

Preliminary Servicing Report

Elgin Mall Apartments

417 Wellington Street, St Thomas, ON

Project Number: DEL25-047

Date: March 2026

Prepared For:

**Railway City
Hospitality Inc.**

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Revisions

Original Report, dated: March 20, 2026

Statement of Qualifications and Limitations

This report has been prepared for Railway City Hospitality Inc. based upon currently available information, to support a Zoning Bylaw Amendment application to be filed for the proposed development. This report has been prepared for the sole use of Railway City Hospitality Inc. and any reliance upon this information by any third party is made at the risk of that party. Development Engineering (London) Limited assumes no liability for any injury, loss or damage suffered by any third party based upon decisions made or actions that arise due to that party's reliance upon or interpretation of the contents of this report.

This Statement of Qualifications and Limitations is attached to and forms part of the report; any use of the report is subject to the terms contained herein.

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1.0 Introduction

Development Engineering (London) Limited (DevEng) has been retained by Railway City Hospitality Inc. to provide a preliminary servicing report in support of a proposed Zoning By-law Amendment application to facilitate construction of two proposed mixed-use commercial and residential apartment buildings on the existing Elgin Centre site (Elgin Mall), located at 417 Wellington Street, in St. Thomas, Ontario. The site is bound by Highview Drive to the north and west, existing residential and institutional (St. Thomas Christian Church) properties to the east and Wellington Street to the south.

The existing commercial plaza is approximately ± 7.96 ha, currently consisting of the primary Elgin Mall building (± 2.57 ha), an attached five storey hotel (± 0.13 ha), a detached commercial building (Denny's Restaurant) (± 0.04 ha), and the remaining space as parking area. Refer to SD1.1 by Zedd Architecture in Appendix A for the existing site plan.

The proposed concept for the site features two (2) mixed-use commercial and 10-storey podium residential tower buildings with a single combined underground garage to be constructed within the existing parking lot at the southwest corner of the site, including demolition of the existing Denny's. Each apartment building is proposed to contain 116 units. Additional changes to the parking layout and servicing are to be implemented to accommodate the proposed concept. Refer to SD1.3 by Zedd Architecture in Appendix A for the proposed site plan.

The purpose of this report is to support the Zoning By-Law application by demonstrating an effective approach to address site servicing, grading and Stormwater Management (SWM), while conforming to City of St. Thomas and Provincial design guidelines.

2.0 Background Information

2.1 Previous Consultations

The following pre-consultation comments were reviewed for the development of the servicing design and the preparation of this report:

- Record of Consultation with the City of St. Thomas, May 22, 2025

2.2 Previous and Concurrent Studies and Reports

The following studies and reports were reviewed for the development of the servicing design and the preparation of this report:

- As built drawings 3-0337, 3-0338, 3-0642, 3-0643 by Cyril J. Demeyere Limited Consulting Engineers (1989)
- As built water distribution drawing 8-0166, Public Utilities Commission of St. Thomas (1976)
- Elgin Mall Development – Hotel Functional Servicing Report and design drawing SE2, DevEng project #DEL19-040 (2020)
- Topographic Survey reference # 19-42-326-00, SCI Survey Consultants (2019)
- Architectural SD1.3 by Zedd Architecture, (Feb 27, 2026)

2.3 Related Design Specifications

- St. Thomas Design Guidelines, 2023
- Ontario Building Code (OBC), 2024
- Ministry of Conservation and Parks Design Guidelines for Drinking Water Systems, 2008
- City of London Design Specifications & Requirements Manual (DSRM), 2025

3.0 Approval Agencies

3.1 City of St. Thomas

The Zoning By-law Amendment application is to be submitted to and approved by the City of St. Thomas. Any future applications (Site Plan, Building Permit) must also be submitted to the City of St. Thomas.

4.0 Existing Conditions

The existing 7.96 ha subject site consists of parking space, the primary Elgin Mall building, an attached five storey hotel and a separate Denny's building. The site has minimal landscaping, with grass surrounding the parking lot and a few trees planted outside the commercial "Denny's" building. The site is bounded by Residential/ institutional lands to the east, Wellington street to the south and Highview Drive to the north and west. The site is located outside of the Kettle Creek Conservation Authority (KCCA) regulation limit and is in an urban area with many neighbouring residential lands.

4.1 Site Topography and Drainage

Topographic information was collected by ACI Survey Consultants in a survey dated November 26, 2019. The site's highest elevation is 243.5m, located near the centre of the site, and the lowest elevation is 240.8m at an existing catch basin near the southwest corner of the site. The site is graded to allow all overland flow to be directed to the existing catch basins throughout the parking lot, which outlet into the existing municipal storm sewer system along Highview Drive and Wellington Street. Refer to Appendix A for the topography drawing by ACI.

4.2 Existing Servicing

As-built plan and profile drawings were obtained from the City of St. Thomas for Wellington Street and Highview Drive. The information from these drawings were used to gain understanding of the servicing capacities of the existing municipal infrastructure surrounding the site. Refer to Appendix A for the As-built drawings and Figure 1 which approximately amalgamates this information.

4.2.1 Watermain

Municipal

There is an existing 300mm diameter municipal watermain along the north (near) side of Wellington Street fronting the subject site. Additionally, there is an existing 250mm diameter municipal watermain is located along the east and south (near) side of Highview Drive.

Private

The existing mall/hotel building currently has four (4) 200mm diameter private water service connections along Highview Drive. Additionally, there are two (2) service connections along the east side of the building, connected to the private (assumed private by the City of St. Thomas) 200mm diameter watermain looping Highview Drive to Wellington Street. There is an existing 100mm diameter private water service connection to

the existing Denny's in the southwest portion of the site connected to the municipal watermain on Highview Drive.

Fire Hydrants

There are seven (7) municipal fire hydrants located around the subject site along the near side of Highview Drive and Wellington Street. The most recent hydrant flow tests for the hydrants were conducted by the City of St. Thomas in 2015. The test results varied with lower pressures found in hydrants near the southwest corner of the site (hydrants 510 and 511 with static pressure of 49 and 50 PSI static and available flow of 1235 and 1095 USGPM respectively at 20 PSI) and higher pressures found along Highview Drive (Hydrants 519 and 520 with 48 and 46 PSI static and available flow of 3518 and 3077USGPM respectively at 20 PSI). Refer to Appendix B for the hydrant flow test results.

4.2.2 Sanitary Sewers

Municipal

Existing municipal sanitary sewers are located within municipal road allowances surrounding the subject site, with 375mm diameter sewers located along the north (near) side of Wellington Street and 300mm diameter sewers located along the east and south (near) side of Highview Drive. The system conveys wastewater south from Highview Drive and west along Wellington Street. According to the pre-consultation comments compiled by the City of St. Thomas, servicing capacity currently exists for the site but the ability to service the site depends on the timing of an approved Site Plan.

Private

There is a private 200mm sanitary sewer system located within the existing parking lot servicing the existing mall and hotel. The system is gravity fed, connecting into the existing municipal sanitary manhole located at the intersection of Highview Drive and Rickwood Place. Due to the as-builts not having private sanitary servicing information for the existing Denny's, it is assumed there is an existing private sanitary service in the southwest corner of the site that is to be demolished.

4.2.3 Storm Sewers

Municipal

Existing municipal storm sewers ranging in size from 1200 - 2000mm diameter are located on the south (far) side of Wellington Street and the west/north (far) side of Highview Drive. Stormwater runoff is conveyed using typical urban road cross sections to direct flow to existing catch basins and into the existing municipal storm network. The stormwater flows are conveyed through the existing sewer system to the intersection of Highview Drive and Wellington Street and then west down Wellington Street before ultimately presumedly discharging to a tributary of Kettle Creek.

Private

There are currently catch basins scattered around the site to capture storm runoff and direct flow to the existing municipal pipe network system along Wellington Street and Highview Drive. Details of the sizing for the existing private storm system is to be confirmed. The existing Elgin mall and hotel are serviced from the municipal storm sewer at the intersection of Highview Drive and Rickwood Place, with a 900mm diameter private storm sewer.

4.2.4 Other Services

There are existing overhead hydro cables east and south of the existing sidewalk along Highview Drive and north of the sidewalk along Wellington Street. Additionally, there are telephone junction boxes and telephone pedestals beyond the subject site's west property line and north property line. Each of these services are anticipated to be sufficient to service the proposed development.

5.0 Proposed Conditions

The proposed concept includes the demolition of the existing Denny's building on the site and the construction of two mixed-use commercial and 10-storey podium residential tower buildings with a single combined underground garage to be constructed within the existing parking lot at the southwest corner of the site. The development is currently anticipated to be completed in two phases, with the central building comprising Phase 1 and the southwest building comprising Phase 2 as identified on drawing SD1.3 in Appendix A. The total building area equates to ± 0.53 ha. Additional landscaped areas and a new parking layout are proposed to accommodate the new buildings. Underground parking for the apartment residents is provided beneath the site in a central common garage. The existing south driveway entrance nearest to the Wellington Street and Highview Drive intersection is anticipated to be removed and municipal boulevard restored.

5.1 Grading and Drainage Design

The proposed grading of the site will be conducted in a manner to provide, where possible, a reasonable cut/fill balance while maintaining existing drainage patterns and matching into existing grades along the property boundaries. It is anticipated the existing overland flow route for a significant portion of the subject site (based on the existing site topography) will be blocked as a result of constructing the Phase 2 building. Review of these impacts and design of the revised overland flow route should be conducted at the detailed design phase.

Based on the existing site topography as well as the road frontage elevation along Wellington Street, main finished floor elevations of $\sim 243.5\text{m}$ and $\sim 242.5\text{m}$ are anticipated for the Phase 1 and Phase 2 buildings respectively. Architectural details to reconcile this difference in elevation within the common underground garage should be conducted at the detailed design stage.

5.2 Proposed Servicing

New private on-site services for water, sanitary and storm drainage will be required to support the proposed development. For the purpose of this report, two (2) servicing options have been identified: providing new private service connections to the existing Municipal services on Wellington Street (henceforth identified as Option 1) or connecting internally to the existing on-site private services (henceforth identified as Option 2).

5.2.1 Watermain

All new private watermain to service the proposed development on the subject site should be designed in accordance with Chapter 9 of the St. Thomas Design Guidelines Manual, the MECP Design Guidelines for Drinking Water Systems and the OBC as applicable, including appropriate isolation valves and hydrants. These requirements are as follows:

1. Maximum day demand plus fire flow be maintained at a pressure not less than 140 kPa (20 PSI) at any hydrant lateral or potential fire service connections.
2. Maximum hourly demand be maintained at a pressure not less than 275 kPa (40 PSI) in residential areas and not less than 310 kPa (45 PSI) in industrial areas.

3. Average day demand be maintained at a pressure not less than 275 kPa (40 PSI)
4. Maximum residential pressure should not exceed 690 kPa (100 PSI) and a minimum residual pressure (peak hour) shall not be below 275 kPa (40 PSI)
5. Watermain velocities shall range between 0.6m/s and 1.5m/s during domestic demand scenarios and shall not exceed 3.0 m/s during the maximum day + fire flow demand scenario.

As previously indicated, there are two options to service the proposed new buildings: propose a new private watermain service, connecting to the municipal watermain on Wellington Street (Option 1) or connect to the existing private system (Option 2). Option 1 is preferred for the proposed development to avoid a potential registered drinking water system, in case the proposed buildings are ever severed from the main mall property in the future. Additionally, given the low static pressures identified in the 2015 flow tests provided by the City, the length of the watermain service for Option 1 will be considerably shorter, resulting in less pressure loss than connecting to the existing private service. Refer to Figure 1 in Appendix A for approximate layouts of each watermain servicing option.

A high level fire flow analysis has been conducted for the proposed Phase 1 building (worst case) for Option 1, assuming a fire flow demand of 900USGPM (650 USGPM sprinkler demand plus a 250 USGPM hose demand per NFPA guidelines). The analysis results determine the proposed fire flow demand can be delivered to the site using a 200mm diameter service at a residual pressure of 22.46 psi, meeting the minimum of 20psi pressure constraint per OBC and City Standards. Additionally, the velocity of the existing municipal watermain is calculated to be 0.80m/s with the proposed private service 1.81m/s, both below the City of St. Thomas maximum velocity of 3.0m/s during fire flow. Final demands and pipe sizing is to be confirmed during detailed design. Refer to Appendix B for the fire flow calculations.

A second high level fire flow analysis has been conducted assuming Option 2 (connecting into the existing 200mm diameter water private loop along the east boundary) for the proposed Phase 1 building (worst case), using the same 900USGPM fire flow demand and 200mm diameter private service. As hydrant 511 is the closest hydrant (with flow test results) to the proposed service, it was used for the fire flow analysis. Option 2 does not have the required pressure to meet the minimum 20psi pressure constraint per OBC and City Standards without having to upsize the private service and shall be considered insufficient for the proposed development. Refer to Appendix B for the fire flow calculations.

Additionally, during demolition, the existing water service for the Denny's building shall be removed and capped at the municipal watermain.

5.2.2 Sanitary Sewers

All new private sanitary sewers to service development on the subject site should be designed and constructed in accordance with Chapter 6 of the St. Thomas Design Guidelines Manual and the OBC as applicable, including maintenance hole spacing.

As previously indicated, there are two (2) options to service the proposed new buildings: connecting directly to the Municipal sanitary sewer on Wellington Street (Option 1) or connecting to the existing on-site private 200mm diameter sanitary sewer serviced off of Highview Drive (Option 2). Option 1 is preferred as based on cursory review; it is anticipated the Option 2 outlet is insufficiently deep to service the proposed buildings (in particular the proposed underground garage) using gravity.

The existing 375mm municipal sanitary sewer along Wellington Street, with a flow capacity of 80.35L/s (Mannings) assuming 0.21% slope, is anticipated to be sufficiently deep to service the proposed buildings. Refer to Appendix C for the Wellington Street as-built information.

Documentation provided by the City of St. Thomas did not specifically include details regarding sanitary allocation for the subject site beyond indicating that servicing capacity currently exists for the site depending on the timing of an approved Site Plan. In lieu of this information, anticipated peak sanitary flows have been generated based on Chapter 6 of the St. Thomas design standards. The City of London DSRM was also used to assume the apartment population of 1.6 persons per unit due to lack of information in the St. Thomas design standard. The proposed anticipated (Harmon) peak sanitary flow for the proposed development (commercial + residential) has been calculated to be 5.07L/s, which equates to approximately 6.31% of the existing municipal sewer's pipe capacity directly fronting the subject site. Confirmation of the pipe slope, design flow and allowable flow in the municipal sewer (by the City of St. Thomas) will be conducted during detailed design. Refer to appendix C for the sanitary design flow calculations.

Additionally, during demolition, the existing sanitary service for the Denny's building shall be removed and capped at the property line.

5.2.3 Storm sewers and Local Drainage

All new private storm sewers to service development on the subject site should be designed and constructed in accordance with Chapter 7 of the St. Thomas Design Guidelines Manual and the OBC as applicable, including maintenance hole spacing. However, given the existing site topography and the proposed Site Plan layout, the only additional storm services anticipated to be required are for rooftop drainage. As previously indicated, there are two (2) options to service the proposed new buildings: connecting directly to the Municipal storm sewer on Wellington Street (Option 1) or connecting to the existing 900mm diameter on-site private storm sewer serviced off of Highview Drive (Option 2). Given the proposed development concept will result in a reduction to site imperviousness, post-development flows to the municipal sewers are anticipated to be maintained or reduced in post-development conditions. At this time, either option is viable and could be considered (including an assessment of reallocation of flows between the Highview Drive and Wellington Street sewers, which converge at the intersection) at the detailed design stage.

5.3 Stormwater Management

The proposed development concept involves adding additional landscaping to the site compared to existing conditions. The increase in landscaping will result in a reduction to the C-value for the site. As a result, no stormwater management quantity control measures are anticipated to be required to maintain existing runoff rates from the subject site. Roof drains could be utilized to decrease post-development runoff further at the discretion of the owner.

The proposed development is anticipated to improve the overall site storm runoff quality by replacing surface features which have traditionally high total suspended solid (TSS) rates (parking lot and drive aisles) with features that are generally considered "clean" for the purpose of quality control (rooftop and landscaped areas). As a result, no stormwater quality control measures are anticipated to be required to support the proposed development.

6.0 Erosion and Sediment Control

Complementary to the site servicing and grading design for the on-site development, erosion and sediment control (ESC) details will be included with the detailed Engineering design drawings. Temporary ESC measures

will be designed to mitigate the offsite migration of sediments by incorporation of various best management practices and control measures. Typical control measures to be implemented on site include:

- Installation of silt control fencing (light duty/robust) around the site perimeter at down-gradient locations;
- Preventing silt or sediment laden runoff from entering inlets (catchbasins / catchbasin maintenance holes) by installing pre-fabricated temporary inlet filter bags and incorporating straw bale or rock dam flow checks;
- Temporary sediment traps/basins (dewatering stations where required);
- Sodding the invert of swales as soon as possible after being constructed to mitigate erosion and down cutting; in general, minimizing the duration of soil exposure in erosion prone areas by temporary vegetation coverage (i.e. hydro-seeding) is recommended;
- Maintaining sediment and erosion control structures in good repair (including periodic cleaning as required) until such time as the Engineer or the Municipality approves their removal;
- Incorporation of temporary measures at site construction entrances to minimize tracking of mud and debris onto municipal road allowances;
- Scheduling of critical conveyance works during forecasts of little to no precipitation.

Detailed ESC plans will be provided for review by the City of St. Thomas at the detailed engineering stage.

7.0 Summary and Conclusions

Based on the above information, the following conclusions can be made with regards to servicing the addition of two (2) mixed use commercial and residential apartment buildings on the existing Elgin Centre Site at 417 Wellington Street in St. Thomas, Ontario:

- The subject site is approximately ± 7.96 ha, currently consisting of a mall (± 2.57 ha), an attached five storey hotel (± 0.13 ha), a detached commercial building (Denny's) (± 0.04 ha), and the remaining space as parking area.
- The proposed development is to occur in two (2) phases, connected via a common underground parking garage.
- There are existing municipal watermain, storm sewers and sanitary sewers located along Wellington Street and Highview Drive.
- There are existing private storm sewers, sanitary sewers and watermain connections located within the subject site, currently servicing the existing mall, attached 5 story hotel and assumed servicing of the Denny's building. The private services are connected to the existing municipal services on Highview Drive.
- Proposed grading of the subject site shall be conducted in a manner that directs storm runoff to the existing storm sewers, and generally follow existing drainage patterns where feasible. It is anticipated that the major overland flow route for a significant portion of the subject site will be blocked by the proposed Phase 2 building. Reallocation of these major flows around the Phase 2 building should be confirmed at detailed design.
- For the purpose of this report, two (2) servicing options have been identified: providing new private service connections to the existing Municipal services on Wellington Street or connecting internally to the existing on-site private services.
- The preferred water servicing alternative is to provide a new connection directly to the Municipal watermain on Wellington Street, which is anticipated to be suitably sized to accommodate the development's domestic and fire flow demands.

- The preferred sanitary servicing alternative is to provide a new connection directly to the Municipal sanitary sewer on Wellington Street, which is suitably deep to service the proposed development. A anticipated sanitary peak flow of 5.07 L/s has been calculated for the proposed development.
- There is no preferred alternative for storm servicing.
- No on-site stormwater quantity or quality control measures are anticipated to be required as the proposed development will result in a reduction to the overall site runoff coefficient (and therefore runoff) and proposes replacing existing parking lot areas with rooftops and landscaping which are considered "clean" for the purpose of quality control.
- Erosion and Sediment Control measures should be implemented to help mitigate potential sediment transport and erosion resulting from construction activities.

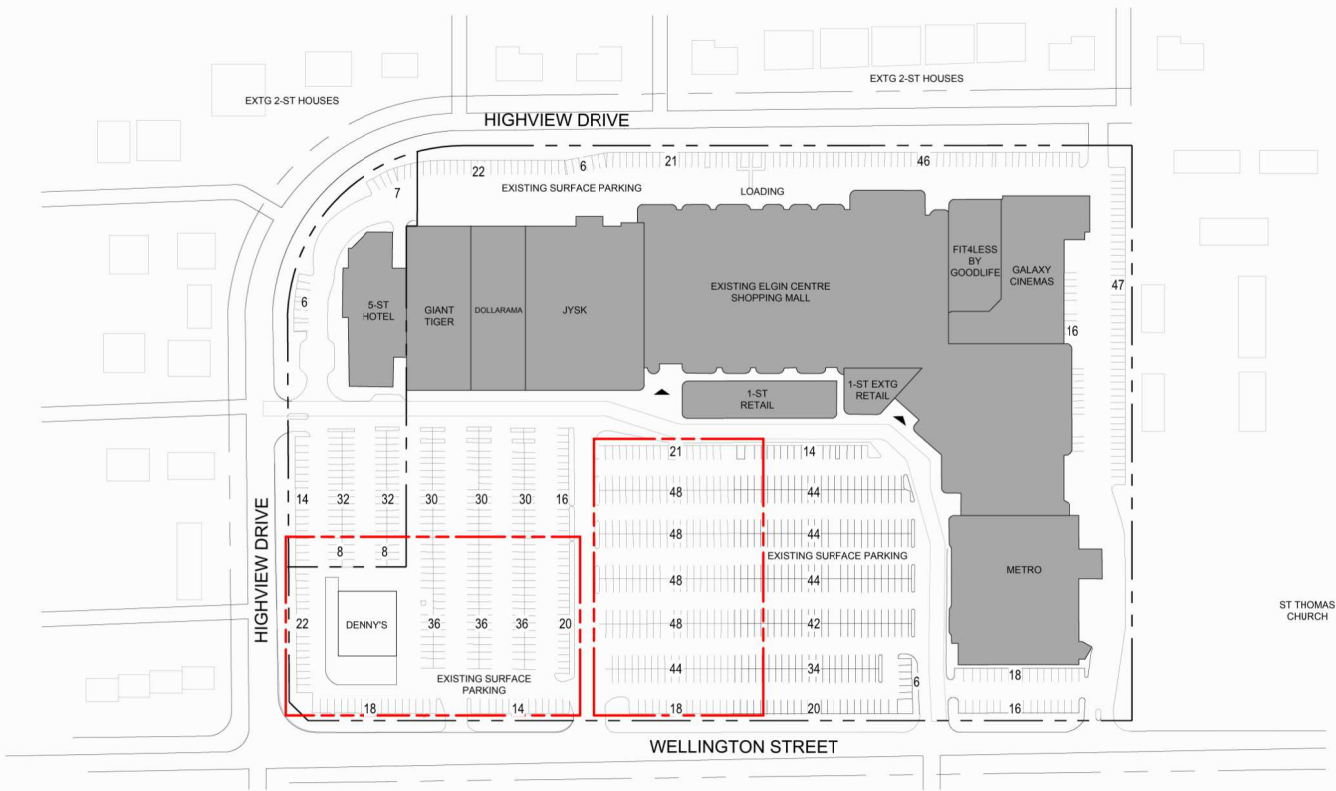
We trust this report adequately addresses the outlined design constraints and proposed solutions related to servicing and stormwater management in support of the proposed Zoning By-law Amendment application.

Respectfully submitted,

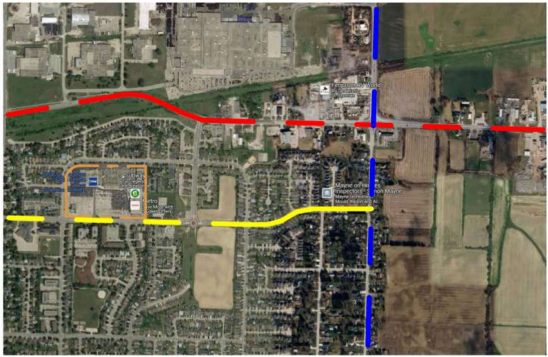
Development Engineering (London) Limited

Appendix A: Background Info & Proposed Site Plan

EXISTING SITE PLAN



TOTAL EXISTING PARKING = 1,111
APPROX. PH 01 = - 275
APPROX. PH 02 = - 182



WELLINGTON STREET
CENTENNIAL AVENUE
TALBOT STREET



WELLINGTON STREET & HIGHVIEW DRIVE INTERSECTION



WELLINGTON STREET & STOKE ROAD INTERSECTION



5

Scale : As indicated

25-043 417 Wellington

417 Wellington St - St. Thomas, Ontario

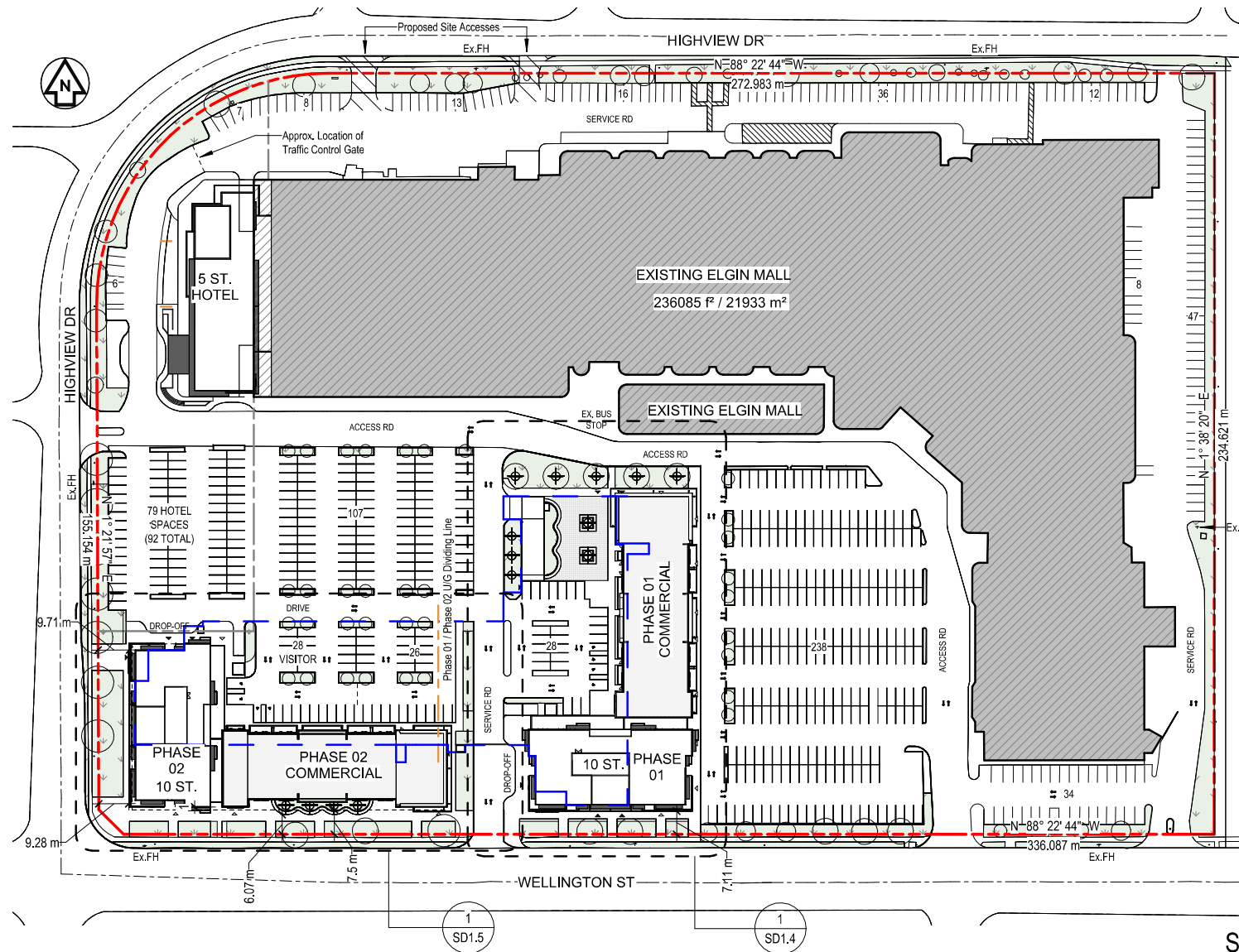
Existing Site Plan

27/02/26 SD1.1

zedd
ARCHITECTURE

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Site Development Stats

417 Wellington St, St. Thomas, ON

	ITEM	Existing	Proposed
1	Zoning Designation	C4-6 / 15.5.6 Special Zone	As Below
2	Lot Area (min.)	79,700 m ²	79,630 m ²
3	Lot Frontage (MINIMUM)	N/A	
4	Front Yard Depth (min.)	N/A	
5	Side Yard Depth - Highview (min.)	N/A	
6	Rear yard Dept'h (min.)	11 m	11m
7	Side Yard Depth - Wellington (min.)	5 m	5m
8	Landscape Open Space (% min.)	N/A	
9	Coverage	N/A	
10	Building Height (max.)	5 Storeys	10 Storeys / max.122 ft
11	Density	N/A	
12	Gross Leasable Area (max.)	27,375 m ²	21,933 m ² (Mall) + 1930m ² (Phase 01 Commercial) + 1930m ² (Phase 02 Commercial) = 25,793 m ² (Total)
13	Hotel GFA (m ²)	N/A	1483m ² (bldg footprint) x 5 (Storeys) = 7180m ²
14	Residential Units	N/A	232
15	Parking Spaces - Total (min.)	930	897
16	Parking Spaces - Hotel	N/A	92
17	Parking Spaces - Mall	N/A	475 (2.17/100m ²)
18	Residential Parking Spaces - Ph. 01	N/A	128 (1.10 pdu)
19	Commercial Parking Spaces - Ph. 01	N/A	37 (1.9/100m ²)
20	Residential Parking Spaces - Ph. 02	N/A	128 (1.10 pdu)
21	Commercial Parking Spaces - Ph. 02	N/A	37 (1.9/100m ²)
22	Bike Parking - Per Phase (Total)	N/A	54 (108)

Site Plan

zedd
ARCHITECTURE

2-427 mall/land street london ontario N6Y 2V7 519 519 9333
www.zeddarchitecture.com info@zeddarchitecture.com

25-043

417 Wellington

417 Wellington St - St. Thomas, Ontario

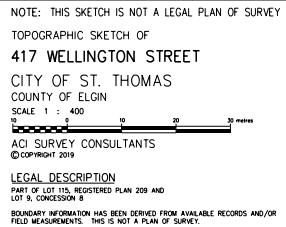
Site Plan

27/02/26

SD1.3

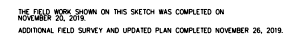
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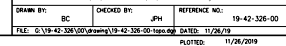
ELEVATION NOTE
ELEVATIONS ARE OF GEODETIC ORIGIN (CGVD-1928:78), AND ARE DERIVED FROM GNSS OBSERVATIONS AND NATURAL RESOURCES CANADA'S GEOID MODEL HT2.0.

	CB	DENOTES CATCHBASIN
	MH	DENOTES MANHOLE
	SAN MH	DENOTES SANITARY MANHOLE
	TMH	DENOTES TELEPHONE MANHOLE
	BOL	DENOTES BOLLARD
	HP	DENOTES HYDRO POLE
	LS	DENOTES LIGHT STAND
	PED	DENOTES TELEPHONE PEDESTAL
	WV	DENOTES WATER VALVE
	FH	DENOTES FIRE HYDRANT
	C/L	DENOTES CENTERLINE
	E	DENOTES OVERHEAD HYDRO CABLE
		DENOTES FENCE
		DENOTES CONIFEROUS TREE
		DENOTES DECIDUOUS TREE



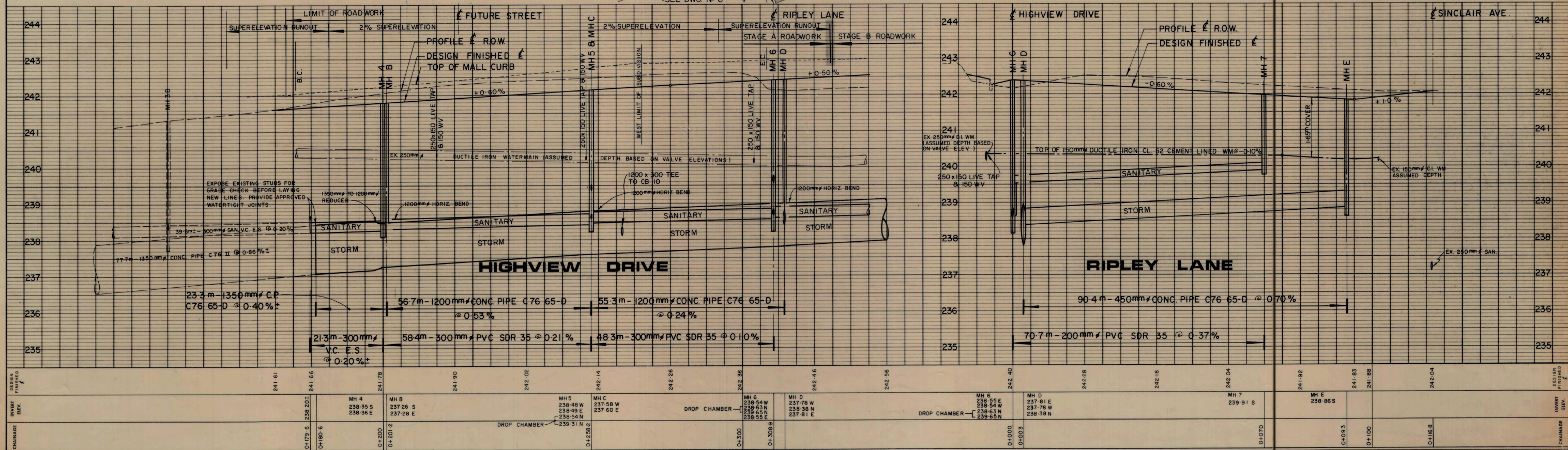
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1. THE LOCATION OF UTILITIES IS APPROXIMATE ONLY AND SHOULD BE DETERMINED BY CONSULTING THE MUNICIPAL AUTHORITIES AND UTILITY COMPANIES CONCERNED. THE CONTRACTOR SHALL PROVE THE LOCATION OF UTILITIES AND SHALL BE RESPONSIBLE FOR ADEQUATE PROTECTION FROM DAMAGE. THE CONTRACTOR SHALL PERMIT REASONABLE ACCESS TO UTILITY COMPANIES TO LOWER UTILITIES IN CONFLICT WITH DESIGN ROAD GRADES.
2. DATUM IS GEODETIC RELATED TO M.T.C. BENCHMARK 65-20 WHICH IS A HORIZONTAL TABLET ON SOUTH SIDE OF BRIDGE AT MANOR ROAD & HWY. 3, SOUTH FACE OF WEST ABUTMENT, 1-2^m WEST OF SOUTH EAST CORNER, 0.2^m BELOW COPING, ELEVATION 247.363. OTHER BENCHMARKS SHOWN ON DRAWINGS ARE NOT GUARANTEED BY THE CITY OF ST. THOMAS OR BY CYRIL J. DEMEYERE LIMITED.
3. THE CONTRACTOR SHALL MAINTAIN THE FLOW OF ALL EXISTING DRAINS ENCOUNTERED, WHETHER SHOWN ON PLAN OR NOT, AND SHALL WHERE REQUESTED CONNECT THE DRAINS INTO SANITARY OR STORM SEWERS. CONNECTIONS SHALL BE PAID AT UNIT PRICES BID FOR P.D.C.'s OR CB LEADS AS DIRECTED BY THE ENGINEER.
4. ALL UNDERCROSSINGS INCLUDING CATCHBASIN LEADS SHALL BE SUPPORTED WITH WELL COMPACTED CLEAR STONE EXTENDING TO THE LOWER PIPE BEDDING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EXPOSING EXISTING SEWERS AND POTENTIALLY CONFLICTING UTILITIES FOR GRADE CHECKS BEFORE LAYING ANY PIPE.
5. CONCRETE AND ASPHALT REMOVALS SHALL BE SAWCUT FULL DEPTH ADJACENT TO AREAS TO REMAIN IN PLACE. LIMITS SHALL BE AS DIRECTED BY THE ENGINEER ON SITE.
6. A TRENCH LINER MUST BE USED TO RESTRICT THE AREA DISTURBED AND TO PREVENT DAMAGE TO THE ROAD SURFACE TO BE LEFT IN PLACE ON SINCLAIR AVE.
7. PIPE BEDDING SHALL BE CLASS 'B', TRENCH BACKFILL ON STAGE 'A' SHALL BE GRANULAR MATERIAL, TRENCH BACKFILL ON STAGE 'B' MAY BE CLEAN NATIVE MATERIAL. ALL TRENCH BACKFILL SHALL BE UNIFORMLY COMPACTED IN ACCORDANCE WITH SPECIFICATIONS.
8. PRIOR TO CLOSING ANY STREET, THE CONTRACTOR SHALL OBTAIN CLEARANCE FROM THE CITY ENGINEER AND PROVIDE ONE WEEKS NOTICE TO THE POLICE, FIRE DEPT., AMBULANCE AND CITY & SCHOOL BUS OPERATORS OF STREETS USED FOR DETOUR AND THE DURATION OF THE DETOUR. THE CONTRACTOR SHALL SUPPLY & MAINTAIN ADEQUATE DETOUR SIGNS & LIGHTS. THE CONTRACTOR SHALL MAINTAIN MAXIMUM ACCESS TO ALL PROPERTIES AT ALL TIMES. THE CONTRACTOR MUST MAINTAIN ONE LANE OF TRAFFIC AT ALL TIMES TO SINCLAIR AVE. WEST.
9. GENERALLY THE CONTRACTOR WILL BE REQUIRED TO STRIP TOPSOIL ON STAGE 'A' STREETS FROM THE EDGE OF PAVEMENT TO THE FURTHER OF DITCH BACKSLOPE OR PROPERTY LINE. TOPSOIL SHALL BE STOCKPILED ON SITE AS DIRECTED BY THE OWNER. STAGE 'B' STREETS WILL GENERALLY NOT REQUIRE TOPSOIL STRIPPING. EXISTING DITCHES SHALL BE FILLED. ALL BLVDs SHALL BE GRADED, FROM EDGE OF EXCAVATION TO PROPERTY LINE, TO 100^{mm} BELOW FINISHED GRADE SHOWN ON CROSS SECTIONS, USING WELL COMPACTED SURPLUS ON SITE CLEAN FILL. VALVE BOXES IN THE HIGHWAY DRIVE BOULEVARD ADJACENT TO ELGIN MALL SHALL BE ADJUSTED AS REQUIRED. TOPSOILING AND SEEDING OF BOULEVARDS WILL BE COMPLETED BY OWNER AFTER CONTRACT #2 CURB & GUTTER

H-045-12



DRAWN BY:	FIELDBOOK	DRAWING NO:	5	REVISION NO:
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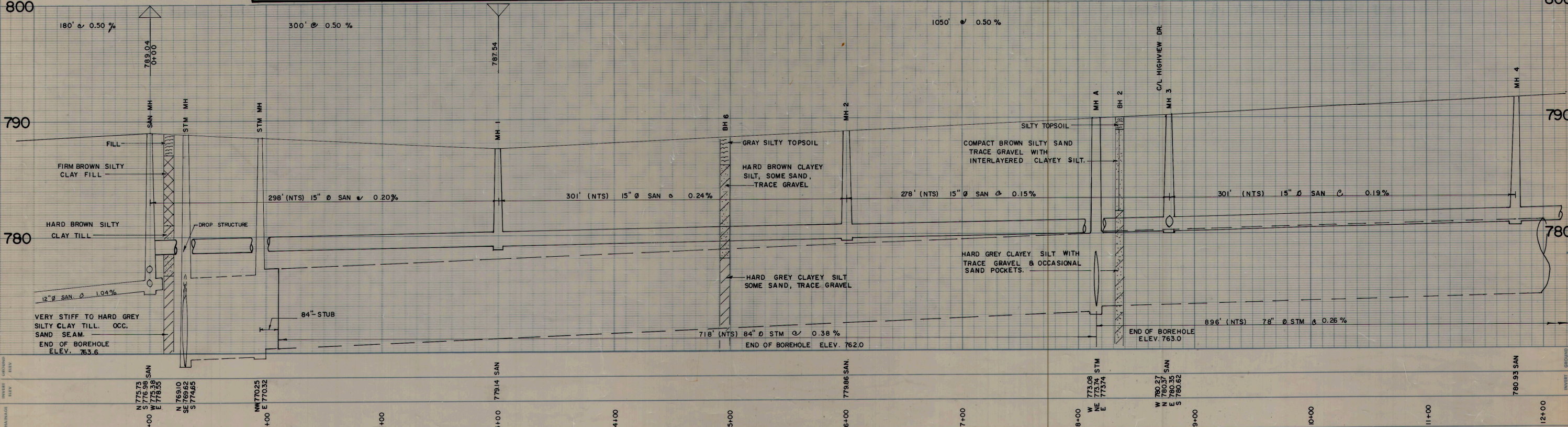
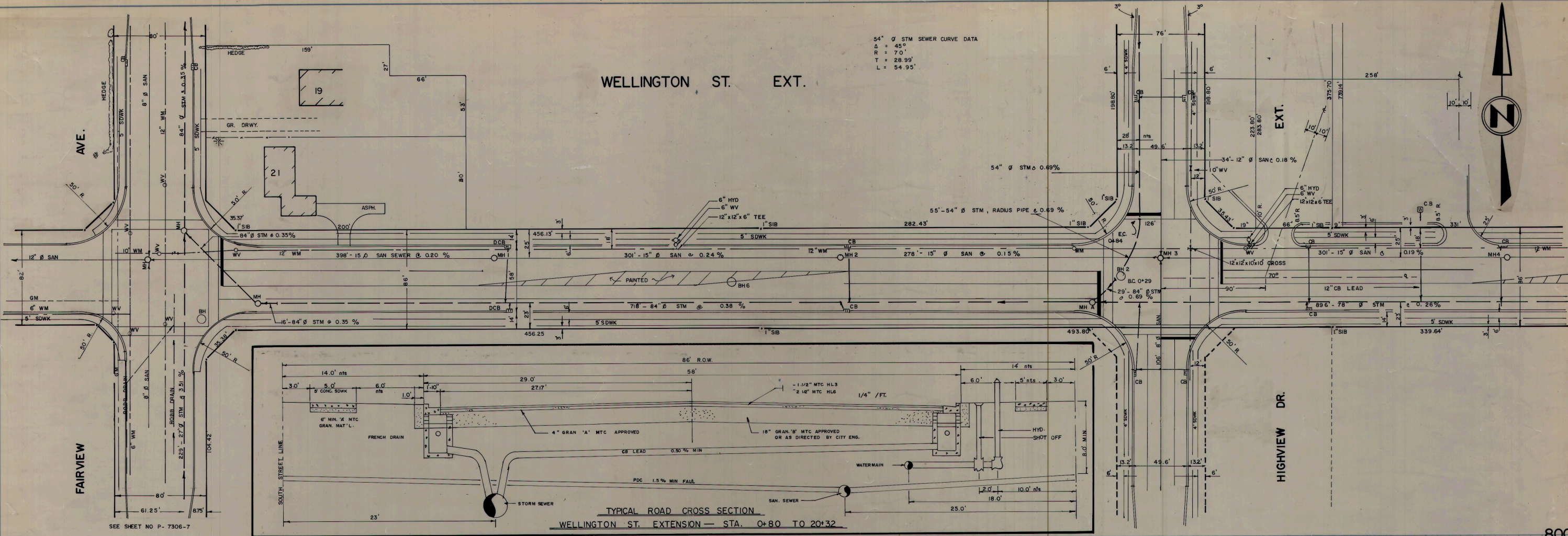
SEWER EASEMENT

MANHOLE	STATION	INVERT ELEV.	OUTLET ELEV.	PIPE SIZE	PIPE MATERIAL	GRADE	LENGTH
MH 6	242.40	238.19 W	238.19 W	1200mm	CONC. PIPE	0.50%	75.6m
MH 8	242.76	238.19 W	238.19 W	1200mm	CONC. PIPE	0.48%	100.2m
MH 9	243.16	238.19 W	238.19 W	1200mm	CONC. PIPE	0.42%	97.8m
MH 10	243.16	238.19 W	238.19 W	1200mm	CONC. PIPE	0.30%	14.8m
MH 11	243.16	238.19 W	238.19 W	1200mm	CONC. PIPE	0.30%	19.2m
MH 12	243.16	238.19 W	238.19 W	1200mm	CONC. PIPE	0.43%	37.2m
MH 13	243.16	238.19 W	238.19 W	1200mm	CONC. PIPE	0.57%	82.5m
MH 14	243.16	238.19 W	238.19 W	1200mm	CONC. PIPE	0.57%	82.5m

CHANGE LOG

NO.	DATE	DESCRIPTION
1	01-30-89	DESIGN FINISHED
2	01-31-89	DESIGN FINISHED
3	01-31-89	DESIGN FINISHED
4	01-31-89	DESIGN FINISHED
5	01-31-89	DESIGN FINISHED
6	01-31-89	DESIGN FINISHED
7	01-31-89	DESIGN FINISHED
8	01-31-89	DESIGN FINISHED
9	01-31-89	DESIGN FINISHED
10	01-31-89	DESIGN FINISHED
11	01-31-89	DESIGN FINISHED
12	01-31-89	DESIGN FINISHED
13	01-31-89	DESIGN FINISHED
14	01-31-89	DESIGN FINISHED
15	01-31-89	DESIGN FINISHED
16	01-31-89	DESIGN FINISHED
17	01-31-89	DESIGN FINISHED
18	01-31-89	DESIGN FINISHED
19	01-31-89	DESIGN FINISHED
20	01-31-89	DESIGN FINISHED

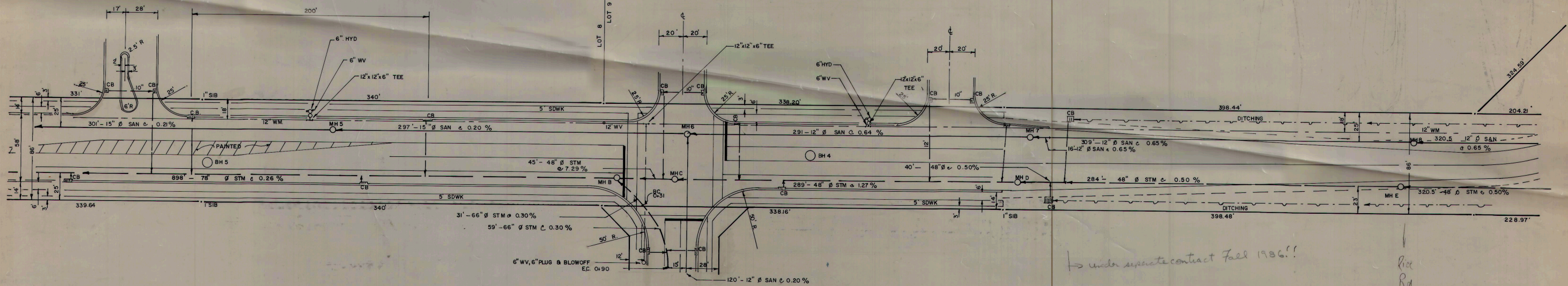
DRAWN BY:	FIELDBOOK	DRAWING NO:	6	REVISION NO:
CHECKED BY:				



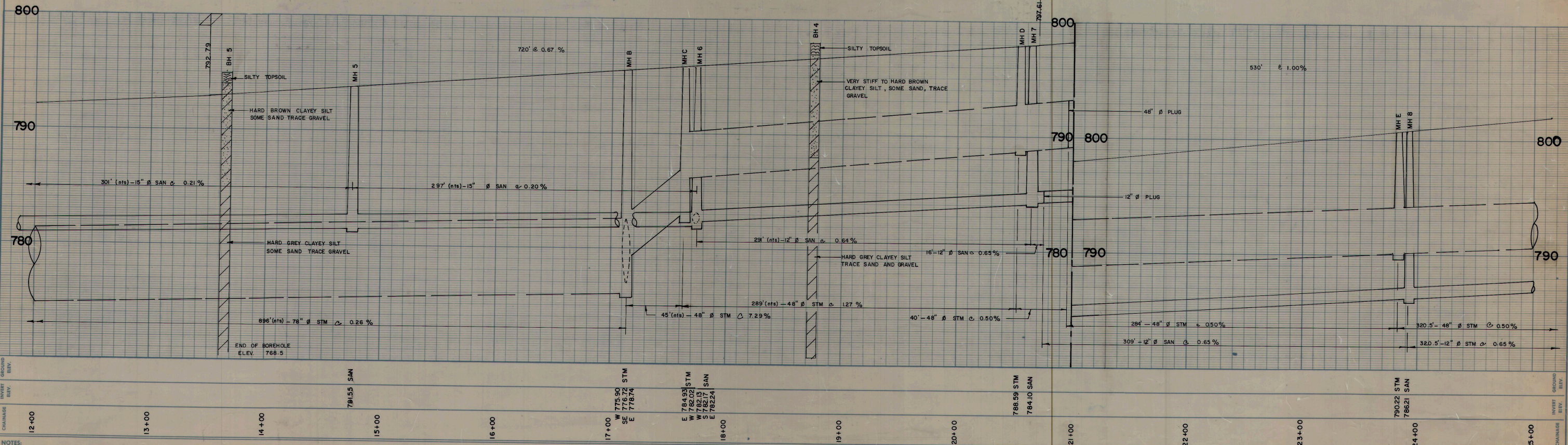
NOTES			TITLE			CITY OF ST. THOMAS		
1. ALL UTILITIES ARE APPROX. LOCATION ONLY.			MUNICIPAL SERVICES			ENGINEERING DEPARTMENT		
2. STM SEWER C76-II-B.			WELLINGTON ST. EXT.			DRAWN BY S.J.W.		
3. SAN SEWER VC-ES-B.			FAIRVIEW AVE. EAST TO STATION 12+00			DRAFTING NO. P-7306-1		
4. WM - 6" COVER.			SCALE: HOR. 1" = 40'			REVISION NO. 3		
VER. 1" = 4'			DATE: 06/1973			CITY ENGINEER		
NO.	DESCRIPTION OF REVISION	DATE	INITIAL	DATE	INITIAL	CHECKED BY:		
3	REDRAWN IN INK	02/85	S.J.W.					
2	AS CONSTRUCTED SEWERS	02/77	R.E.S.					
1	REVISED RD. X-SECTION & PLAZA ENTR.	03/75	R.E.S.					

W-035-01

WELLINGTON ST. EXT.



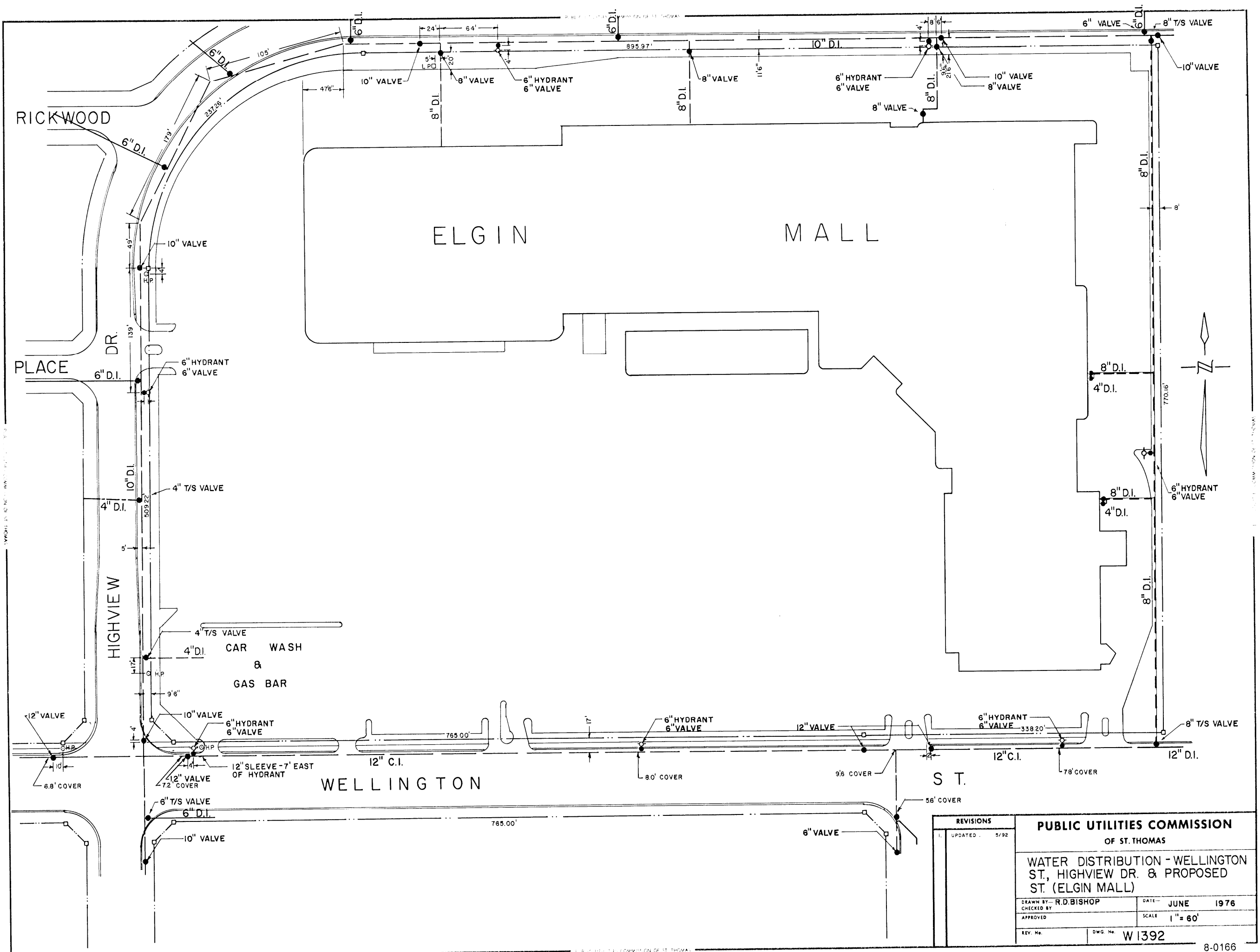
66" Ø STM SEWER CURVE DATA
 $\Delta = 45^\circ$
 $R = 75'$
 $T = 31.07'$
 $L = 58.89'$



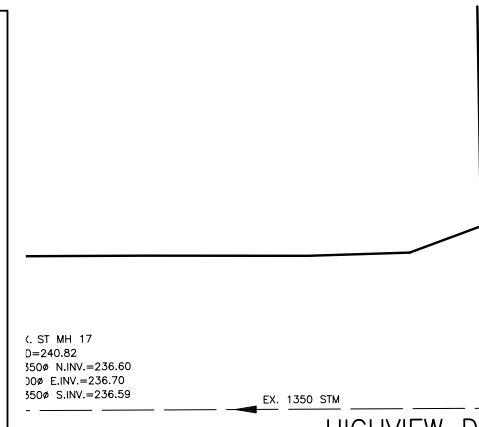
NOTES:
 1. ALL UTILITIES ARE APPROX. LOCATION ONLY.
 2. STM SEWER C-76-III-B.
 3. SAN SEWER VC-ES-B.
 4. WM - 6" COVER.

TITLE: MUNICIPAL SERVICES WELLINGTON ST. EXT. STATION 12+00 TO STATION 24+00		CITY OF ST. THOMAS ENGINEERING DEPARTMENT	
3 RE-DRAWN IN INK 2 AS CONSTRUCTED 1 EXTENDED 48" STM 40' E. OF MH D 1 REVISE RD X-SECTION, PLAZA ENTRANCES, DELETED 21" STM	02/85 S.J.W. 02/77 RES. 04/75 RES.	SCALE: HOR. 1" = 40.0' VER. 1" = 4.0'	DRAWN BY: S.J.W. CHECKED BY: 443 REVISION NO. 3
NO.	DATE	INITIAL	CITY ENGINEER

W-035-02



REVISIONS		PUBLIC UTILITIES COMMISSION	
1. UPDATED 5/92		OF ST. THOMAS	
		WATER DISTRIBUTION - WELLINGTON ST., HIGHVIEW DR. & PROPOSED ST. (ELGIN MALL)	
DRAWN BY: R.D.BISHOP		DATE: JUNE 1976	
CHECKED BY:		SCALE: 1" = 60'	
APPROVED:			
REV. No.		DWG. No. W1392	





CONSULTANT OR DIVISION

London Office
41 Adelaide St. N., Unit 71
(519) 672-8310

Paris Office
31 Mechanio St., Unit 301
(519) 442-1441

development
engineering
(London) Limited

CONSULTING CIVIL ENGINEERS



TITLE	ELGIN CENTRE HOTEL ST THOMAS, ON
	SITE SERVICING AND GRADING PLAN

PROJECT No.	DEL19-040
SHEET No.	SE2
PLAN FILE No.	

Appendix B: Water Servicing

Number	Number r			Static Pressure	Residue Pressure	at 20 P SI in USGPM
Test	Hydrant	Date of Test	Location	PSI	PSI	Available Flow
523	510	21/5/2015	Wellington Street & Highview Drive	49	44	1235
525	511	24/5/2015	417 Wellington Street	50	46	1095
564	519	26/5/2015	Highview Drive and Rickwood Place	48	44	3518
556	520	26/5/2015	Highview Drive & Farmington Drive	46	41	3077
554	521	26/5/2015	316 Highview Drive (Opposite)	46	41	3441

GREEN

Map of area FH's:



As for SWM controls, rooftop storage is sufficient. Also, any green space added to the site would be beneficial.

Nathan Bokros, P.Eng.
 Manager of Development and Compliance
 City of St. Thomas

FIRE FLOW WATERMAIN CALCULATIONS - SPRINKLERED BUILDING - OPTION 1
DEL 25-047 - Elgin Mall Apartments, St. Thomas, Ontario

Date: March 2026
 By: S.Palmer

Checked: D.Hoevenaars, P.Eng.



CHECK WATER PRESSURE AT THE PROPOSED BUILDING UNDER FIRE FIGHTING CONDITIONS USING A 200 DIA SERVICE CONNECTION

Flow tests were conducted by the City of St. Thomas on May 24, 2015

Total Flow in Hydrant 511 =	1095 usgpm	x	0.833 =	912.1 igpm
Static Pressure (psi) =				50.0 psi
Residual Pressure (psi) =				20.0 psi
A reduction in static and residual pressure will be applied as a factor of safety to all flow tests to account for peak conditions.				
		reduction =		-5.00 psi
Adjusted Static Pressure (psi) =				45.0 psi
Adjusted Residual Pressure (psi) =				15.0 psi
Top of spindle of residual hydrant =				242.74 m ±

CALCULATE FIRE FLOW DEMAND:

The proposed new buildings are anticipated to be sprinklered ut detailed sprinkler demands have not been provided as of the date of this calculation. A conservative demand of 900usgpm (650 USGPM sprinkler demand + 250 USGPM hose demand per NFPA-13) has been used to represent the apartment buildings for the purpose of this calculation.

Total flow required for fire protection =	900.0 usgpm =	749.41 igpm
---	---------------	-------------

CALCULATE AVAILABLE RESIDUAL PRESSURE IN MAIN UNDER FIRE FLOW:

Hazen-Williams equation = $Q_R = Q_F \times (h_s^{0.54} / h_r^{0.54})$
 Q_R = available flow = fire flow = 900.00 usgpm = 749.41 igpm
 Q_F = observed flow = 1095 usgpm = 912.14 igpm
 h_r = drop in pressure from static pressure to available residual pressure = $P_s - P_r$ (45 - P_s)
 h_s = drop in pressure static pressure to actual measured residual = $P_s - P_r$ = (45 - 15) = 30 psi
 Re-arranging and solving for P_s : 24.15 psi
 Therefore the available residual pressure in the main during fire flow conditions is 24.15 psi.

CHECK PRESSURE CONSTRAINT:

The watermain should be sized so that the minimum pressure reached during fire flows is 20 psi.
 We need to account for pressure losses in the system. The equivalent length method is used below.

Length of 200 dia water service			13.5 m
200 Gate Valve (fully open)	L/D= 8	D= 200 mm	1.6 m
200x200x150 Tee (flow through)	L/D= 20	D= 200 mm	4.0 m
Total Equivalent Length of pipe and fittings =			19.1 m

Calculate the frictional head loss in the equivalent length of pipe using the Hazen-Williams Formula:

$f = 0.2083 (100/C)^{1.85} \times Q^{1.85} / d^{4.8655}$ where f is in m of water/100 m of pipe, C is unitless, Q is in usgpm, d is in inches

C = constant for inside roughness of pipe: 110 (C=110 for a 200 pipe as per City of St. Thomas specifications)

Q = flow in usgpm = 900.0 usgpm

di = inside diameter of pipe = 200 mm

f = friction head in m of water per 100 m of pipe = 2.2539 m water / 100 m of pipe

Total head loss = $2.2539 \times 19.1/100 = 0.4305$ m

Pressure drop in equivalent length of pipe = 0.43 m = -0.61 psi

loss through hydrant = 0.00 psi

elevation of Phase 1 Building FFE = 243.50 m ±

difference in static head = -0.76 m = -1.08 psi

Residual pressure at proposed fire hydrant during fire fighting conditions = 22.46 psi

Residual pressure during fire flow is greater than 20 psi, therefore the pressure constraint is met.

CHECK VELOCITY CONSTRAINT:

The watermain should be sized so that the maximum velocity shall not exceed 3m/s during fire flows (City of St. Thomas specification)

Check velocity in 300mm municipal watermain:

$V = Q/A$	$A = \pi (D/2)^2$	Q = 900.0 usgpm = 0.0568 cu.m/s
		D = 300 mm
		A = 0.0707 sq.m
		V = 0.80 m/s

Velocity during fire flow is less than 3 m/s, therefore the velocity constraint is met.

Check Velocity in 200mm water service main:

$V = Q/A$	$A = \pi (D/2)^2$	Q = 900.0 usgpm = 0.0568 cu.m/s
		D = 200 mm
		A = 0.0314 sq.m
		V = 1.81 m/s

Velocity during fire flow is less than 3 m/s, therefore the velocity constraint is met.

FIRE FLOW WATERMAIN CALCULATIONS - SPRINKLERED BUILDING - OPTION 2
DEL 25-047 - Elgin Mall Apartments, St. Thomas, Ontario

Date: March 2026
 By: S.Palmer

Checked: D.Hoevenaars, P.Eng.



CHECK WATER PRESSURE AT THE PROPOSED BUILDING UNDER FIRE FIGHTING CONDITIONS USING A 200 DIA SERVICE CONNECTION

Flow tests were conducted by the City of St. Thomas on May 24, 2015

Total Flow in Hydrant 511 =	1095 usgpm	x	0.833 =	912.1 igpm
Static Pressure (psi) =				50.0 psi
Residual Pressure (psi) =				20.0 psi
A reduction in static and residual pressure will be applied as a factor of safety to all flow tests to account for peak conditions.				
		reduction =		-5.00 psi
Adjusted Static Pressure (psi) =				45.0 psi
Adjusted Residual Pressure (psi) =				15.0 psi
Top of spindle of residual hydrant =				242.74 m ±

CALCULATE FIRE FLOW DEMAND:

The proposed new buildings are anticipated to be sprinklered ut detailed sprinkler demands have not been provided as of the date of this calculation. A conservative demand of 900usgpm (650 USGPM sprinkler demand + 250 USGPM hose demand per NFPA-13) has been used to represent the apartment buildings for the purpose of this calculation.

Total flow required for fire protection =	900.0 usgpm =	749.41 igpm
---	---------------	-------------

CALCULATE AVAILABLE RESIDUAL PRESSURE IN MAIN UNDER FIRE FLOW:

Hazen-Williams equation = $Q_R = Q_F \times (h_f^{0.54} / h_t^{0.54})$
 Q_R = available flow = fire flow = 900.00 usgpm = 749.41 igpm
 Q_F = observed flow = 1095 usgpm = 912.14 igpm
 h_t = drop in pressure from static pressure to available residual pressure = $P_s - P_i$ (45 - P_s)
 h_t = drop in pressure static pressure to actual measured residual = $P_s - P_r$ = (45 - 15) = 30 psi
 Re-arranging and solving for P_s : 24.15 psi
 Therefore the available residual pressure in the main during fire flow conditions is 24.15 psi.

CHECK PRESSURE CONSTRAINT:

The watermain should be sized so that the minimum pressure reached during fire flows is 20 psi.
 We need to account for pressure losses in the system. The equivalent length method is used below.

Length of 200 dia water service			160.0 m
200 Gate Valve (fully open)	L/D= 8	D= 200 mm	1.6 m
200x200x150 Tee (flow through)	L/D= 20	D= 200 mm	4.0 m
Total Equivalent Length of pipe and fittings =			165.6 m

Calculate the frictional head loss in the equivalent length of pipe using the Hazen-Williams Formula:

$f = 0.2083 (100/C)^{1.85} \times Q^{1.85} / d^{4.8655}$ where f is in m of water/100 m of pipe, C is unitless, Q is in usgpm, d is in inches

C = constant for inside roughness of pipe: 110 (C=110 for a 200 pipe as per City of St. Thomas specifications)

Q = flow in usgpm = 900.0 usgpm

di = inside diameter of pipe = 200 mm

f = friction head in m of water per 100 m of pipe = 2.2539 m water / 100 m of pipe

Total head loss = 2.2539 x 165.6/100 = 3.7324 m

Pressure drop in equivalent length of pipe = 3.73 m = -5.30 psi

loss through hydrant = 0.00 psi

elevation of Phase 1 Building FFE = 243.50 m ±

difference in static head = -0.76 m = -1.08 psi

Residual pressure at proposed fire hydrant during fire fighting conditions = 17.77 psi

Residual pressure will drop below 20 psi during fire flow. **PRESSURE CONSTRAINT IS NOT MET.**

CHECK VELOCITY CONSTRAINT:

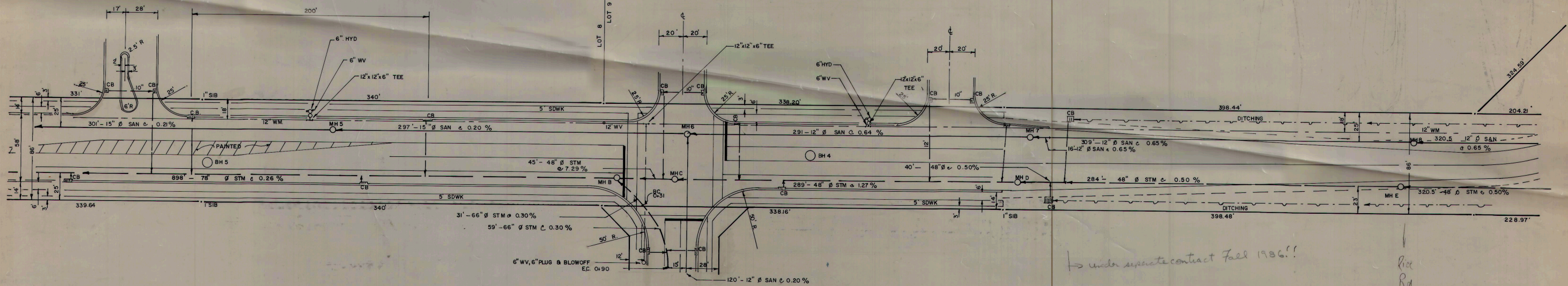
Check Velocity in 200mm water service main:

$V = Q/A$	$A = \pi (D/2)^2$	Q = 900.0 usgpm = 0.0568 cu.m/s
		D = 200 mm
		A = 0.0314 sq.m
		V = 1.81 m/s

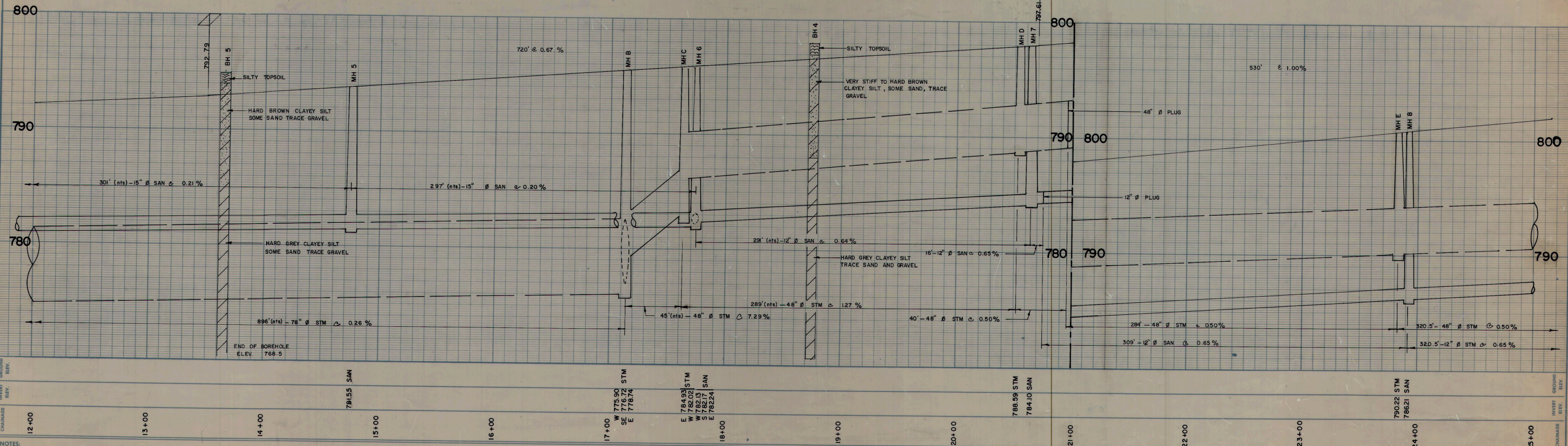
Velocity during fire flow is less than 3 m/s, therefore the velocity constraint is met.

Appendix C: Sanitary Servicing

WELLINGTON ST. EXT.



66" Ø STM SEWER CURVE DATA
 $\Delta = 45^\circ$
 $R = 75'$
 $T = 31.07'$
 $L = 58.89'$



NOTES:
 1. ALL UTILITIES ARE APPROX. LOCATION ONLY.
 2. STM SEWER C-76-III-B.
 3. SAN SEWER VC-ES-B.
 4. WM - 6' COVER.

REVISION		DATE	
3	RE-DRAWN IN INK	02/85	S.J.W.
2	AS CONSTRUCTED	02/77	RES.
1	EXTENDED 48" STM 40' E. OF MH D	04/75	RES.
1	REVISE RD X-SECTION, PLAZA ENTRANCES, DELETED 21" STM		
DESCRIPTION OF REVISION		DATE	INITIAL
		06/73	

TITLE: MUNICIPAL SERVICES
 WELLINGTON ST. EXT.
 STATION 12+00 TO STATION 24+00

CITY OF ST. THOMAS
 ENGINEERING DEPARTMENT

DRAWN BY: S.J.W. 443
 CHECKED BY: 443
 DRAWING NO: P-7306-2
 REVISION NO: 3

W-035-02

DEL25-047 - Elgin Mall Apartments
Preliminary Sanitary Servicing Calculations

Date: March 2026
Prepared by: Shannon Palmer
Checked by: Derek Hoevenaars, P.Eng.

LAND USE DESIGNATION	AREA (ha)	PEOPLE PER UNIT ¹	NO. OF UNITS ²	POPULATION	AVERAGE DAILY FLOW (L/s)	INFILTRATION (L/s)	PEAKING FACTOR (M)	TOTAL PEAK FLOW (L/s)
Phase 1 - Commercial	0.19			22	0.06	0.02	4.38	0.29
Phase 1 - Apartment Building	0.07	1.6	116	186	0.54	0.01	4.16	2.24
Phase 2 - Commercial	0.19			22	0.06	0.02	4.38	0.29
Phase 2 - Apartment Building	0.07	1.6	116	186	0.54	0.01	4.16	2.24
Proposed Totals	0.53		232	415				5.07

Notes:

¹. Taken from City of London Design Specifications and Requirements Manual- Section 3, Last updated 2025.

². Apartment unit count retrieved from the Architectural Plan Dated Feb 27, 2026

³. Taken from the City of St. Thomas Design guidelines, 2023

ADF apartment = Pop x Per Capita Unit Flow

ADF commercial = Area x Min Allowance for Commercial Flows

Peak Flow = ADF x M + Infiltration

Design Criteria:

Single Family Residential	3	p/unit	Minimum Allowance for Commercial Flows (L/ha/day)=	28000
Semi-detached	6	p/unit	Residential Design Flow (L/person/day) ³ =	250
High Density (Apartments) ¹	1.6	p/unit	Hectare per person=	112
Residential Design Flow (L/person/day) ³ =	250		Commercial Population=	22
Allowance for Commercial Flows (m ³ /ha/day) ³ =	28	=28,000 L/ha/day		
Res. Peaking Factor (M) =	1 + 14 / (4 + √P)			
Infiltration Rate (L/ha/second) =	0.100			

Existing 375mm private Sanitary Service Capacity				
Pipe Size (mm)	Roughness (n)	Pipe Slope (%)	Velocity (m/s)	Flow Cap. (l/s)
375	0.013	0.21	0.727	80.35