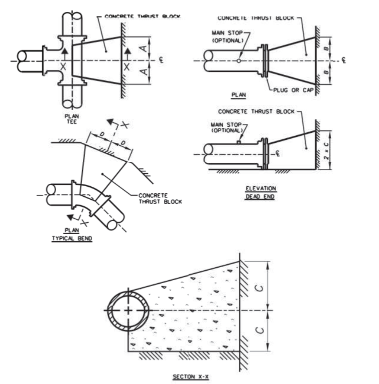
THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNTIL SIGNED BY THE ARCHITECT.

GLADSTONE VILLAGE
PHASE 1
933 Gladstone Avenue - Phase 1
211006

DETAILS 4

Scale: N/A
Project No: 210101900
Date: 08/09/21

C104



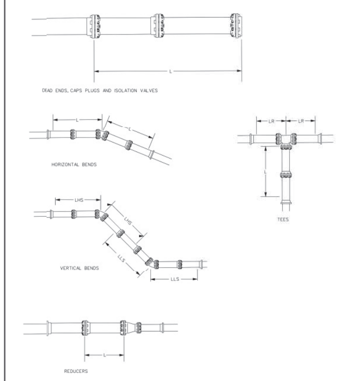
NOTES:

1. CONCRETE SHALL BE PLACED TO WITHIN 50mm OF FACE OF THE BELL.
2. BOND BREAKER TO BE USED BETWEEN CONCRETE AND FITTINGS.
3. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.
4. REFER TO W25.4 FOR ADDITIONAL REQUIREMENTS.
5. THRUST BLOCKS SHALL BE 20 MPa. CONCRETE AND AS SHOWN ON ABOVE DRAWINGS UNLESS OTHERWISE DIRECTED BY THE CONTRACT ADMINISTRATOR. THE BLOCK SHALL BE CENTERED ON THE THRUST FORCE AND SHALL ALSO PARTIALLY CRADLE THE FITTING TO DISTRIBUTE THE FORCE. THE SIDES OF THE BLOCK SHALL BE 80mm FROM THE JOINT ON EITHER SIDE OF THE BEND OR TEE.
6. THE CONCRETE WHERE POSSIBLE SHALL BE PLACED AGAINST UNDISTURBED SOIL AT THE BOTTOM AND SIDE OF THE TRENCH. WHERE IT IS NOT POSSIBLE, THE FILL BETWEEN THE BEARING SURFACE AND THE UNDISTURBED SOIL MUST BE COMPACTED IN ACCORDANCE WITH D-029.
7. EXCEPT FOR THE ADDITION OF WATER, CONCRETE FOR THRUST BLOCKS SHALL COME PREMIXED FROM CONCRETE SUPPLIER, AS 'READY MIX' FROM A CONCRETE TRUCK. ON-SITE MIXING OF CEMENT, SAND AND AGGREGATE ETC. BY THE CONTRACTOR, FOR THE PURPOSE OF MAKING CONCRETE THRUST BLOCKS/ ANCHORS WILL NOT BE ACCEPTED.

Ottawa

CONCRETE THRUST BLOCKS
FOR PVC AND DI PIPE
400mm AND UNDER

DATE: MAY 2001
REV. DATE: MARCH 2016
DWG.No.: W25.3



NOTES:

1. ANY JOINT THAT FALLS WITHIN THE RECOMMENDED LENGTH (L) SHALL BE RESTRAINED. SEE DRAWING W25.6
2. TO REDUCE THE NUMBER OF RESTRAINERS REQUIRED THE USE OF FULL PIPE LENGTHS IS RECOMMENDED IN THESE AREAS.

Ottawa

RESTRAINING AND RETAINING RINGS
FOR PVC AND DI PIPE
400mm AND UNDER

DATE: MAY 2001
REV. DATE: NONE
DWG. No.: W25.5

TABLE OF RESTRAINED LENGTHS FOR DI AND PVC WATERMAIN PIPE IN STANDARD GRANULAR 'A' EMBEDMENT IN SOILS OF BEARING CAPACITY OF 100 KPa AND OVER

REDUCERS — LARGER DIAMETER SIDE (TO BE RESTRAINED)

SMALLER DIAMETER (UNRESTRAINED)	100mm	150mm	200mm	250mm	300mm	400mm
100mm	N/A	3	6	8	10	14
150mm	N/A	N/A	4	6	9	13
200mm	N/A	N/A	N/A	3	6	11
250mm	N/A	N/A	N/A	N/A	4	9
300mm	N/A	N/A	N/A	N/A	N/A	7
400mm	N/A	N/A	N/A	N/A	N/A	N/A

PIPE DIAMETER

	100mm	150mm	200mm	250mm	300mm	400mm
DEAD ENDS, CAPS, PLUGS, VALVES						
BEFORE CAPS AND EITHER SIDE OF VALVES - L	5	6	9	10	12	16
VERTICAL BENDS						
LENGTH HIGH SIDE - LHS	3	4	5	6	7	9
LENGTH LOW SIDE - LLS	1.5	2	2.5	3	3.5	4.5
TEES						
LENGTH ALONG THE BRANCH - L	1	1	1	1	1	1
LENGTH ALONG THE RUN - Lr	3	3	3	3	3	3
HORIZONTAL BENDS						
11.25, 22.5, AND 45 DEGREE BENDS	1	1.5	1.5	2	2	2.5

NOTES:

1. THE ABOVE RESTRAINED LENGTHS MEET OR EXCEED THE WATERMAIN DESIGN CRITERIA FOR FUTURE ALTERATIONS AUTHORIZED UNDER A DRINKING WATER WORKS PERMIT.
2. THE ASSUMPTIONS MADE FOR THE ABOVE CALCULATIONS ARE AS FOLLOWS:
   a) MAXIMUM OPERATING PRESSURE OF 100 psi.
   b) MAXIMUM SURGE PRESSURE WITH A FLOW VELOCITY CHANGE OF 0.6 m/s OF 115 psi (115 psi FOR CLASS 52 DI AND FOR PVC MAX. SURGE IS 35 psi)
3. FOR SOFTWARE CALCULATIONS A TEST PRESSURE OF 150 psi AND A SAFETY FACTOR OF 1.5 WAS USED WHICH RESULTS IN 225 psi MAXIMUM PRESSURE.
4. TYPE 5 TRENCH BEDDING.
5. DEPTH TO BURY 2.4 METRES EXCEPT FOR VERTICAL BENDS WHERE THE HIGH SIDE IS AT 1.8 METRES.
6. EMBEDMENT MATERIAL GRANULAR 'A' WITH CHARACTERISTICS OF ASTM D2487 GP.
7. GP SOILS ARE DESCRIBED AS POORLY GRADED GRAVEL AND SAND-GRAVEL MIXES WITH LITTLE OR NO FINES.
8. (Lr) MUST BE OF SOLID PIPE WITHOUT JOINTS, FITTINGS, ETC.
9. THE TABLES APPLY TO BOTH DUCTILE IRON AND PVC. WHERE ONE LENGTH EXCEEDED THE OTHER THE LONGER LENGTH WAS USED.
10. RESTRAINED LENGTHS ARE IN METRES.

Ottawa

TABLES OF RESTRAINED LENGTHS
FOR PVC AND DI PIPE
400mm AND UNDER

DATE: MAY 2001
REV. DATE: MARCH 2011
DWG. No: W25.6

1. SOIL DESCRIPTION: VERY FINE SANDS, SANDY CLAYS, CLAYS.
SOILS WITH TYPICAL BEARING STRENGTH OF 100 TO 199 KPa

PIPE DIAMETER	DIMENSION NOTED ON W25.3			
	A	B	C	D
102	250	250	200	200
152	400	400	250	300
203	550	550	300	450
254	650	650	400	500
305	800	800	450	650
406	1050	1050	600	850

2. SOIL DESCRIPTION: SILTY SAND GRAVELS OR CLAYEY SAND GRAVEL MIXTURES, MODERATE AMOUNT OF FINES.
SOILS WITH TYPICAL BEARING STRENGTH OF 200 TO 299 KPa

PIPE DIAMETER	DIMENSION NOTED ON W25.3			
	A	B	C	D
102	200	200	150	150
152	250	250	200	200
203	350	350	250	270
254	450	450	300	350
305	500	500	350	400
406	750	750	400	600

3. SOIL DESCRIPTION: SANDS, GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.
SOILS WITH TYPICAL BEARING STRENGTH OF 300 KPa AND OVER

PIPE DIAMETER	DIMENSION NOTED ON W25.3			
	A	B	C	D
102	150	150	150	150
152	200	200	200	200
203	300	300	200	230
254	400	400	250	270
305	450	450	300	300
406	650	650	350	450

NOTES:

1. THE ABOVE THRUST BLOCK DIMENSIONS MEET OR EXCEED THE WATERMAIN DESIGN CRITERIA FOR FUTURE ALTERATIONS AUTHORIZED UNDER A DRINKING WATER WORKS PERMIT.
2. THE ASSUMPTIONS MADE FOR THE ABOVE CALCULATIONS ARE AS FOLLOWS:
   a) MAXIMUM OPERATING PRESSURE OF 100 psi.
   b) MAXIMUM SURGE PRESSURE WITH A FLOW VELOCITY CHANGE OF 0.6 m/s OF 115 psi (115 psi FOR CLASS 52 DI AND FOR PVC MAX SURGE IS 35 psi)
3. THE TABLES APPLY TO BOTH DUCTILE IRON AND PVC. WHERE ONE LENGTH EXCEEDED THE OTHER THE LONGER LENGTH WAS USED.
4. DIMENSIONS MAY BE ADJUSTED SO LONG AS THE BEARING SURFACE AREA OF THE THRUST BLOCK IS NOT REDUCED.
4. TO BE USED IN CONJUNCTION WITH W25.3.

Ottawa

THRUST BLOCK DIMENSION TABLES
FOR PVC AND DI PIPE
400mm AND UNDER

DATE: MAY 2001
REV. DATE: MARCH 2011
DWG. No: W25.4

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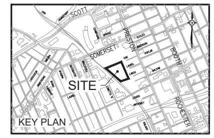
MORRISON HERSHFIELD
200-2932 BASELINE ROAD, OTTAWA, ON K2H 1B1



ISSUED

No.	Date	Description
1	2021 SEP 08	ISSUED FOR SITE PLAN APPROVAL

LICENSED PROFESSIONAL ENGINEER
J.G. FOOKES
Sept 08, 2021
PROVINCE OF ONTARIO

GLADSTONE VILLAGE
PHASE 1
933 Gladstone Avenue - Phase 1
211006

DETAILS 5

Scale: N/A
Project No: 210101900
Date: 08/09/21

C105

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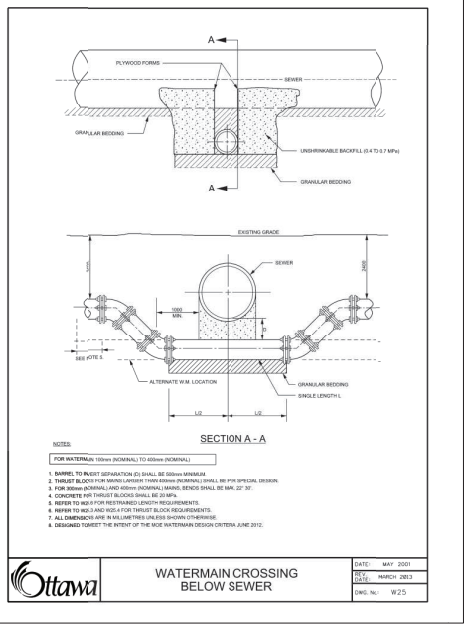

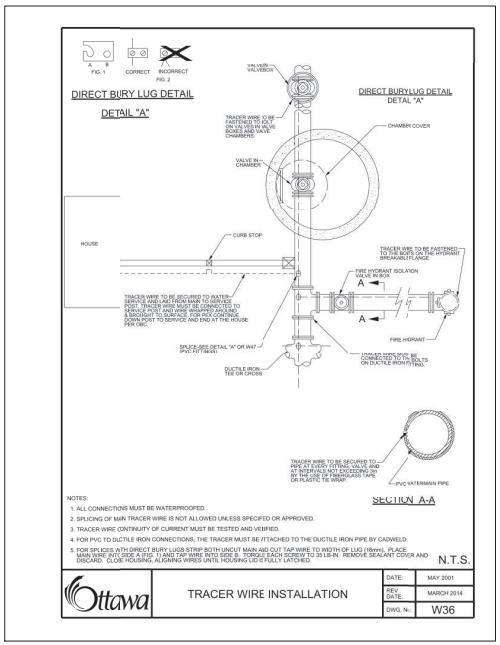

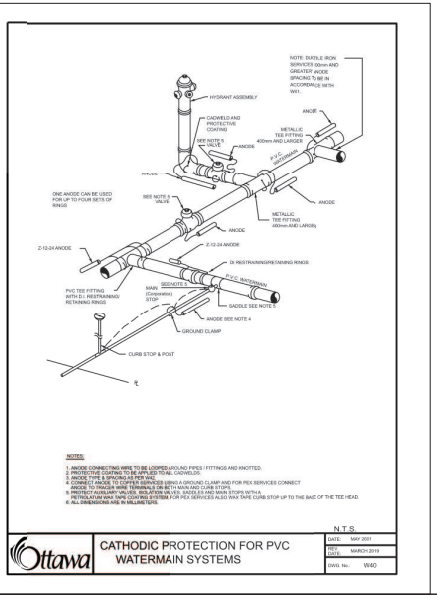

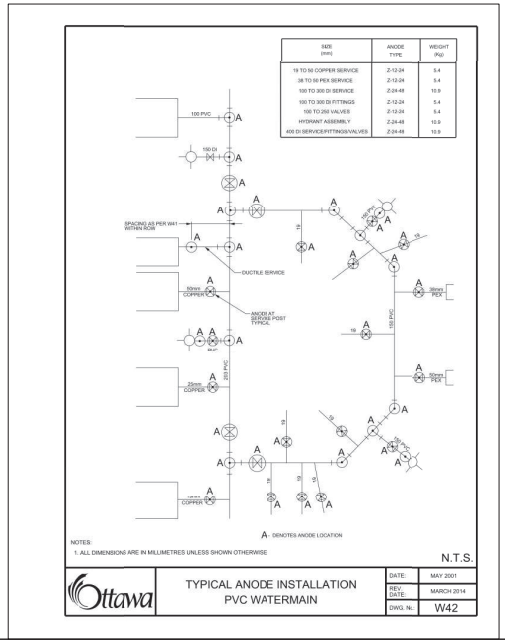

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MORRISON HERSHFIELD
200-2932 BASELINE ROAD, OTTAWA, ON K2H 1B1

ISSUED

No.	Date	Description
1	2021 SEP 08	ISSUED FOR SITE PLAN APPROVAL

LICENSED PROFESSIONAL ENGINEER J.G. FOOKES Sept 08, 2021 PROVINCE OF ONTARIO

GLADSTONE VILLAGE
PHASE 1
933 Gladstone Avenue - Phase 1
211006

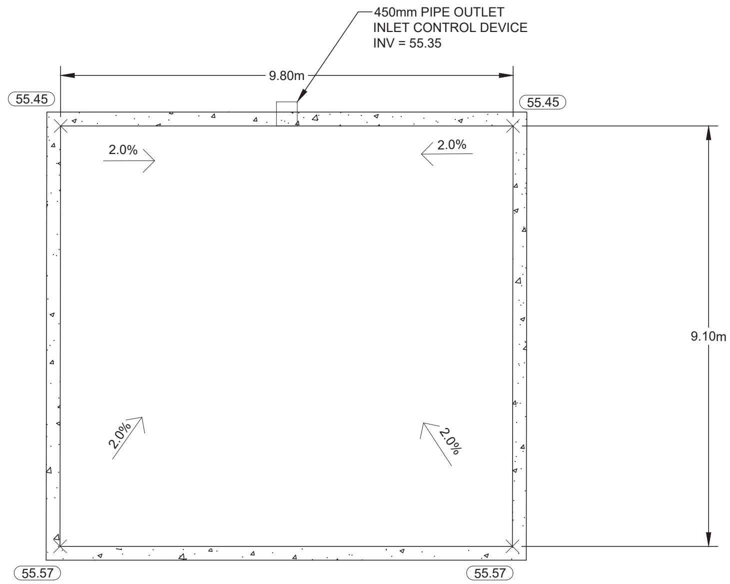
DETAILS 6

Scale: N/A
Project No: 210101900
Date: 08/09/21

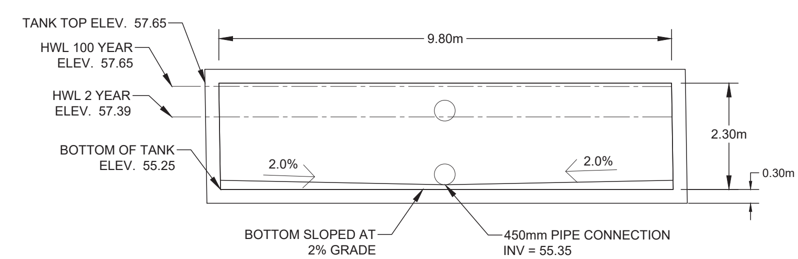
C106

DETAILS OF STORMWATER DETENTION TANK

REINFORCED CONCRETE
STORMWATER DETENTION TANK
GROSS VOLUME = 180m^3
OVERALL HEIGHT = 2.3m
TANK BOTTOM INV = 55.25
TANK TOP ELEV. = 57.65



TOP VIEW



SIDE VIEW

NOTES:

1. REFER TO STRUCTURAL FOR CONCRETE AND REINFORCING DESIGN
2. REFER TO IDC TABLE BELOW FOR ALL CONTROLLED FLOW REQUIREMENTS

LEGEND

PIPE OUTLET
59.46 PROPOSED ELEVATION
2.0% PROPOSED SLOPE DIRECTION
CONCRETE WALL

INLET CONTROL DEVICE DATA TABLE - 450mm PIPE OUTLET

DESIGN EVENT	ICD TYPE	DIAMETER OF OUTLET PIPE (mm)	DESIGN FLOW (L/s)	WATER ELEVATION (m)	REQUIRED VOLUME (m^3)	TOTAL VOLUME PROVIDED (m^3)
1:2 YR	HYDROVEX 100VHV-1	450mmØ CONC.	10.9	57.39	136.8	180
1:100 YR	HYDROVEX 100VHV-1	450mmØ CONC.	11.7	57.65	173.6	180

1:50
HORIZONTAL
0m 1 2

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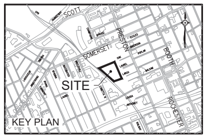
MORRISON HERSHFIELD
200-2932 BASELINE ROAD, OTTAWA, ON K2H 1B1



ISSUED

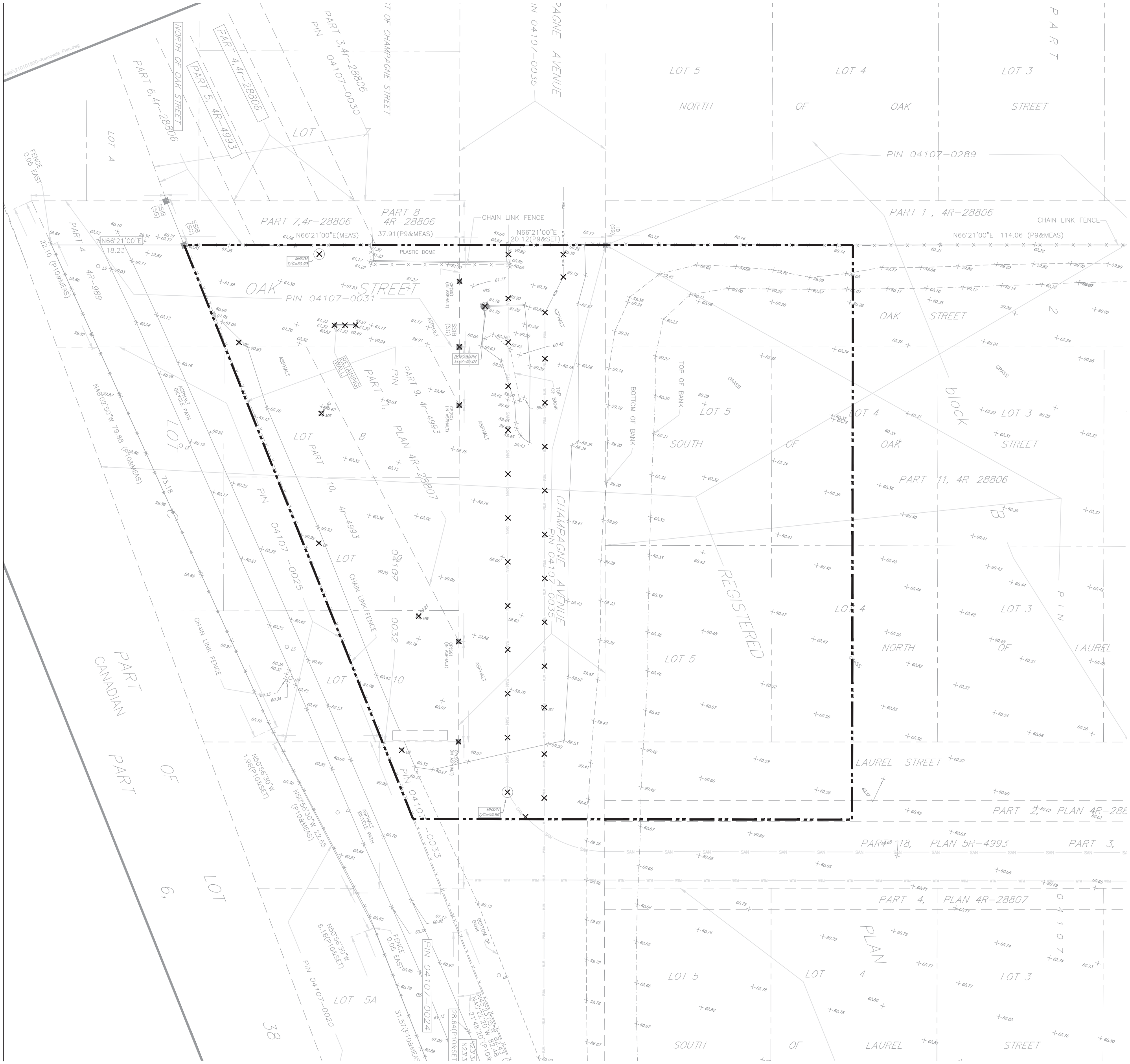
No.	Date	Description
1	2021 SEP 08	ISSUED FOR SITE PLAN APPROVAL

GLADSTONE VILLAGE
PHASE 1
933 Gladstone Avenue - Phase 1
211006

DETAILS 7

Scale: 1:50
Project No: 210101900
Date: 08/09/21

C107



REMOVALS

1. COMPLETE ALL REMOVALS IN ACCORDANCE WITH OPSS MUN. 510

LEGEND

BOUNDS OF THE PROPERTY

EXISTING WATERMAIN OR SEWER, VALVE CHAMBER, MAINTENANCE HOLE OR CATCH BASIN TO BE REMOVED OR ABANDONED (REMOVE IF WITH EXCAVATION LIMITS).

1:250
HORIZONTAL
0m 5 10
0m 1

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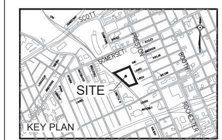
KWC

MORRISON HERSHFIELD

200-2932 BASELINE ROAD, OTTAWA, ON K2H 1B1



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LICENSED PROFESSIONAL ENGINEER
J.G. FOOKES
Sept 08, 2021
PROVINCE OF ONTARIO

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GLADSTONE VILLAGE PHASE 1

933 Gladstone Avenue - Phase 1
211006

REMOVALS PLAN

Scale: 1:250
Project No: 210101900
Date: 08/09/21

C700

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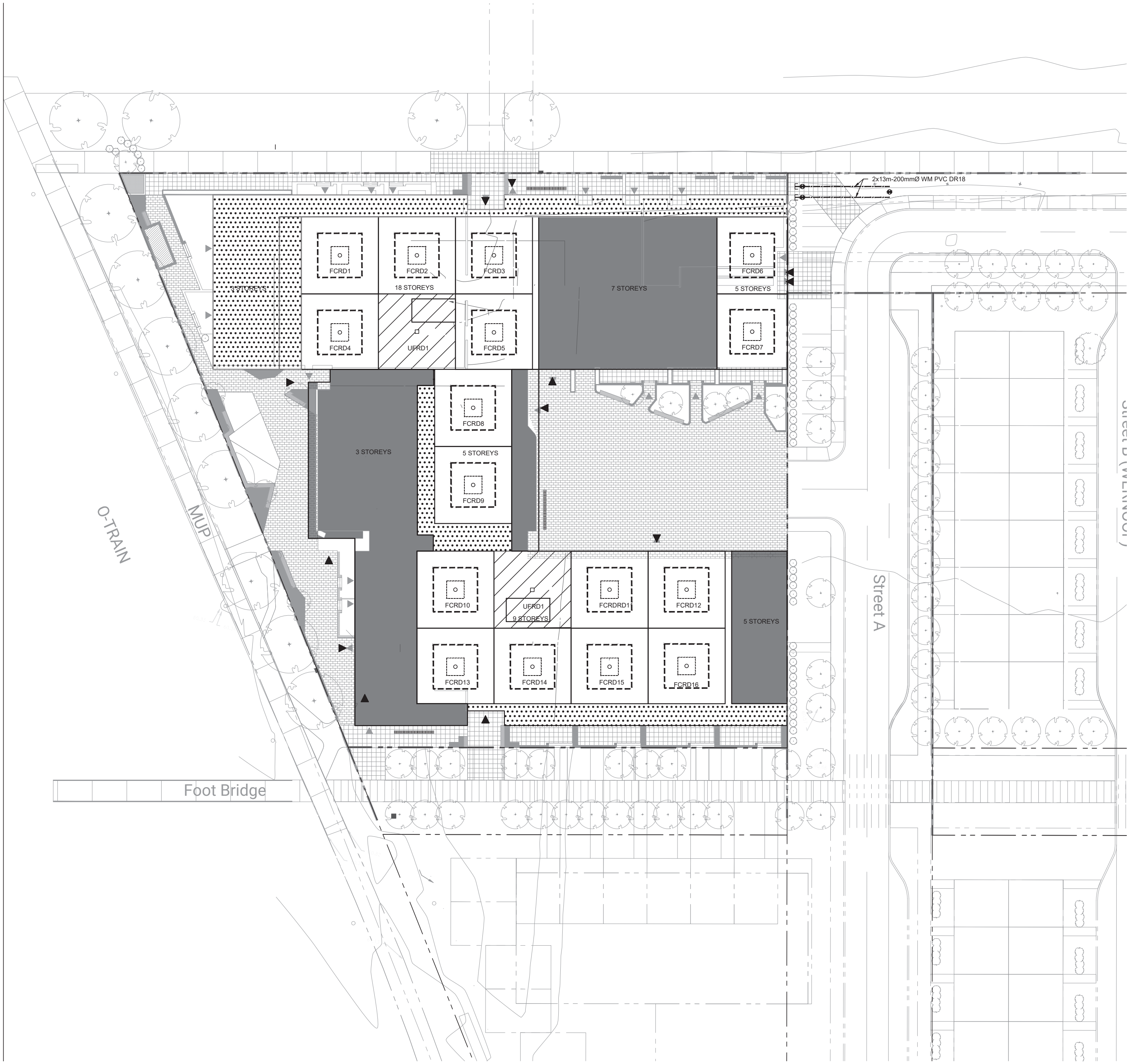

LEGEND

◎	FLOW CONTROLLED ROOF DRAIN
▢	UNCONTROLLED FLOW ROOF DRAIN
■	AMENITY ROOF/OCCUPIABLE - NO FLOW CONTROL
▦	UNOCCUPIABLE ROOF - NO FLOW CONTROL
▨	AREA WITH UNCONTROLLED FLOW
....	2 YR=34MM DEPTH
– – – –	100 YR=86MM DEPTH

1:250
HORIZONTAL
0m 5 10

BIM 360://211006-Gladstone-R21/211006-ARCH-DSA-Building-R21.rvt

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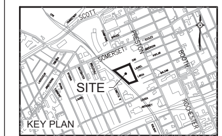
KWC

MORRISON HERSHFIELD
200-2932 BASELINE ROAD, OTTAWA, ON K2H 1B1



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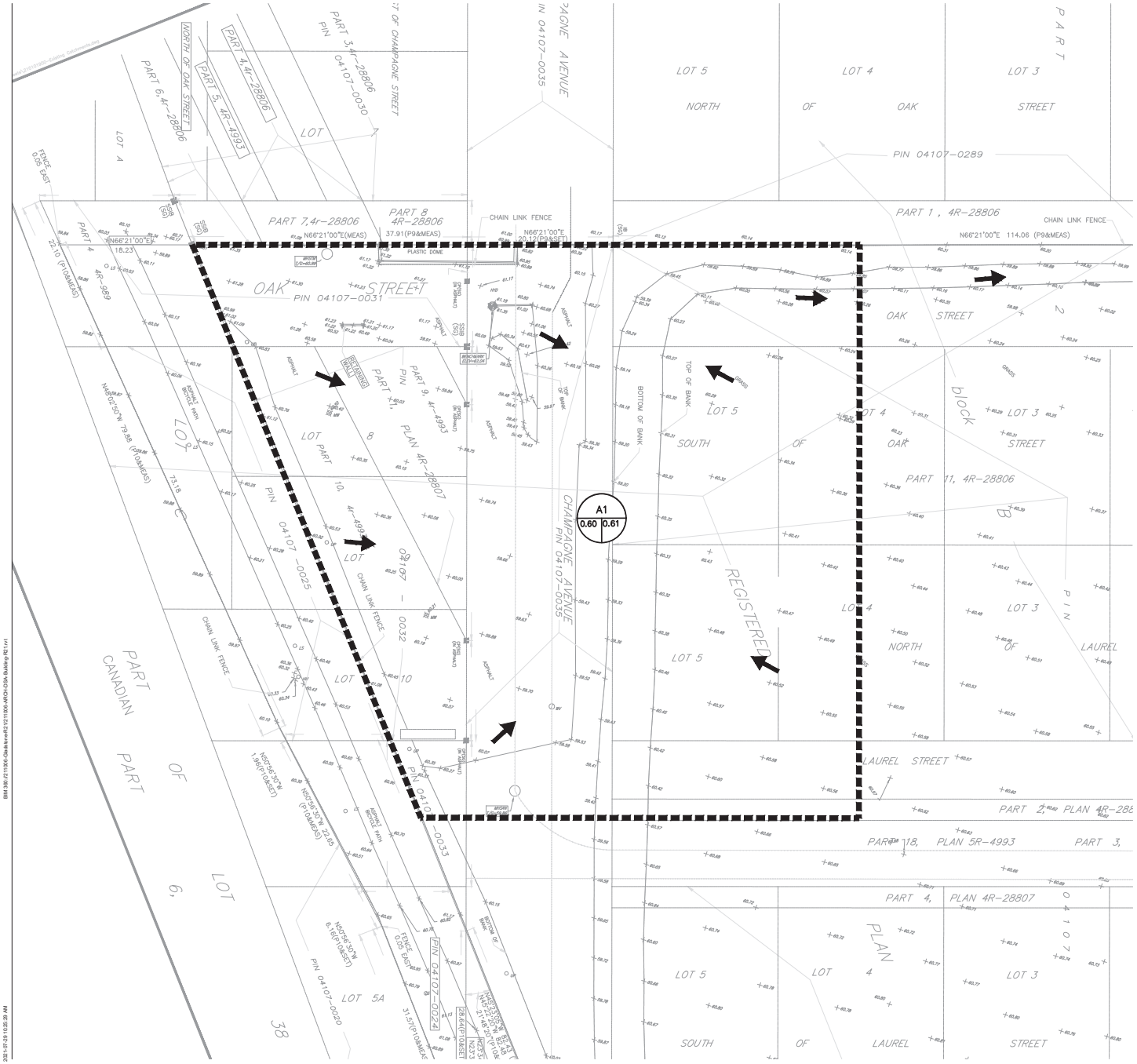
GLADSTONE VILLAGE PHASE 1

933 Gladstone Avenue - Phase 1
211006

ROOF DRAIN LAYOUT & PONDING

Scale: 1:250
Project No: 210101900
Date: 08/09/21

C701



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MORRISON HERSHFIELD

200-2932 BASELINE ROAD, OTTAWA, ON K2H 1B1

ISSUED

No.	Date	Description
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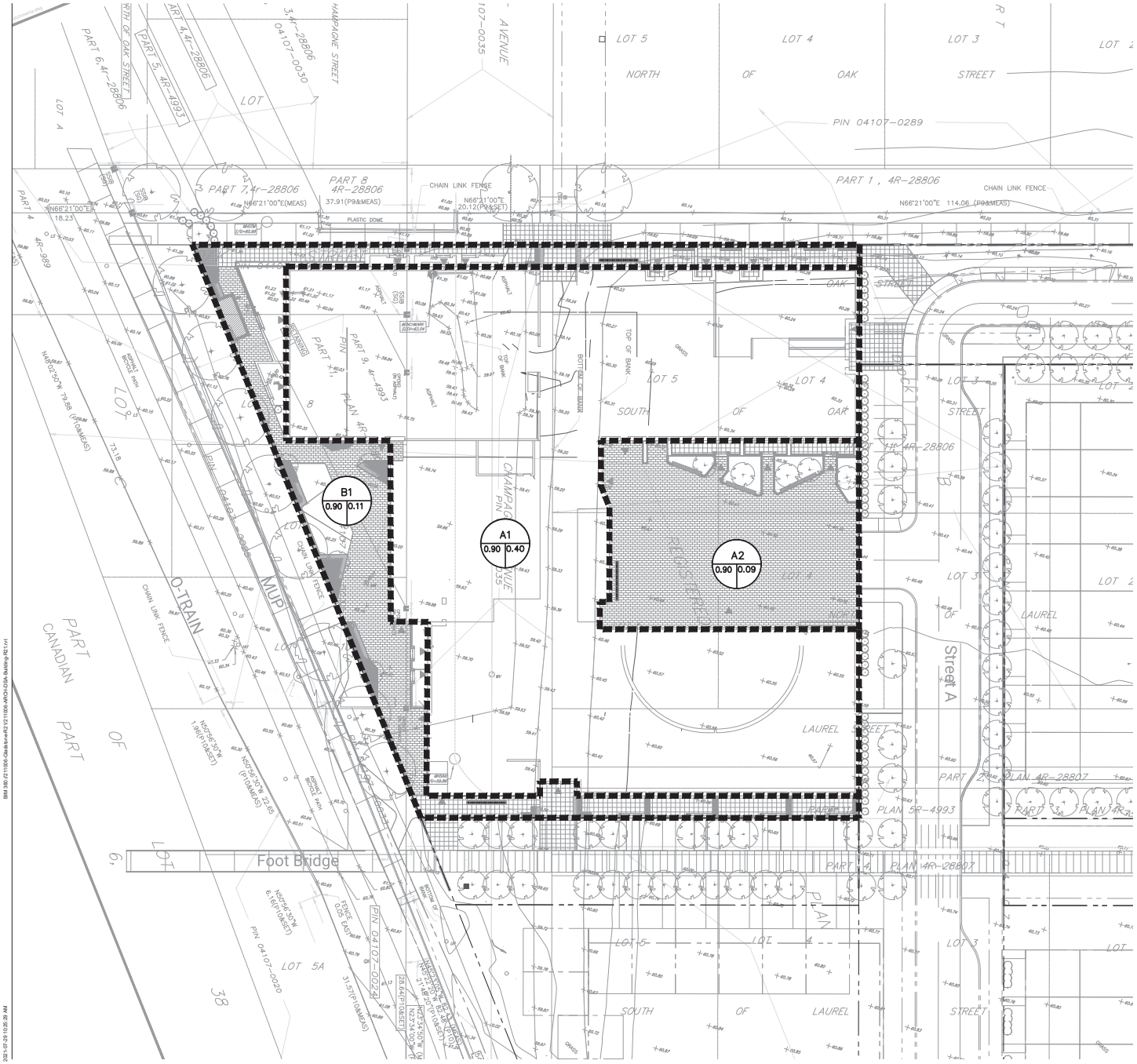
LICENSED PROFESSIONAL ENGINEER J.G. FOOKES Sept 08, 2021 PROVINCE OF ONTARIO

GLADSTONE VILLAGE
PHASE 1
933 Gladstone Avenue - Phase 1
211006

EXISTING SITE CATCHMENTS

Scale: 1:250
Project No: 210101900
Date: 08/09/21

C800



NOTES
1. A1 & A2 ARE PROPOSED CONTROLLED CATCHMENTS.
B1 IS A PROPOSED UNCONTROLLED CATCHMENT.

LEGEND

AREA ID — DRAINAGE AREA CHARACTERISTICS

RUNOFF COEFFICIENT % — AREA ha

CATCHMENT AREAS

1:250 HORIZONTAL
0m 5 10
0m 1

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MORRISON HERSHFIELD
200-2932 BASELINE ROAD, OTTAWA, ON K2H 1B1

ISSUED

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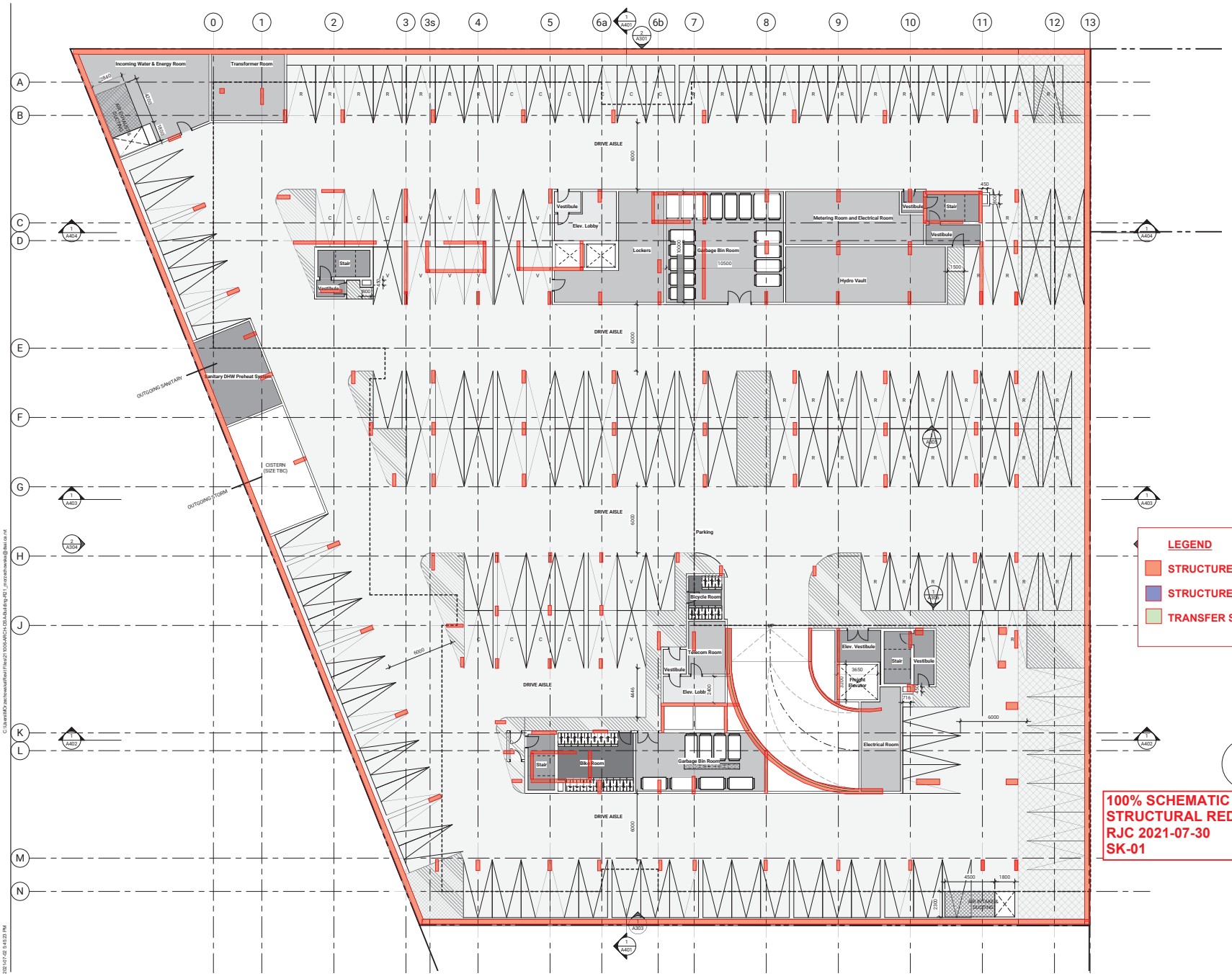
GLADSTONE VILLAGE
PHASE 1
933 Gladstone Avenue - Phase 1
211006

PROPOSED SITE CATCHMENTS

Scale: 1:250
Project No: 210101900
Date: 08/09/21

C801



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LEGEND

- shared services
- retail TBD
- interior amenity
- circulation
- exterior amenity
- green roof
- 4BD
- 3BD
- 2BD
- 1BD
- studio
- lockers + storage
- vertical circulation
- service
- parking

ISSUED

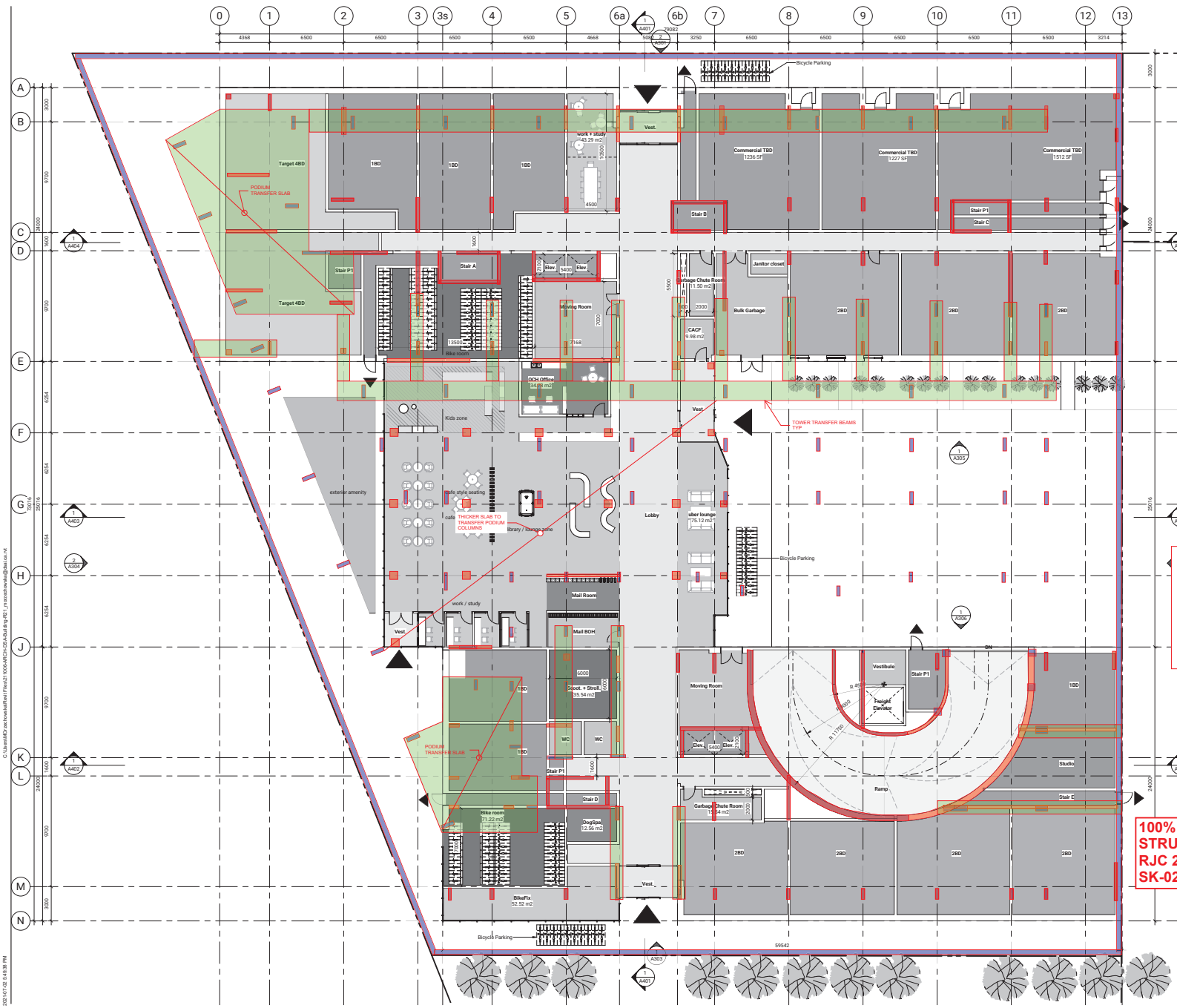
No. Date Description

Parking Schedule	
Type	Count
Commercial Parking	13
Residential Parking	129
Visitor Parking	15
	157

STONE VILLAGE
PHASE 1
933 Gladstone Avenue - Phase 1
211006

Level P1 - Floor Plan
As indicated

A100



LEGEND

- shared services
- retail TBD
- interior amenity
- circulation
- exterior amenity
- green roof
- 4BD
- 3BD
- 2BD
- 1BD
- studio
- lockers + storage
- vertical circulation
- service
- parking

PROJECT STATS

UNITS:
studio: 63 units
1BD: 143 units
2BD: 98 units
3BD: 26 units
4BD: 8 units (some maybe 3BDs)
Total: 338 units

AMENITY REQUIRED:
6ms per unit
338 x 6 = 2028m2

AMENITY PROVIDED:
INTERIOR:
L1: 43m2 + 423m2 + 75m2 + 52m2
L4: 185m2 + 67m2
L8: 57m2
Total interior: 902m2
EXTERIOR:
L1: 82m2
L4: 537m2 + 74m2
L8: 482m2
Total exterior: 1175m2
TOTAL AMENITY: 2077m2

LEGEND

- **STRUCTURE ABOVE (AT THIS LEVEL)**
- **STRUCTURE BELOW**
- **TRANSFER STRUCTURE (BEAM OR SLAB)**

100% SCHEMATIC DESIGN
STRUCTURAL REDLINE SKETCHES
RJC 2021-07-30
SK-02

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GENERAL NOTES

Plan Symbols

- Denotes Sloped Roof Insulation
- RD Denotes Roof Drain
- FD Denotes Floor Drain
- AD Denotes Area Drain
- HB Denotes Hose Bib Location
- Denotes Proposed Siamese Connection Location
- Denotes Proposed Gas Meter Location
- RWL Denotes Rain Water Leader
- Convex Mirror

ISSUED

No.	Date	Description

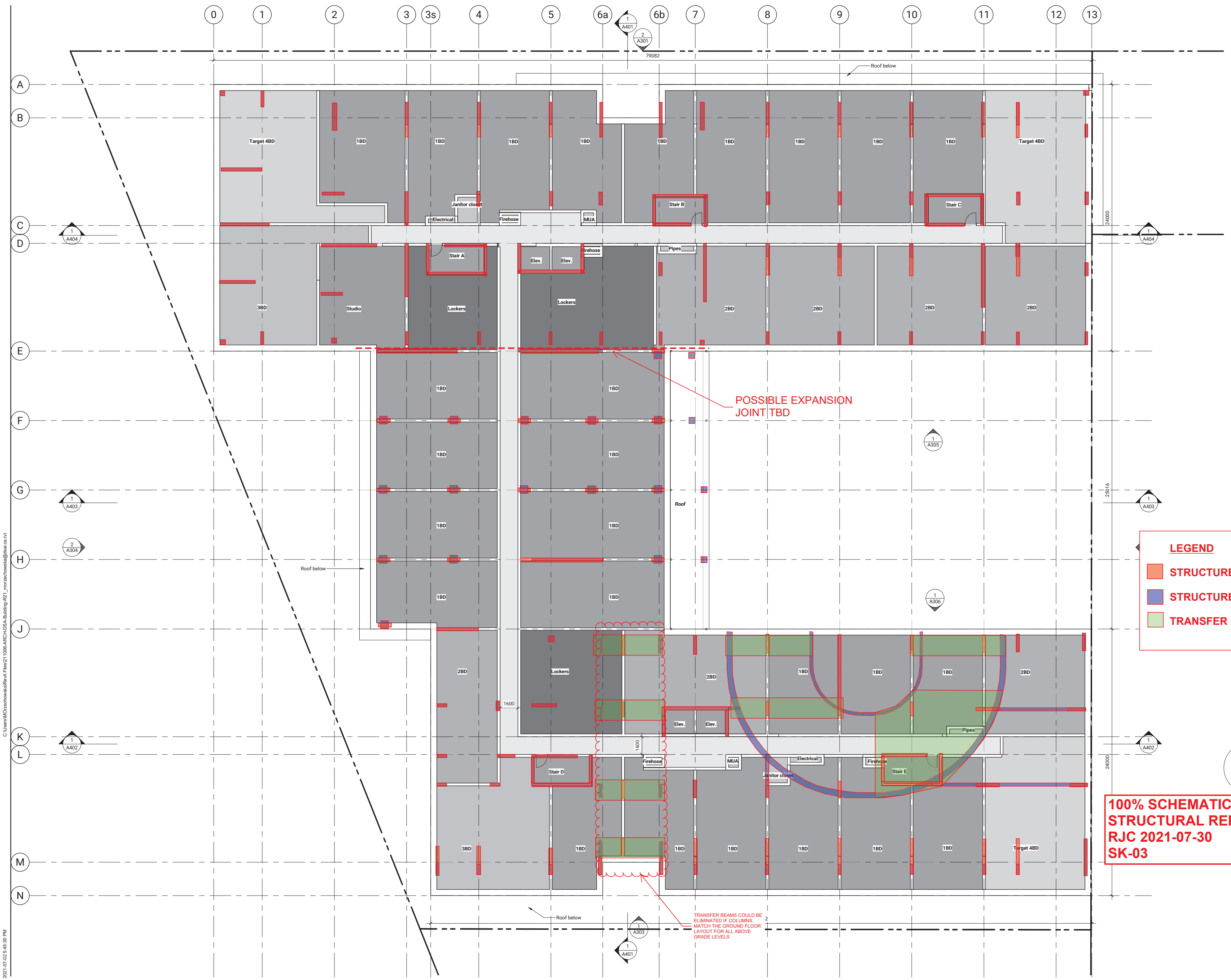
Plans

1. Refer to Building Elements Schedule for Exterior Wall, Partition, Roof, Ceiling, and Soffit Types.
2. Refer to Mechanical and Electrical Drawings for Additional Requirement.
3. At Locations where Mech. Ducts Interfere with Full Height Construction of Interior Partitions, Offset Partition Above Ceiling and Brace as Required. Maintain Fire Separation/Sound Rating of Partition. Offsetting of Partitions Will Only Be Permitted Where Ductwork Cannot Be Positioned.
4. All Dimensions are Taken to Face of Masonry or Concrete at Masonry and Concrete Walls and Partitions. At Steel Stud Partitions, Dimensions are Taken to Face of Gypsum Board, Unless Otherwise Noted.
5. Increase Thickness of Walls or Furr Out Wall Thickness as Required to Accommodate Mechanical and Electrical Panels and Services. Maintain Fire Separation Around Back of Panels where Applicable.
6. For Dimensions of Concrete Refer to Slab Edge Drawings.

STONE VILLAGE
PHASE 1
933 Gladstone Avenue - Phase 1
211006

Level 1 - Floor Plan
As indicated

A101



LEGEND

- STRUCTURE ABOVE (AT THIS LEVEL)
- STRUCTURE BELOW
- TRANSFER STRUCTURE (BEAM OR SLAB)

diamond schmitt

LEGEND

- shared services
- retail TBD
- interior amenity
- circulation
- exterior amenity
- green roof
- 4BD
- 3BD
- 2BD
- 1BD
- studio
- lockers + storage
- vertical circulation
- service
- parking

ISSUED

No.	Date	Description

CONTRACTOR MUST CHECK & VERIFY ALL DIMENSIONS ON THE JOB.
DO NOT SCALE DRAWINGS.

100% SCHEMATIC DESIGN
STRUCTURAL REDLINE SKETCHES
RJC 2021-07-30
SK-03

STONE VILLAGE
PHASE 1
933 Gladstone Avenue - Phase 1
211006

Level 2-3 - Floor Plan
As indicated

A102

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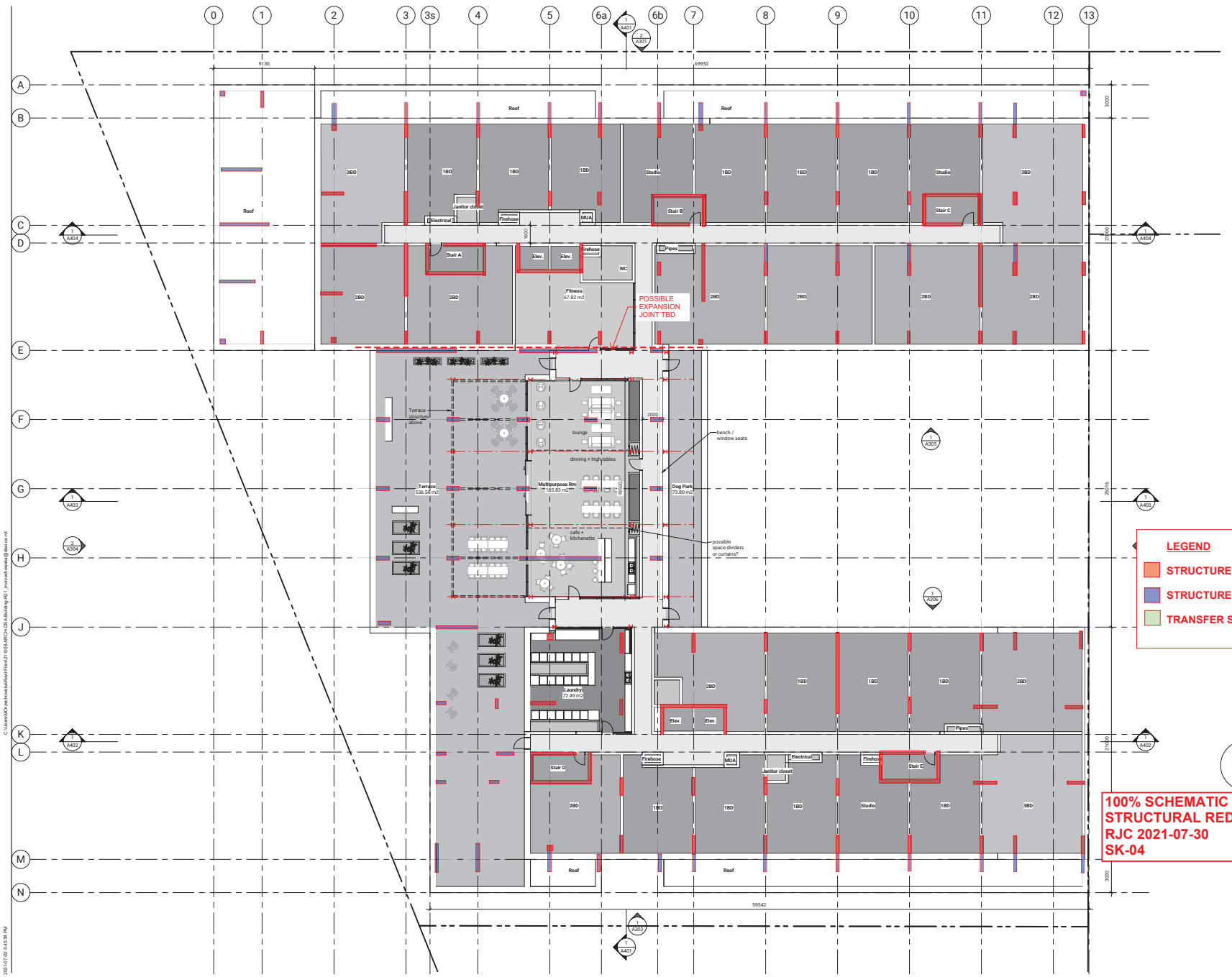


diamond schmitt

LEGEND

- shared services
- retail TBD
- interior amenity
- circulation
- exterior amenity
- green roof
- 4BD
- 3BD
- 2BD
- 1BD
- studio
- lockers + storage
- vertical circulation
- service
- parking

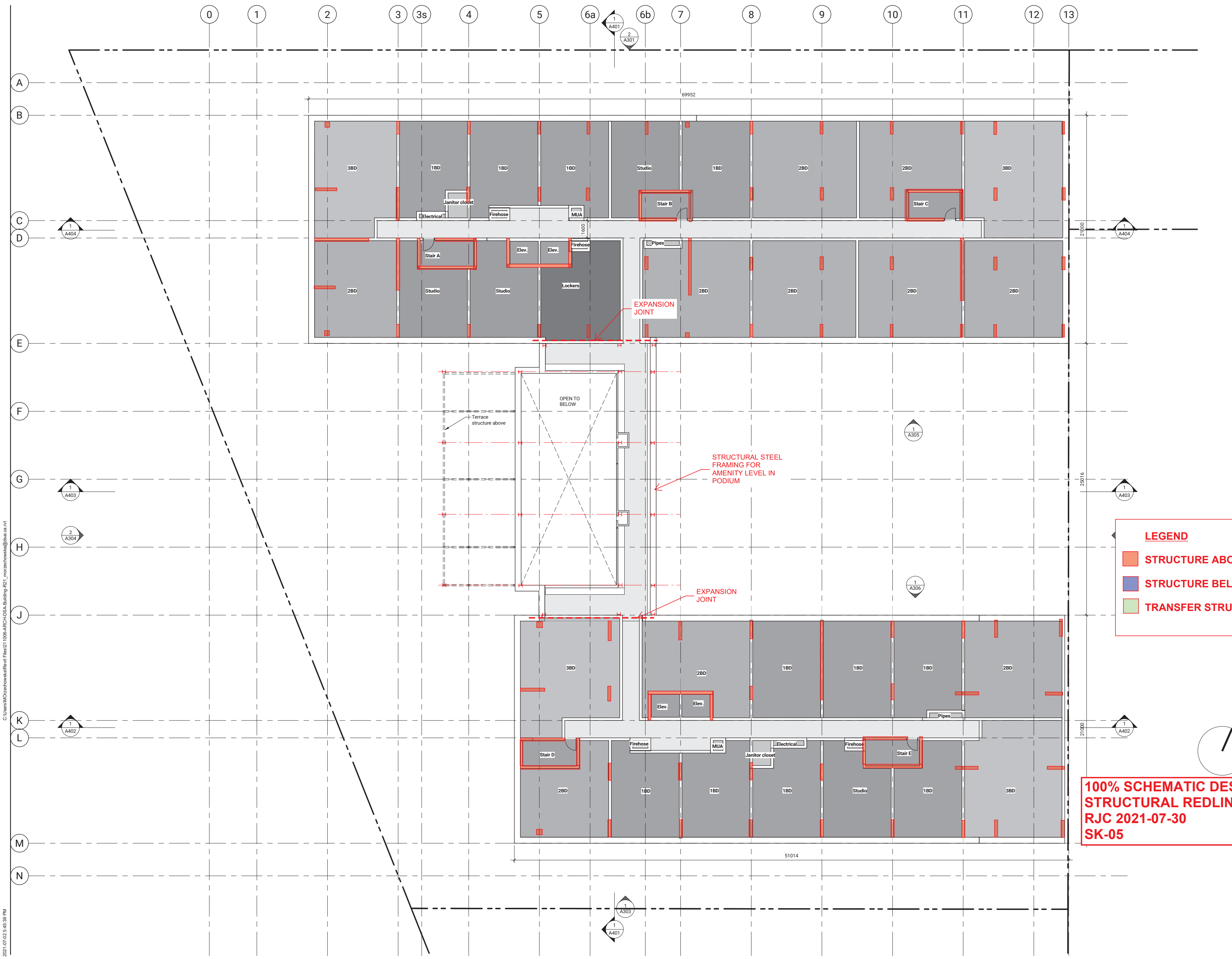
ISSUED

No.	Date	Description

STONE VILLAGE
PHASE 1
933 Gladstone Avenue - Phase 1
211006

Level 4 - Floor Plan
As indicated

A104



LEGEND

- STRUCTURE ABOVE (AT THIS LEVEL)
- STRUCTURE BELOW
- TRANSFER STRUCTURE (BEAM OR SLAB)

100% SCHEMATIC DESIGN
STRUCTURAL REDLINE SKETCHES
RJC 2021-07-30
SK-05

diamond schmitt

LEGEND

- shared services
- retail TBD
- interior amenity
- circulation
- exterior amenity
- green roof
- 4BD
- 3BD
- 2BD
- 1BD
- studio
- lockers + storage
- vertical circulation
- service
- parking

ISSUED

No.	Date	Description

CONTRACTOR MUST CHECK & VERIFY ALL DIMENSIONS ON THE JOB.

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...STONE VILLAGE
PHASE 1

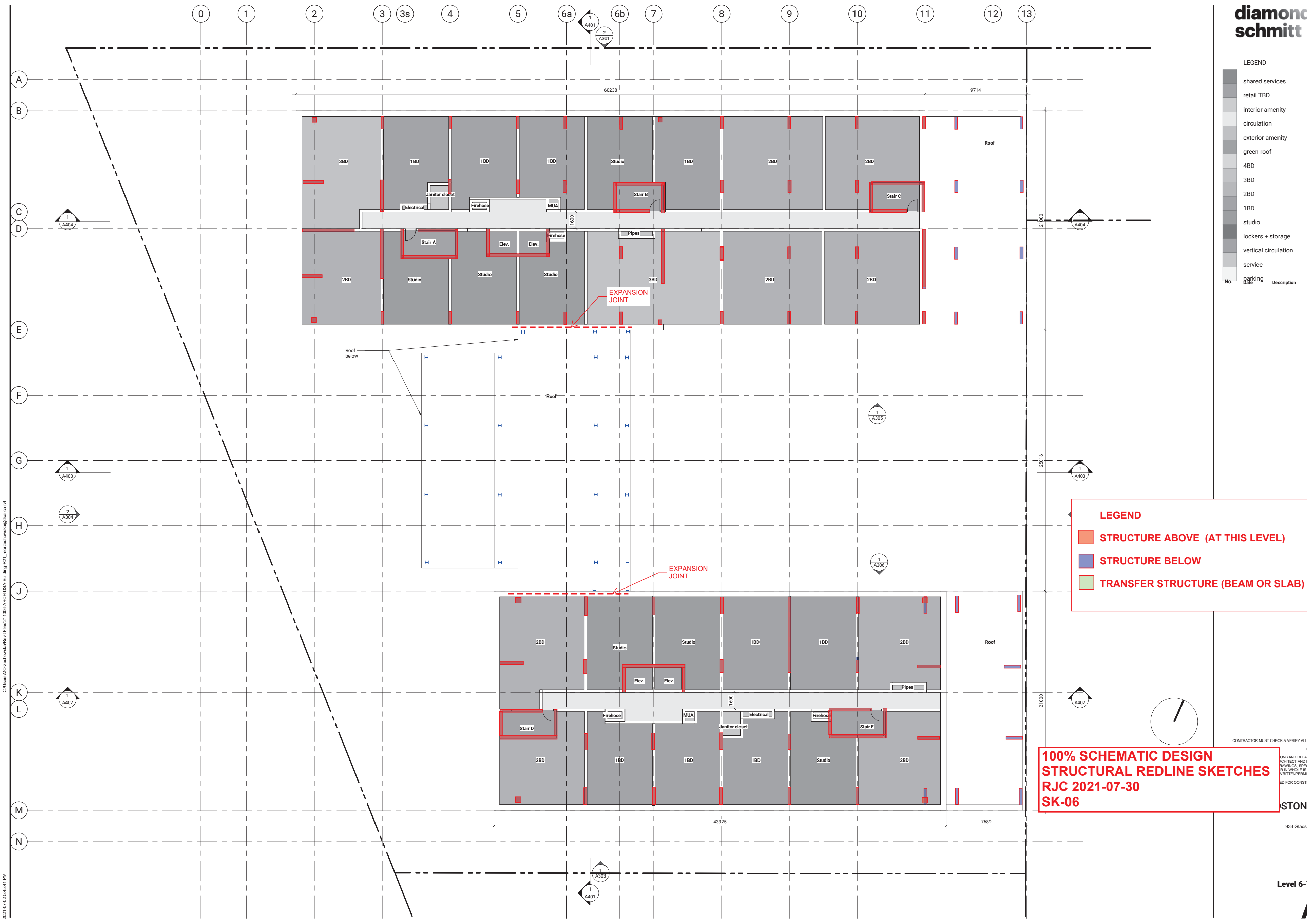
933 Gladstone Avenue - Phase 1

211006

Level 5 - Floor Plan

As indicated

A105



diamond schmitt

LEGEND

- shared services
- retail TBD
- interior amenity
- circulation
- exterior amenity
- green roof
- 4BD
- 3BD
- 2BD
- 1BD
- studio
- lockers + storage
- vertical circulation
- service
- parking

ISSUED

No.	Date	Description

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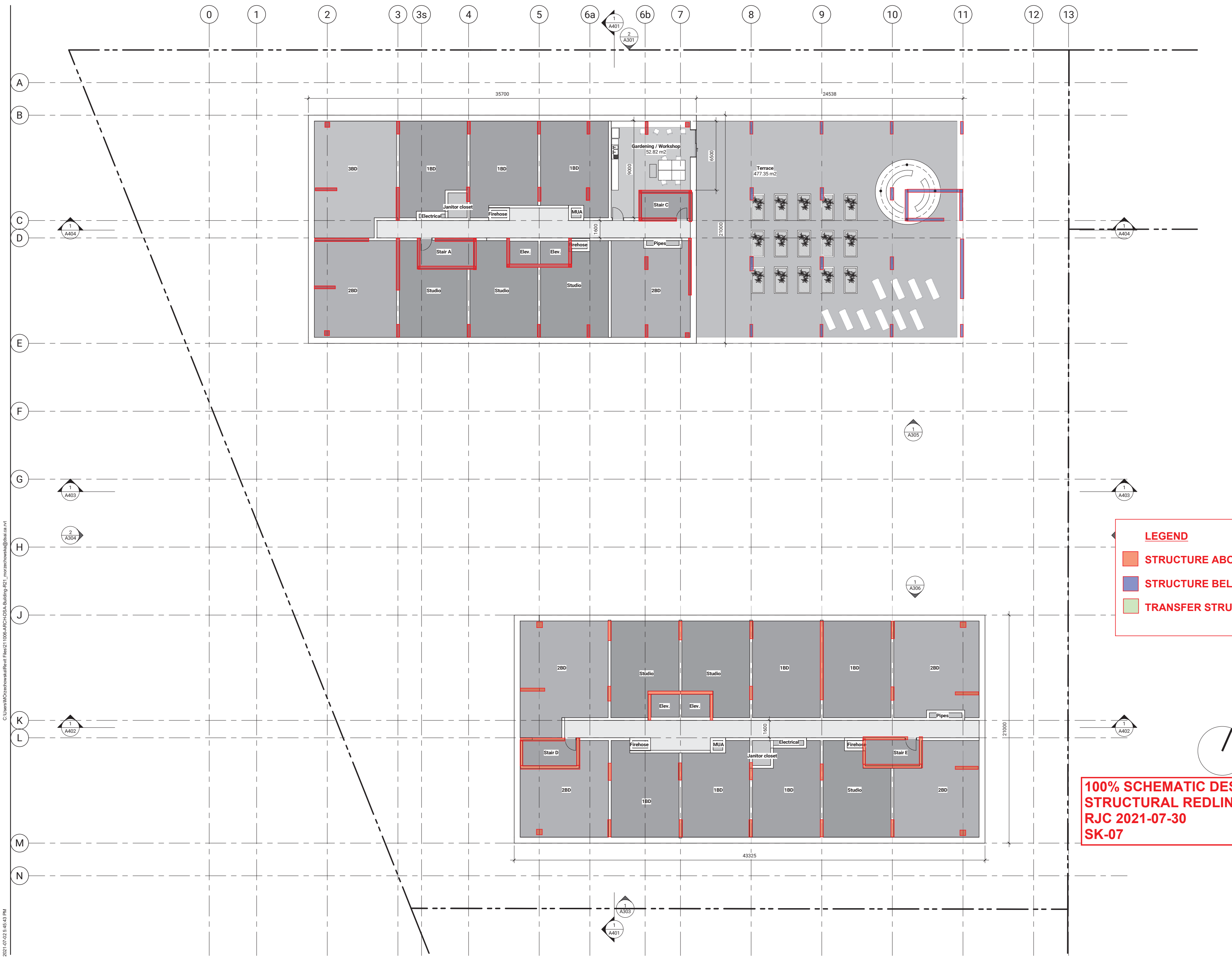
STONE VILLAGE
PHASE 1
933 Gladstone Avenue - Phase 1
211006

Level 6-7 - Floor Plan
As indicated

A106



diamond schmitt

LEGEND

- shared services
- retail TBD
- interior amenity
- circulation
- exterior amenity
- green roof
- 4BD
- 3BD
- 2BD
- 1BD
- studio
- lockers + storage
- vertical circulation
- service
- parking

ISSUED

No.	Date	Description

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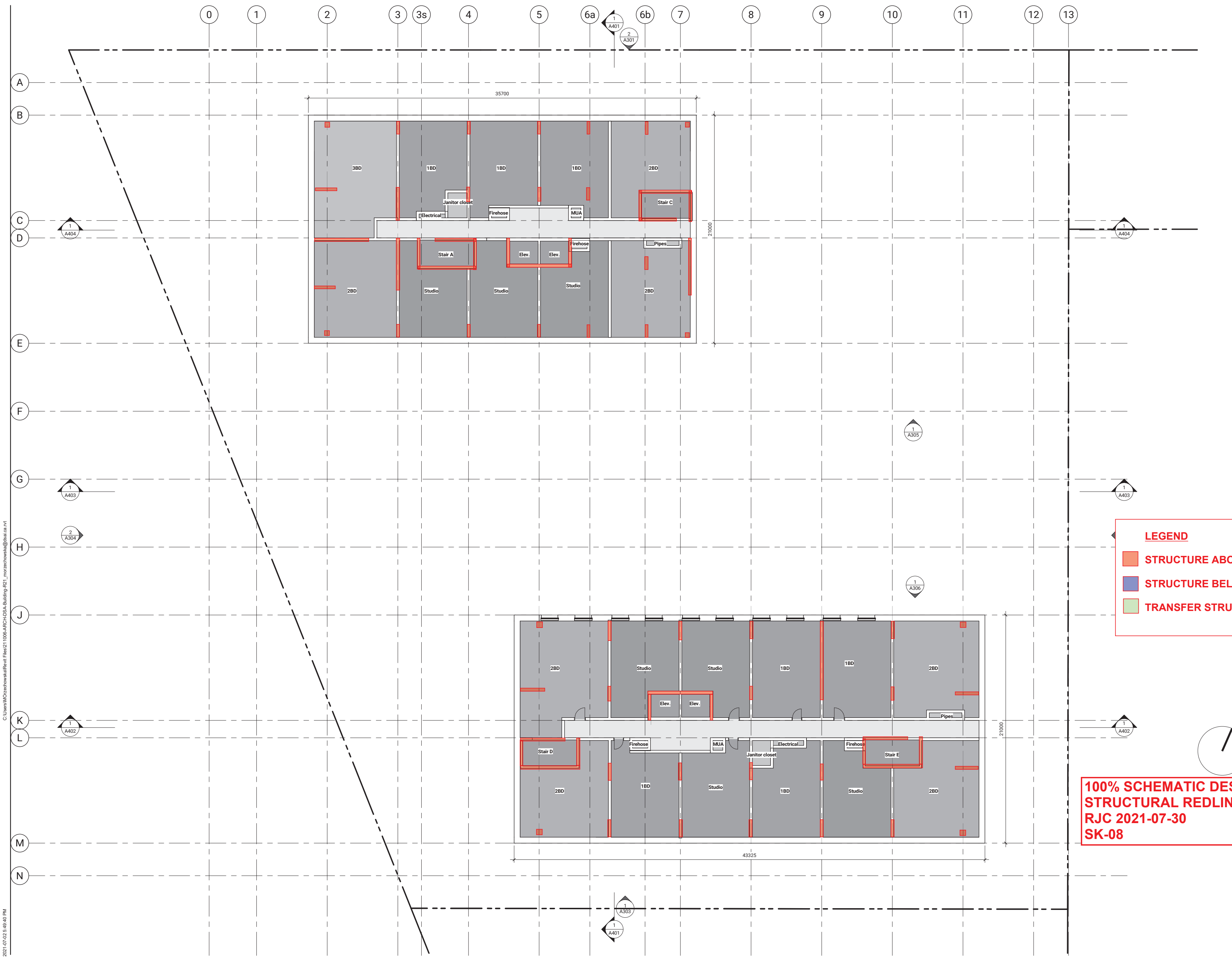
STRUCTURAL REDLINE SKETCHES
RJC 2021-07-30
SK-07

STONE VILLAGE
PHASE 1
933 Gladstone Avenue - Phase 1
211006

Level 8 - Floor Plan
As indicated

A108



diamond schmitt

LEGEND

- shared services
- retail TBD
- interior amenity
- circulation
- exterior amenity
- green roof
- 4BD
- 3BD
- 2BD
- 1BD
- studio
- lockers + storage
- vertical circulation
- service
- parking

ISSUED

No.	Date	Description

LEGEND

- STRUCTURE ABOVE (AT THIS LEVEL)
- STRUCTURE BELOW
- TRANSFER STRUCTURE (BEAM OR SLAB)

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RJC 2021-07-30
SK-08

STONE VILLAGE PHASE 1
933 Gladstone Avenue - Phase 1
211006

Level 9 up - Floor Plan
As indicated

A109

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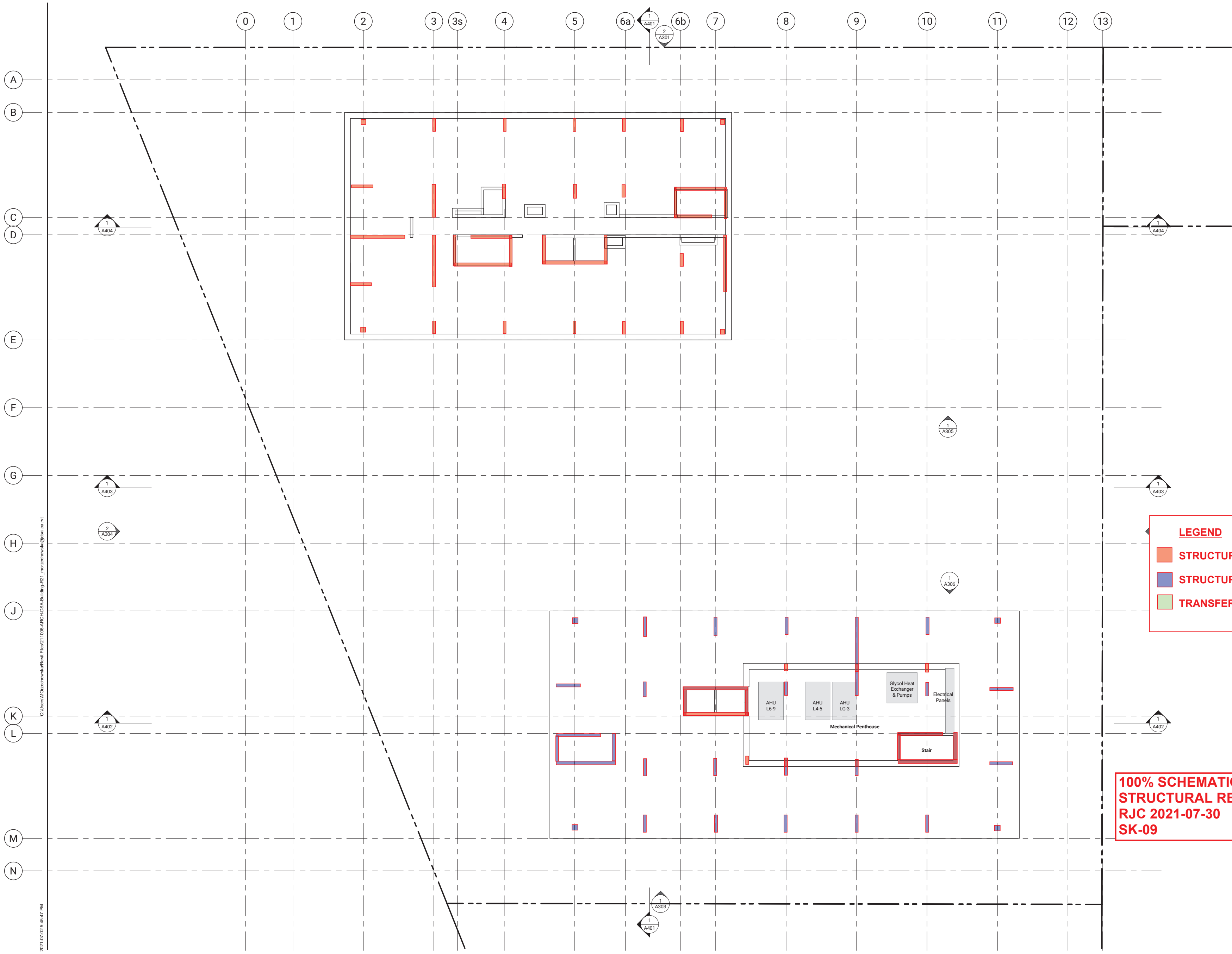

LEGEND

- STRUCTURE ABOVE (AT THIS LEVEL)
- STRUCTURE BELOW
- TRANSFER STRUCTURE (BEAM OR SLAB)

100% SCHEMATIC DESIGN STRUCTURAL REDLINE SKETCHES
RJC 2021-07-30
SK-09

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No.	Date	Description

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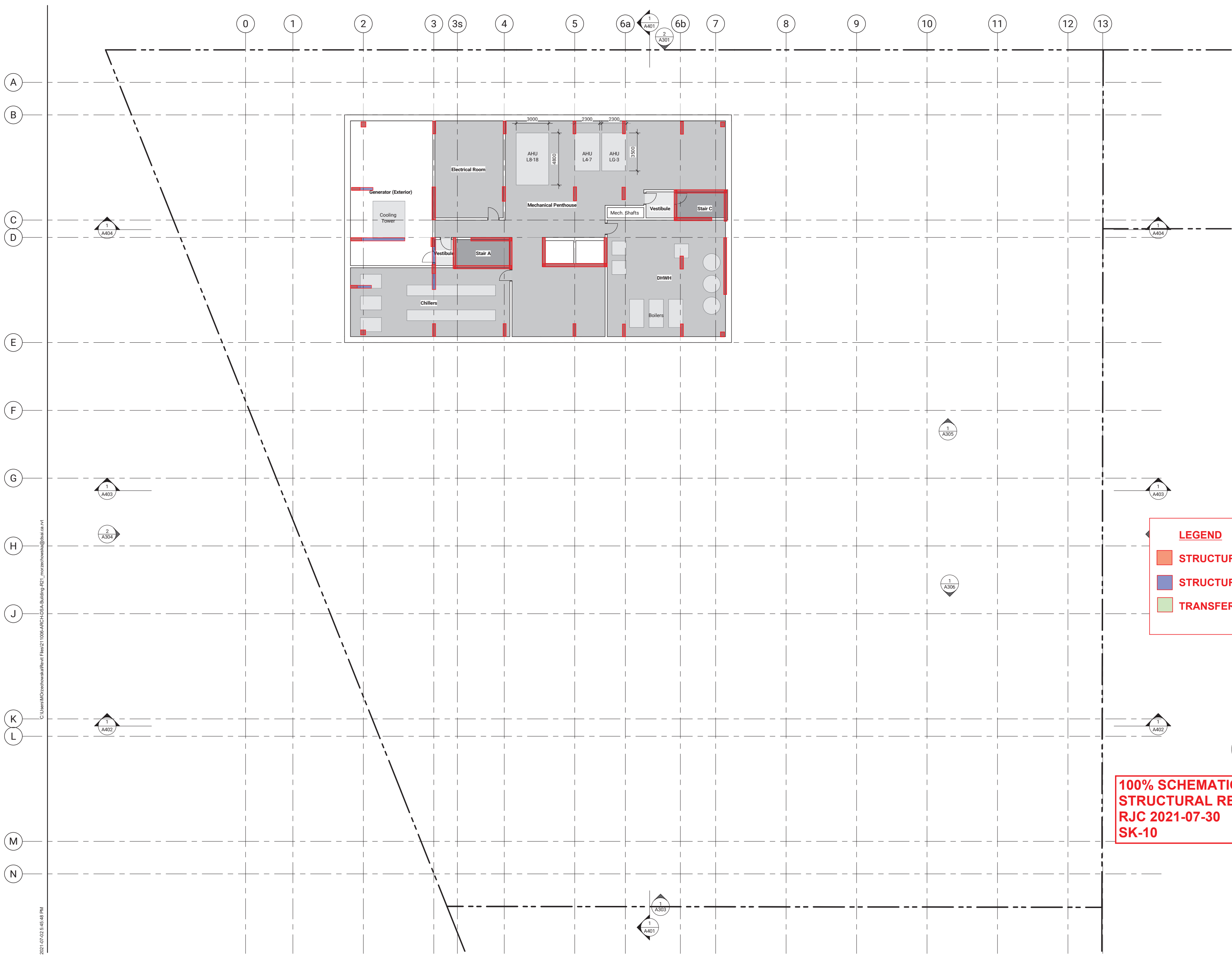
...STONE VILLAGE
PHASE 1
933 Gladstone Avenue - Phase 1
211006

Level 10 / Mechanical Penthouse
1 : 150

A110

diamond schmitt



ISSUED

No.	Date	Description

LEGEND

- STRUCTURE ABOVE (AT THIS LEVEL)
- STRUCTURE BELOW
- TRANSFER STRUCTURE (BEAM OR SLAB)

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100% SCHEMATIC DESIGN
STRUCTURAL REDLINE SKETCHES
RJC 2021-07-30
SK-10

...STONE VILLAGE
PHASE 1
933 Gladstone Avenue - Phase 1
211006

Mechanical Penthouse - Floor Plan
1 : 150

A119

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Construction Methodology and Impact Review		
Construction Item	**Potential Impact**	**Mitigation Program**
Item A - Installation of Temporary Shoring System - Where adequate space is not available for the overburden to be sloped, the overburden along the perimeter of the proposed building footprints will need to be shored in order to complete the construction of the underground parking levels. The shoring systems are anticipated to consist of a soldier pile and lagging or interlocking sheet pile system along the south sides, which is nearest to the Trillium Line.	Vibration issues during shoring system installation.	Design of the temporary shoring systems, in particular vibrations during installation, will take into consideration the presence of the Trillium Line. Installation of the shoring systems is not anticipated to have an adverse impact on the Trillium Line, nonetheless, vibration monitoring devices are recommended to be installed to monitor vibrations. The vibration monitors would be remotely connected to permit real time monitoring and a vibration monitoring program would be implemented as detailed in Subsection 3.1 - Vibration Monitoring and Control Program of Paterson Group Report PG5929-1 dated September 22, 2021.
Item B - Bedrock Blasting and Removal Program - Blasting of the bedrock will be required for construction of the proposed buildings and parking garage structures. It is expected that bedrock removal is required based on the current design concepts for the proposed development.	Structural damage of Trillium Line due to vibrations from blasting program.	Structural damage to the Trillium Line during bedrock blasting and removal is not anticipated, nonetheless, vibration monitoring devices are recommended to be installed at the rail line in order to monitor vibrations. The vibration monitors would be remotely connected to permit real time monitoring and a vibration monitoring program would be implemented as detailed in Subsection 3.1 - Vibration Monitoring and Control Program of Paterson Group Report PG5929-1 dated September 22, 2021.
Item C - Construction of Footings and Foundation Walls - The proposed buildings will include 1 to 3 levels of underground parking. Therefore, the footings will be placed over a clean, surface sounded limestone with interbed shale bedrock bearing surfaces.	Building footing loading on adjacent Trillium Line, and excavation within the lateral support zone of the Trillium Line.	Due to the distance between the proposed buildings and the Trillium Line, the zone of influence from the proposed footings will not intersect the rail line structure and associated infrastructure. Further, although the underground parking levels for the proposed buildings will extend approximately 7.0 to 12.9 m below existing ground surface, due to the approximate 28 to 33 m distances between the proposed buildings and rail line structure, the building excavations will not impact the lateral support zone of the Trillium Line. Further, the proposed rail station is located approximately 22 m from the proposed buildings at the subject site.