July 30, 2024

Town of Niagara-on-the-Lake
Community & Development Services
1593 Four Mile Creek Road
P.O. Box 100
Virgil, ON L0S 1T0

Servicing Brief
1822 Niagara Stone Road, Niagara-on-the-Lake

To Whom it May Concern:

LandSmith Engineering & Consulting Ltd. have been retained by Fabian Reis of Ferox Winery to complete a Servicing Brief for the subject lands located at the above address in support of the proposed change of use for the existing buildings on-site. The site area is 5.96-hectares, and the existing Harvest Barn and Grey Barn buildings are proposed to be turned into a microbrewery and farm distillery, complete with multi-use hospitality and retail areas.

1.0 Water Service Assessment

The Ontario Building Code has been utilized to calculate the expected maximum hydraulic load and associated flow rate for the proposed changes in use for the existing buildings with the Fixture Unit Method, per OBC Table 7.6.3.2.A. These calculations have been based on the Site Plan provided by NPG Planning Solutions which is attached to this brief for reference purposes.

The existing Harvest Barn contains one staff washroom (toilet and sink), 2 commercial sinks, and one hand wash station (sink). The proposed changes for this building will include the addition of one commercial sink, 3 public washrooms, and one additional staff washroom. Table 1 on the following page summarizes the fixtures and associated hydraulic load for the Harvest Barn building.

Fixture	Fixture Units (FU)	Existing		Proposed	
		Quantity	Hydraulic Load (FU)	Quantity	Hydraulic Load (FU)
Water Closet	2.2	1	2.2	5	11
Sink	1.4	2	2.8	6	8.4
Commercial Sink	4.0	2	8	3	12
Total Fixture Units			**13**	-	**31.4**

Table 1: Harvest Barn Existing and Proposed Fixtures and Hydraulic Load
(Ref. OBC Table 7.6.3.2.A)

The existing Grey Barn contains two public washrooms (toilet and sink). The proposed changes for this building will include the addition of one small kitchenette with one handwashing sink. Table 2 below summarizes the fixtures and associated hydraulic load for the Grey Barn building.

Fixture	Fixture Units (FU)	Existing		Proposed	
		Quantity	Hydraulic Load (FU)	Quantity	Hydraulic Load (FU)
Water Closet	2.2	2	4.4	2	4.4
Sink	1.4	2	2.8	3	4.2
Total Fixture Units			**7.2**	-	**8.6**

Table 2: Grey Barn Existing and Proposed Fixtures and Hydraulic Load
(Ref. OBC Table 7.6.3.2.A)

Based on the fixture units method, the buildings on site after the proposed change of use renovations will have a total of 40 fixture units. This is equivalent to a maximum hydraulic load of 3.03 L/s. The supporting calculations describing how this value was determined have been attached to this brief for reference purposes.

The existing buildings are serviced from a 25mm diameter copper pipe connected to the 200mm diameter watermain along East & West Line. The inspectors report which details this connection is attached to this brief for reference purposes. Due to the increase in fixtures with the proposed changes to the buildings on site, the water service line should be upsized to a 31.75mm diameter (1¼ inch) pipe. This upsizing is documented on the *Sizing of Water Service Pipe* form attached to this brief for reference purposes. The existing 200mm diameter watermain can support this proposed upsize in domestic demand. As per Town Engineering Standards, the proposed water service pipe shall be Type "K" soft copper and shall conform to ASTM B88.

Based on the fact that the total building footprint size on site will remain unchanged after the proposed changes in use, the fire demands for the site will remain unchanged as well. Therefore, the

existing hydrants adjacent to the site can accommodate the fire flow demands. As illustrated on Town drawings No. 41236 – P4 and P5 attached to this brief for reference purposes, the hydrants adjacent to the east of the site connect to the 150mm diameter watermain along Niagara Stone Road and the hydrants adjacent to the north of the site connect to the 200mm diameter watermain along East & West Line.

2.0 Wastewater Assessment

Based on the Ontario Building Code the calculation for expected generation of sanitary effluent based on the proposed changes in use for the existing buildings is as follows:

Hospitality & Retail Areas:

As seen on the Site Plan, there will be a total of 282 square metres of Hospitality & Retail areas within the existing Harvest Barn and Grey Barn buildings. There will be a total of 5 water closets in these areas. As per OBC Table 8.2.1.3.B – Sewage System Design Flows, the demand for retail areas is 5 L/day/m², and 1,230 L/day per water closet. Using this criteria, the expected sanitary flow for the retail areas will be:

Hospitality & Retail Area Flow = (282 m² x 5 L/day/m²) + (5 x 1,230 L/day)
= 7,560 L/day = 0.088 L/s

Food Service Operation Areas:

As seen on the Site Plan, there will be a total of 757 square metres of Food Service Operations areas within the existing Harvest Barn and Grey Barn buildings. This includes cooler and freezer rooms, loading areas, and distilling/grape processing areas. There will be 2 staff water closets in these areas. As per OBC Table 8.2.1.3.B – Sewage System Design Flows, the demand for food operation areas is 190 L/day per 9.25m² of floor area, and 950 L/day per water closet. Using this criteria, the expected sanitary flow for the food operation areas will be:

Food Service Operations Area Flow = ((190 L/day/9.25m²) x 757 m²) + (2 x 950 L/day)
= 17,449 L/day = 0.202 L/s

Total Wastewater Generation = 0.088 + 0.202 = 0.290 L/s
Peaking Factor = 4.5 (Babbit Formula)

Estimated Peak Instantaneous Flow = 0.290 x 4.5 = 1.305 L/s

The existing sanitary service to the site is 150mm in diameter and is illustrated on Town drawing No. 0043PP1, which is attached to this brief for reference purposes. At a slope of 1.0% the capacity of the service connection is 15.22 L/s which is sufficient for the proposed domestic flows from the site.

Given the proposed development does not include the addition of any new structures on site, and the change of use only increases the number of fixtures, the increased sanitary flows from the subject lands are expected to easily be accommodated by the downstream sanitary infrastructure. The downstream system flows to the Sanitary Pumping Station (SPS) at municipal address 1974 Niagara Stone Road which has an operational capacity of 20.7 L/s and can accommodate the peak flows from the site.

3.0 Conclusions

Based on the analysis provided within this report we conclude that:

1. In order to accommodate the proposed increase in fixtures for the site, the existing 25mm diameter water service should be upsized to a 31.75mm diameter pipe. The existing 200mm diameter watermain along East & West Line can support this upsize in service.

2. Since the building footprint size will remain unchanged with the proposed change in use for the site, the fire flow demands for the site will not increase and can be accommodated by the existing adjacent hydrants.

3. The existing 150mm diameter sanitary service lateral can be re-used and can accommodate for the sanitary flows from the buildings.

We trust that the recommendations and analysis contained within the preceding Servicing Brief are satisfactory for the purposes of the Town. Should you have any questions please do not hesitate to contact the undersigned.

Respectfully submitted,

Andrew Smith, P. Eng.
Principal & Director
LandSmith Engineering & Consulting Ltd.
289-309-3632
andrew@landsmithec.com

COPY:

Fabian Reis, Ferox Winery (fabian@ferox.ca)

Jesse Ausptiz, NPG Planning Solutions (jauspitz@npgsolutions.ca)

Attachments:

Site Plan by NPG Planning Solutions

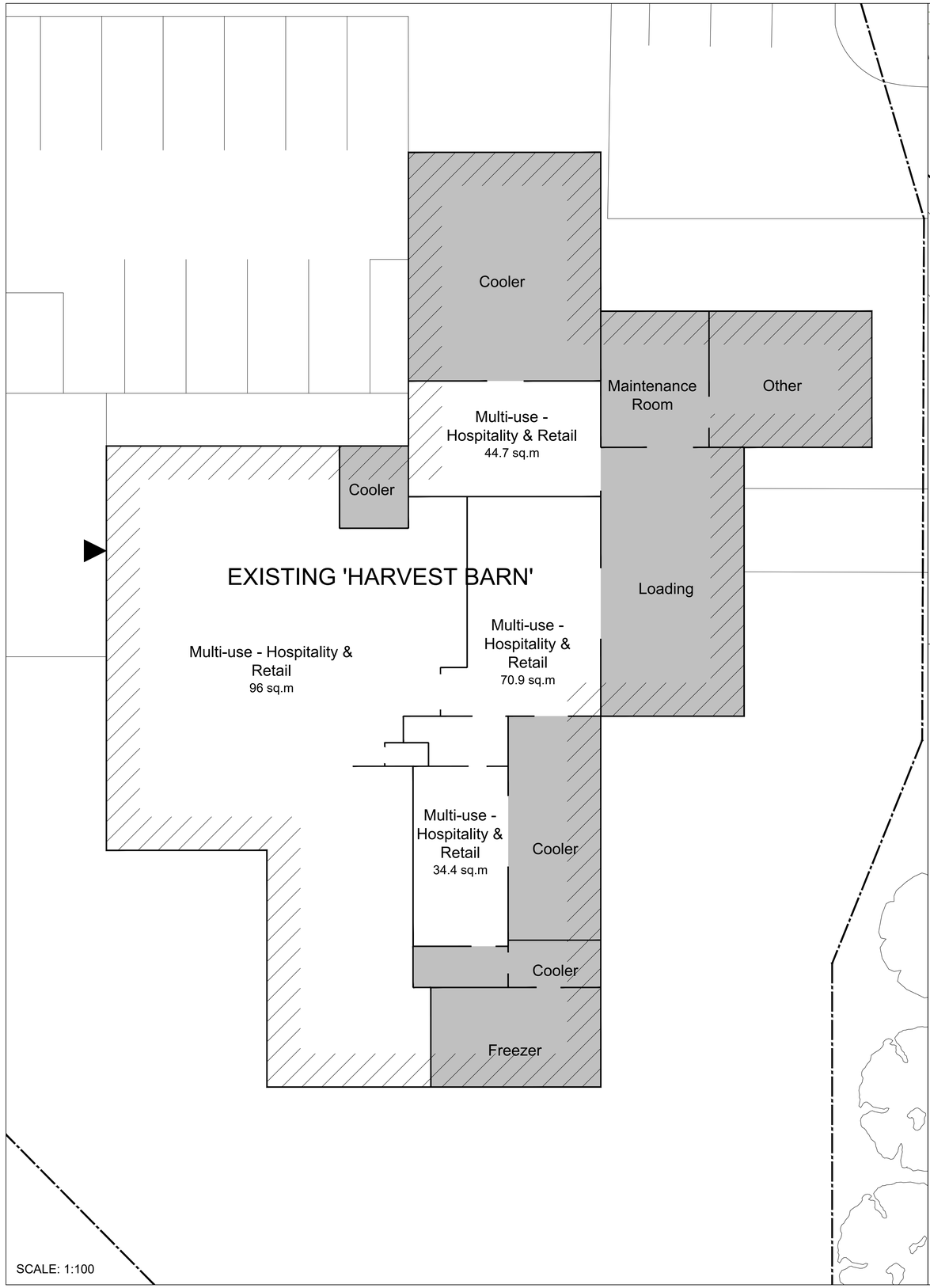
Domestic Water Demand Calculations

Sizing of Water Service Pipe Form

Water Service Inspector's Report: 1822 Niagara Stone Road

Niagara Stone Road Watermain Plan & Profile: Town Drawings No. 41236-P4, P5

Niagara Stone Road Sanitary Sewer Plan & Profile: Town Drawing No. 0043PP1



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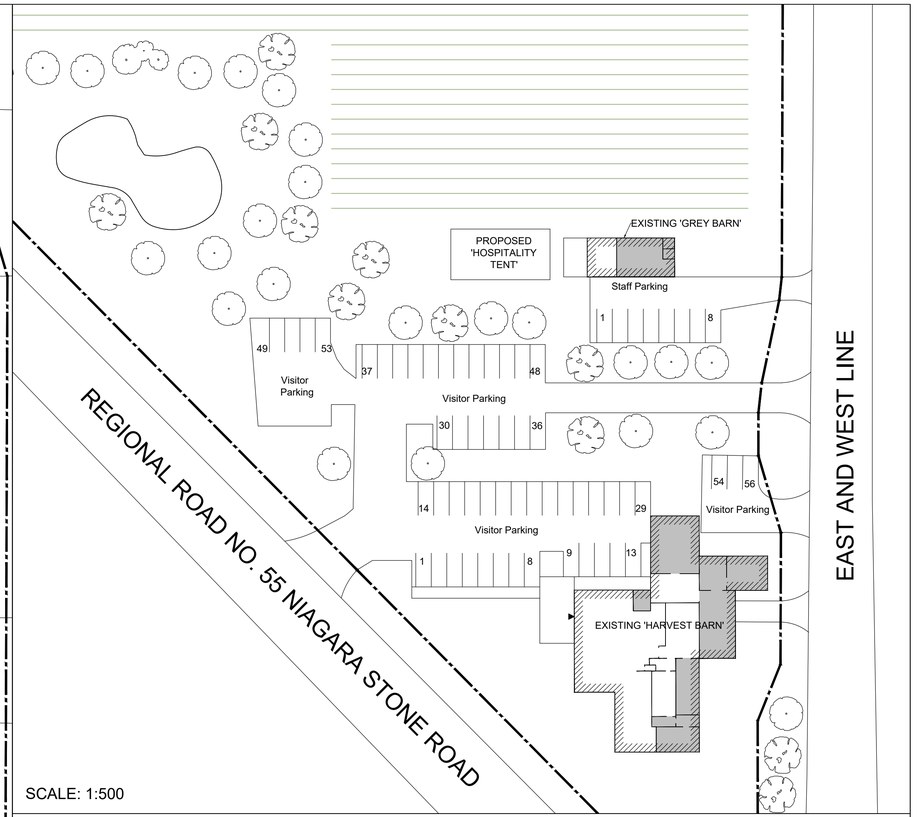

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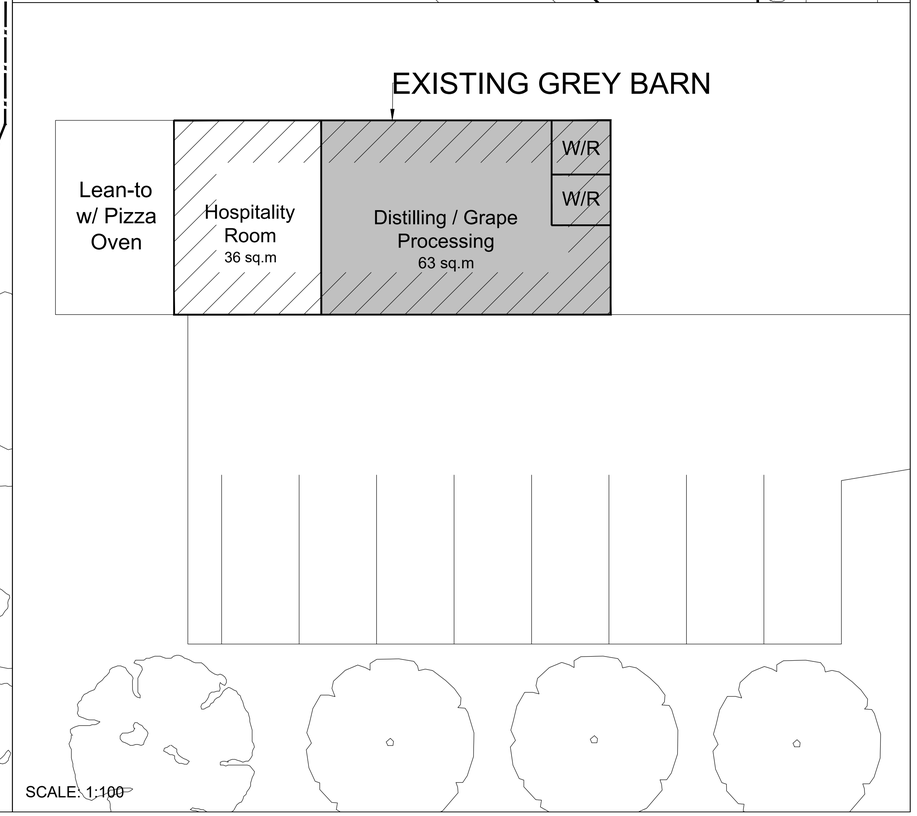

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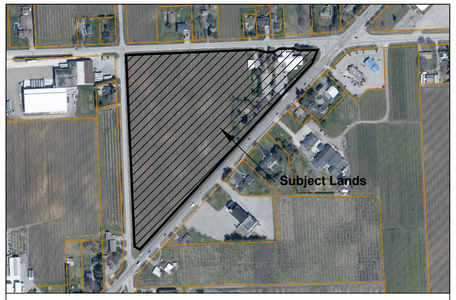


KEY MAP

SITE STATISTICS

PROPERTY 'A'	LEGAL ADDRESS	BLK 14 TP PL 85 NIAGARA EXCEPT PT 1, 2, 3 HWY1108 & HWY364; NIAGARA-ON-THE-LAKE
	MUNICIPAL ADDRESS:	1822 NIAGARA STONE ROAD NIAGARA ON THE LAKE, ONTARIO
ZONING:		RURAL (A)

	%	METRIC	IMPERIAL
LOT AREA: (APPROX)			
PROPERTY 'A':		6.0 HA	14.8 AC
LOT FRONTAGE: (NIAGARA STONE ROAD)		465.0 M	
BUILDING COVERAGE:			
HARVEST BARN		830.0 SQ.M	8934.0 SQ.FT
GREY BARN & LEAN-TO		209.0 SQ.M	2249.7 SQ.FT
PROPOSED ASSOCIATED STRUCTURES (SEASONAL TENT)		160.0 SQ.M	1722.2 SQ.FT
TOTAL COVERAGE AGEA:		1199.0 SQ.M	12905.9 SQ.FT
GROSS LEASABLE FLOOR AREA:			
HARVEST BARN		246.0 SQ.M	2647.9 SQ.FT
GREY BARN & LEAN-TO		36.0 SQ.M	387.5 SQ.FT
PROPOSED ASSOCIATED STRUCTURES (SEASONAL TENT)		160.0 SQ.M	1,722.3 SQ.FT
TOTAL GROSS LEASABLE FLOOR AREA:		442.0 SQ.M	4757.6 SQ.FT
ON-FARM DIVERSIFIED USES (OFDU)			-
HARVEST BARN (DISCOUNTED @ 50%)		123.0 SQ.M	1,324.0 SQ.FT
GREY BARN & LEAN-TO (DISCOUNTED @ 50%)		18.0 SQ.M	193.8 SQ.FT
PROPOSED ASSOCIATED STRUCTURES (SEASONAL TENT)		160.0 SQ.M	1,722.3 SQ.FT
OFDU AREA (TOTAL)		**301.0 SQ.M**	**3,240.0 SQ.FT**
TOTAL LOT AREA		**6.0 HA**	**157.1 AC**
OFDU %		0.05%	

PARKING:

	REQUIREMENT	REQUIRED	PROVIDED
VISITOR PARKING REQUIREMENT	1 PER 18.5 SQ.M	24	56
STAFF PARKING REQUIREMENT	1 PER EMPLOYEE	8	8
TOTALPARKING		32	64

ROOM LEGEND

- Storage / Non-Gross Leasable Floor Area
- Gross Leasable Floor Area

SITE PLAN

PRE-CONSULTATION

1822 NIAGARA STONE ROAD

For:	Fabian Reis	Scale:	As Shown
Drawing No.:	231150	Date:	04-12,2024

NPG PLANNING SOLUTIONS

LandSmith
ENGINEERING & CONSULTING LTD.

Date: ***2024-07-26***

DOMESTIC WATER USEAGE REQUIREMENTS

Project: 1822 Niagara Stone Road, Niagara-on-the-Lake
Method: Fixture Unit Method, Per OBC Table 7.6.3.2.A

Fixtures: The number of fixtures was estimated based on the Site Plan provided by NPG Planning Solutions dated April 12, 2024.

Amount	***Fixture Type***	***Fixture Units Per***	***Total***
7	Water Closet	2.2	15.4
9	Sink	1.4	12.6
3	Commercial Sink	4.0	12
	Total:		***40***

1 - Reference Table 7.6.3.2.A, Ontario Building Code

Hydraulic Load: Fixture units are then transferred to Hydaulic Load based on Ontario Building Code Table 7.4.10.5.

Column 1	Column 2	Column 3	Column 4
Fixture Units in service	*Max Drainage Rate (Gal/m)*		
	Col. 1	Col. 1 × 10	Col. 1 × 100
100	53	174	900
90	51	164	835
80	49	153	750
70	47	140	680
60	44	128	600
50	41	115	520
40	38	102	435
30	33	88	350
20	27	72	262
10	21	53	174

Maximum hydraulic load is estimated to be 38 Imperial Gallons / Minute

40 Fixture Units = 38 Imp Gal/min = 3.03 Lps

The estimated maximum hydraulic load for the proposed buildings is 3.03 Liters per second.

Sizing of Water Service Pipe for Buildings Containing More than One Dwelling Unit

Size and capacity of potable water system pipe shall be designed in accordance with 7.6.3.1, of Division B, of the Ontario Building Code (OBC). Where both hot and cold water is supplied to fixtures in residential buildings containing more than one unit, the water system may be sized in accordance with the tables in Part 1 and Part 2 of this form, provided, the minimum water pressure at the entry to the building is 200 kPa, the total maximum length of the water system is 90 m, and the hydraulic loads for maximum separate demands on water distribution system piping are not less than 100% of the total hydraulic load of the fixture units given in Tables 7.6.3.2.A, 7.6.3.2.B, 7.6.3.2.C and 7.6.3.2.D, of Division B, of the OBC for private use.

Address	Date
1822 Niagara Stone Road, Niagara-on-the-Lake	7/26/24

PART 1 - Hydraulic Load (Fixture Unit Calculation)

Fixture or Device	Fixture Units	Quantity	Total Hydraulic Load (Fixture Units x Quantity)
Bathroom Group with 6 LPF or less flush tank*	3.6		0
Rough-in Bathroom Group with 6 LPF or less flush tank*	3.6		0
Clothes washer	1.4		0
Dishwasher (domestic)	1.4		0
Hose bibb (1/2")	2.5		0
Lavatory	0.7		0
Shower head	1.4		0
Shower, spray, multi-head, fixture unit per head	1.4		0
Sink, bar	1		0
Sink, kitchen	1.4	9	12.6
Sink, laundry	1.4		0
Water Closet (6 LPF or less with flush tank)	2.2	7	15.400000000000002
Other: Commercial Sink	4.0	3	12
Total Fixture Units			40

(Fixture Units from Table 7.6.3.2.A, of Division B of the OBC)

* Bathroom group consists of 1 water closet, 1 basin (lavatory), and 1 bathtub or 1 shower.

PART 2 - Sizing of Water Service Pipe

Size of Water Pipe	Water Velocity (m/s)	
	2.4 (copper piping, cold water)	Other Pipe Material*:
	Hydraulic Load (Fixture Units)	
1/2"	Up to 7	
3/4"	7.1 to 16	
1"	16.1 to 31	
1¼"	31.1 to 57	40

(Above information obtained from Table 7.6.3.4, of Division B of the OBC)

* If a water velocity of other than 2.4 m/s is proposed, provide documentation showing maximum permitted water velocity with maximum hydraulic loads for each water pipe size as recommended by the pipe and fitting manufacturer.

PART 3 - Design of Water Service Pipe

Total Hydraulic Load (fixture units): 40.0

Water Service Pipe size
Existing 1.0 (inches) **& Proposed** 1.3 (inches)

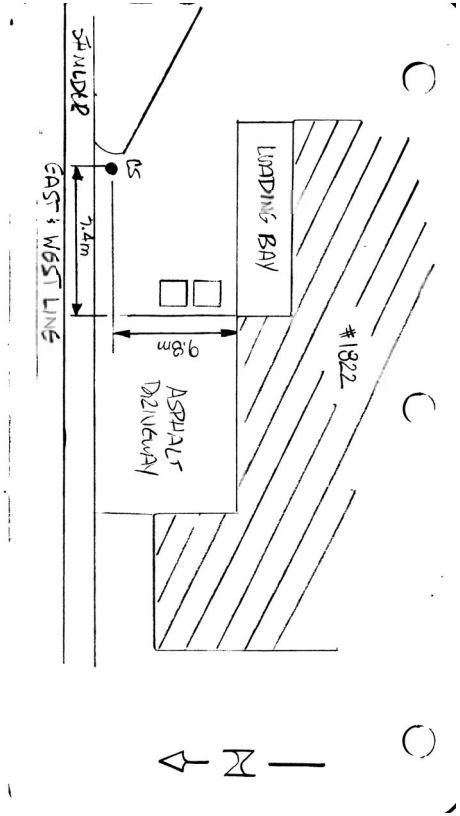
Water Meter Size

3/4" Water Service Pipe = 5/8" (16 mm) Water Meter
1" Water Service Pipe = 3/4" (21 mm) Water Meter
1¼" Water Service Pipe = 1" (25 mm) Water Meter

Designer Information

Name	BCIN	Signature
Andrew Smith		

Revised August 25, 2022



Route #: _____

Comp. Acct. #: R11304

Roll # 262702001205901
262702001205900

STREET: 1822 NIAGARA STONE RD.

LOT #: _____

OWNER: HARVEST BARN

DATE INSTALLED: AUGUST 20, 2003

SERVICE SIZE: 25mm @ TYPE 'K'

METER SIZE: _____

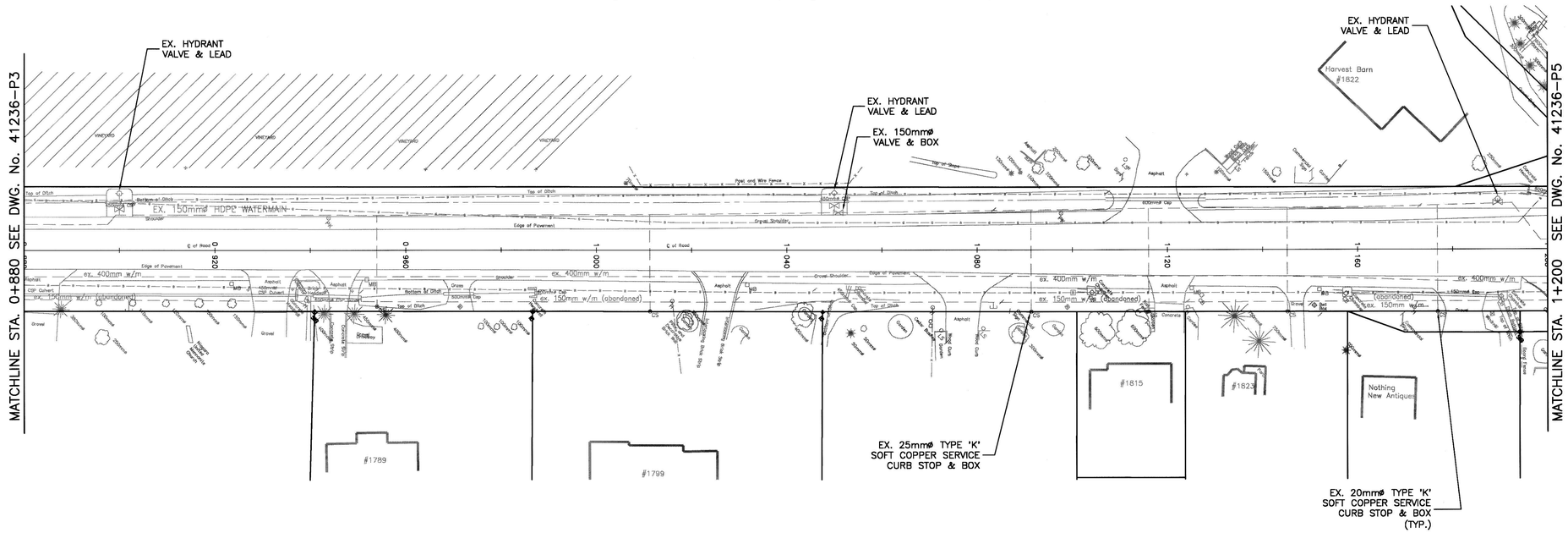
METER SERIAL #: _____

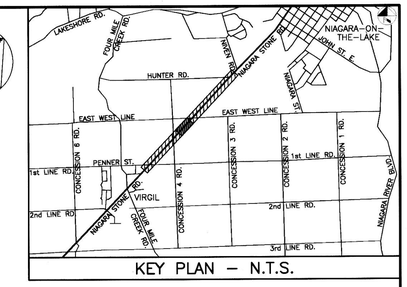
E.C.R. #: _____

CHAMBER: NO

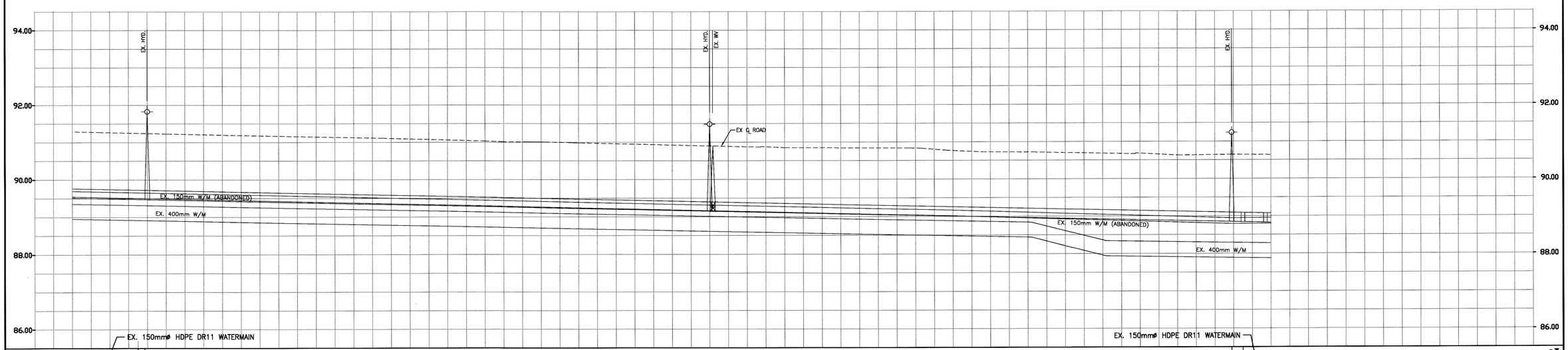
ANODE: 12 LB

Niagara Stone Road (Regional Road No. 55)





KEY PLAN – N.T.S.



NO.	REVISION	DATE	INIT.
4	CONSTRUCTION RECORD DETAILS	04/05/31	AGC
3	ISSUED FOR TENDER	03/08/16	AGC
2	ISSUED FOR TOWN REVIEW	03/02/14	AGC
1	ISSUED FOR UTILITY INFORMATION		

NOTES

(1) THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWER AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS 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.

(2) PROPERTY LINES WERE PLOTTED USING REGISTERED PLANS AND BARS LOCATED IN THE FIELD. TO VERIFY THE ACCURACY OF THESE PROPERTY LINES, A LEGAL SURVEY SHOULD BE PERFORMED PRIOR TO CONSTRUCTION.

BENCHMARK

#00119630J3534

TOWNSHIP OF VIRGIL

DESC: EDEN CHRISTIAN COLLEGE ON NORTHWEST SIDE OF NIAGARA STONE ROAD JUST SOUTH OF HUNTER ROAD, 2.70m NORTHEAST OF STREET'S MAIN CONNECTION, 0.30m WEST OF FRONT CONCRETE FOUNDATION WALL BETWEEN FIRST AND SECOND BASEMENT WINDOWS NORTH OF THE SOUTHWEST CORNER, 3.40m NORTH OF SOUTHEAST CORNER, 8cm BELOW BRICK SIDING.

ELEV: 88.158m

DRAFTING: CJB/DMV

DESIGN: AGC

CHECKED BY: TBS

TSH engineers architects planners

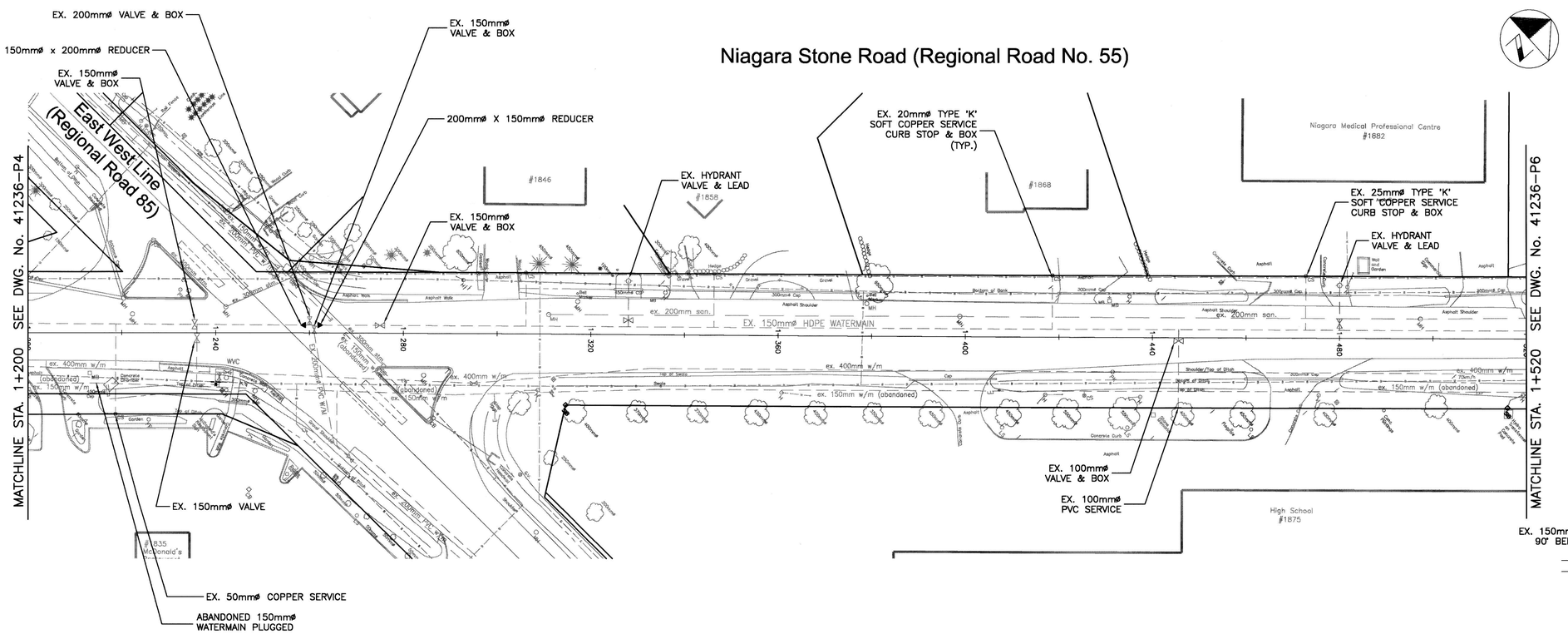
NIAGARA-ON-THE-LAKE

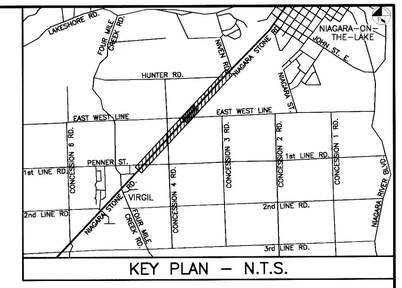
TOWN OF NIAGARA-ON-THE-LAKE
NIAGARA STONE ROAD
WATERMAIN REPLACEMENT
PENNER STREET TO HUNTER ROAD

STA. 0+880 TO STA. 1+200

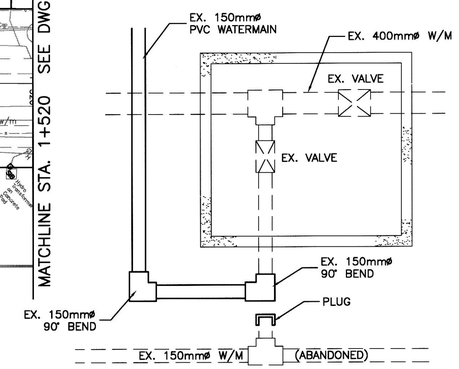
FIELD NOTES

DATE	DECEMBER, 2002
SCALE	HORIZONTAL 1:500 VERTICAL 1:50
DWG No.	41236–P4
MUN. REF. No.	
REV.	4

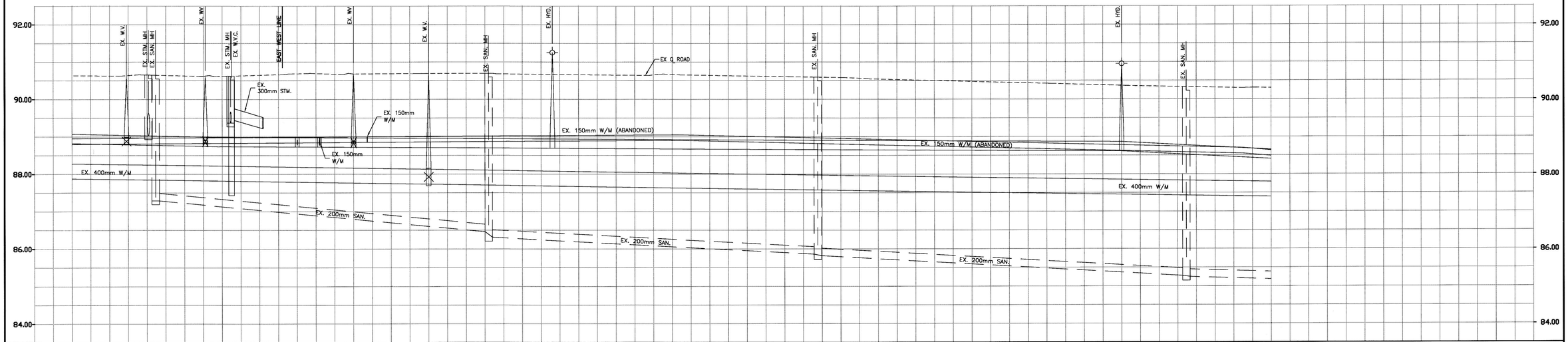




KEY PLAN – N.T.S.



DETAIL 'A'
CROSS CONNECTION TO THE EXISTING 400mmø REGIONAL WATERMAIN
N.T.S.



PROPOSED WATERMAIN	EX. 150mmø HDPE DR11 WATERMAIN; EX. 150mmø PVC DR18 CL150 WATERMAIN; EX. 150mmø HDPE DR11 WATERMAIN
EX. & ROAD ELEVATION	90.64, 90.65, 90.62, 90.69, 90.68, 90.69, 90.67, 90.65, 90.67, 90.62, 90.59, 90.53, 90.47, 90.42, 90.36, 90.32, 90.30
STATION	1+200, 1+235.5, 1+260, 1+265.9, 1+275, 1+280, 1+320, 1+328, 1+360, 1+400, 1+440, 1+460, 1+520

NO.	REVISION	DATE	INIT.
4	CONSTRUCTION RECORD DETAILS	04/05/31	AGC
3	ISSUED FOR TENDER	03/08/16	AGC
2	ISSUED FOR TOWN REVIEW	03/02/14	AGC
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BENCHMARK
#0011963U3534
TOWNSHIP OF VIRGIL.
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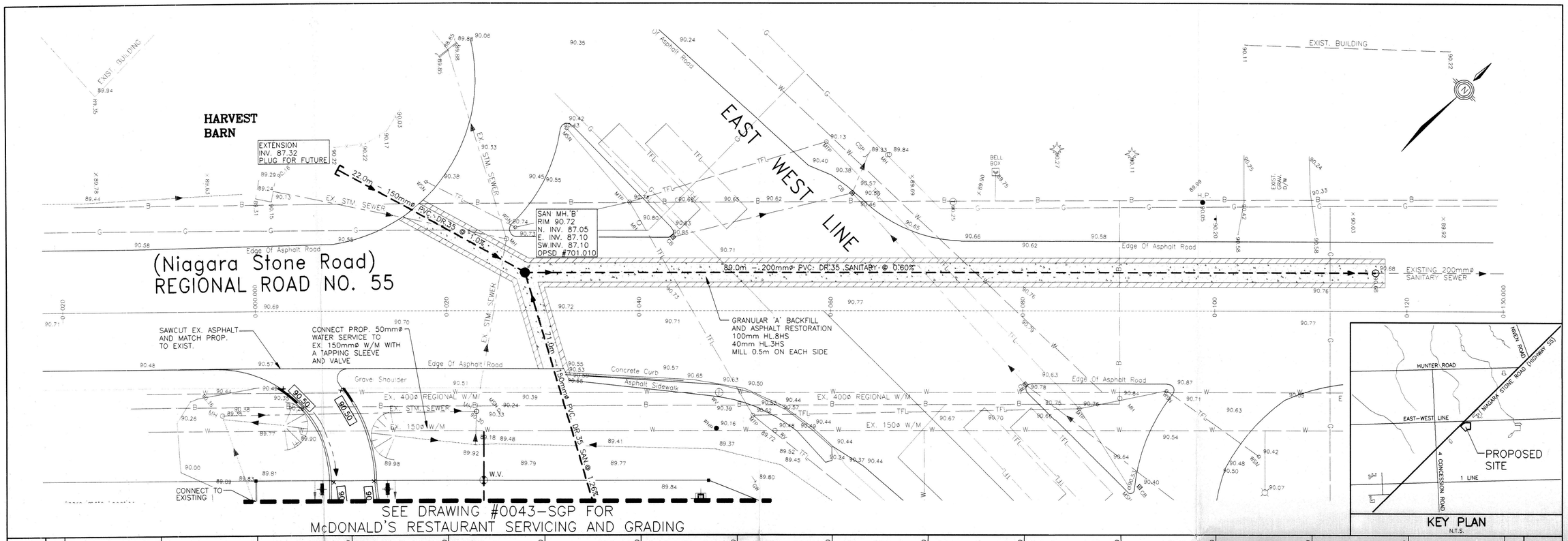
NIAGARA-ON-THE-LAKE

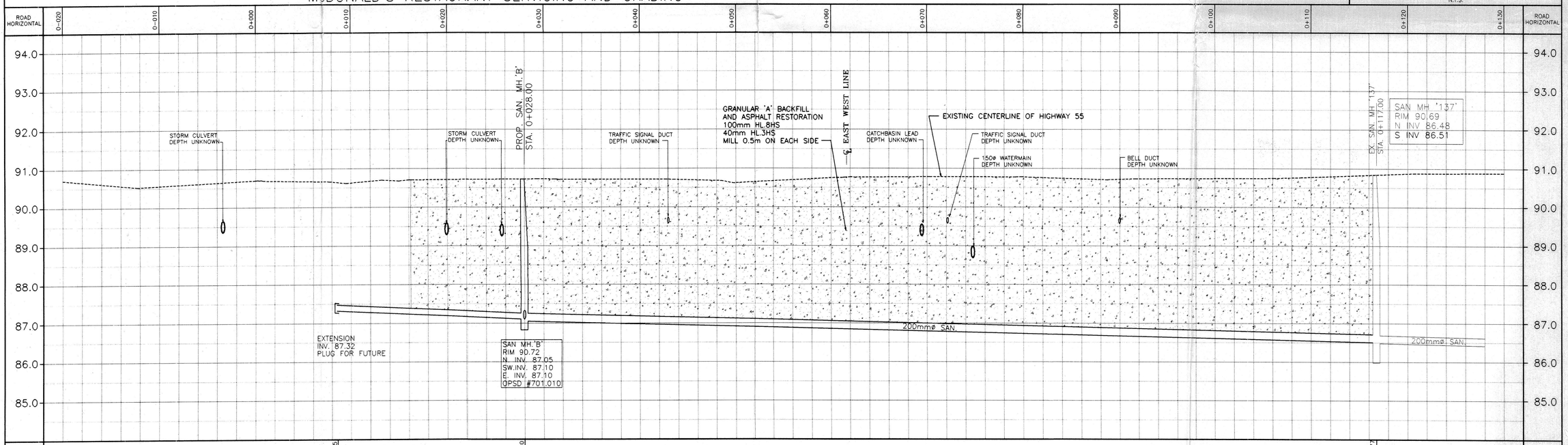
TOWN OF NIAGARA-ON-THE-LAKE
NIAGARA STONE ROAD
WATERMAIN REPLACEMENT
PENNER STREET TO HUNTER ROAD

STA. 1+200 TO STA. 1+520

FIELD NOTES
DATE: DECEMBER, 2002
SCALE: HORIZONTAL 1:500, VERTICAL 1:50
DWG No. 41236-P5
MUN. REF. No.
REV. 4



SEE DRAWING #0043-SGP FOR
McDONALD'S RESTAURANT SERVICING AND GRADING



No	REVISIONS	DATE	BY
1	REVISED BUILDING LOCATION	FEB. 5/01	B.V.
0	ISSUED FOR SITE PLAN APPROVAL	NOV. 29/00	B.V.

NOTES:

1.) Single roadway catchbasin leads to be 250ø, double roadway catchbasin leads to be 300ø, PVC DR 35 of Extra Strength Concrete.

2.) The position of pole lines, conduits, sewers, watermains and other underground utilities and structures is not necessarily shown on the construction drawings. Where shown the accuracy of the position of such utilities and structures is not guaranteed.

3.) Before starting work, the contractor shall check with all utilities involved and inform himself of the exact location of all such utilities and structures and shall assume all liability for damage to them.

4.) Hydro and Bell poles are to be anchored to the ground where required so as to ensure the stability of the pole lines.

5.) All manhole frames, catchbasin frames, water valves and gas valves are to be adjusted to finished grade.

APPROVED BY:

DIRECTOR OF PUBLIC WORKS DATE

LICENSED PROFESSIONAL ENGINEER J. P. SCHOOLEY Feb 8/01 PROVINCE OF ONTARIO

UPPER CANADA CONSULTANTS
ENGINEERS/PLANNERS
215 Ontario Street
St. Catharines, Ontario
L2R 5L2
Phone:(905)688-9400
Fax: (905)688-5274

PROJECT NAME:
McDONALD'S RESTAURANT
TOWN OF NIAGARA-ON-THE-LAKE
Highway 55 & East West Line

DRAWING TITLE:
HIGHWAY 55 & EAST WEST LINE SANITARY SEWER PLAN & PROFILE

DESIGN: M.H. DRAFTING: B.V.
DATE: NOVEMBER 29, 2000
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