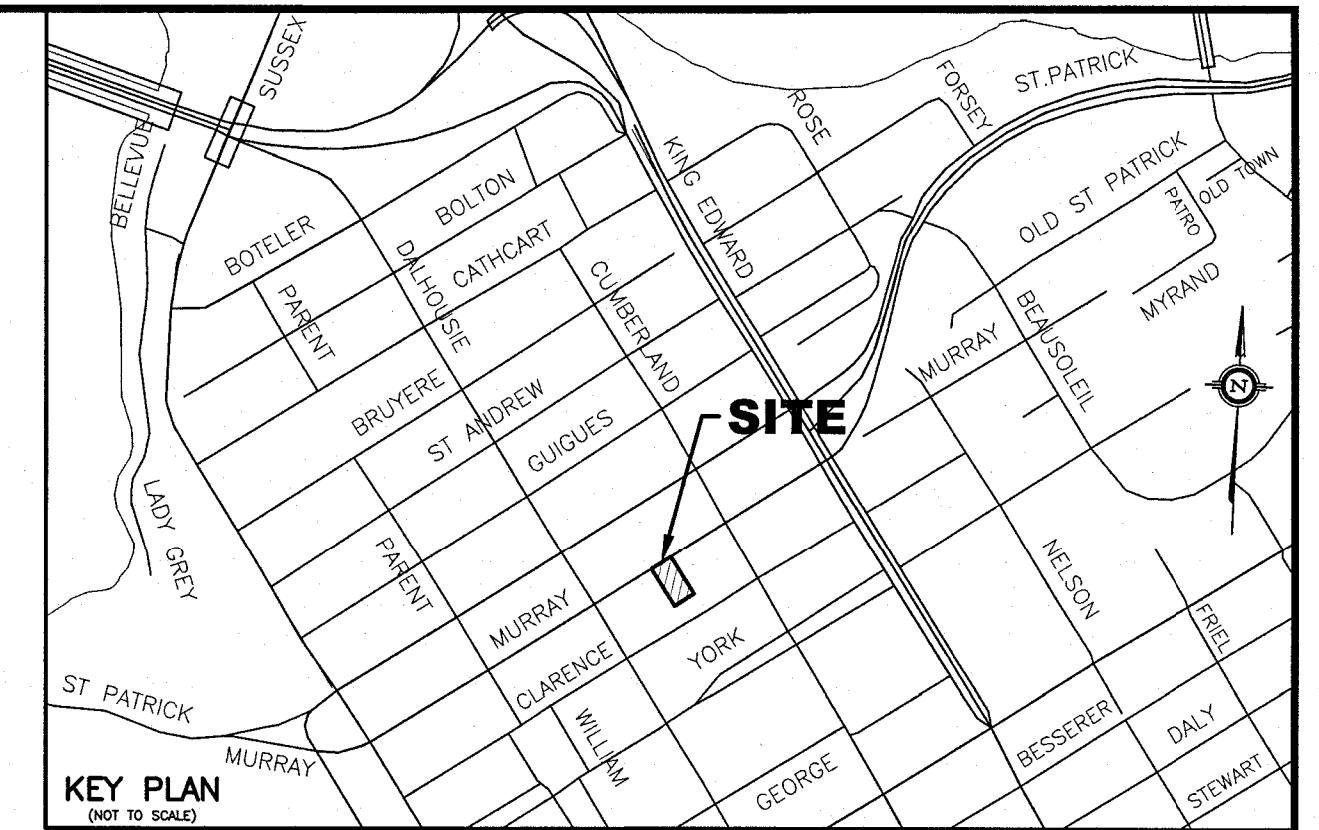
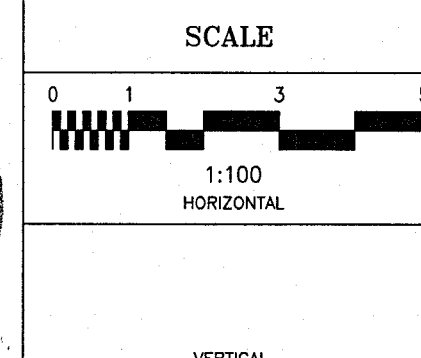
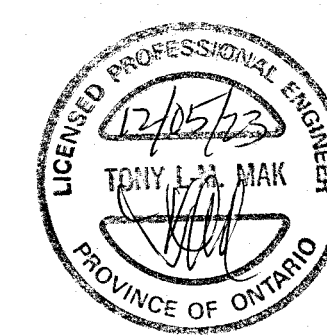


M U R R A Y S T R E E T




- NOTES**
- NODE #1, #2, #3 AND #4 REPRESENTS BUILDING ROOF AREA (SWM CONTROLLED AREA)
 - NODE #5 REPRESENTS UNCONTROLLED DRAINAGE AREA
 - NODE #101 REPRESENTS PRE-DEVELOPMENT DATA.


1	REVISIONS AS PER CITY'S REVIEW COMMENTS OF AUGUST 31, 2023		12/04/23	TLM
NO.	REVISION		DATE	BY

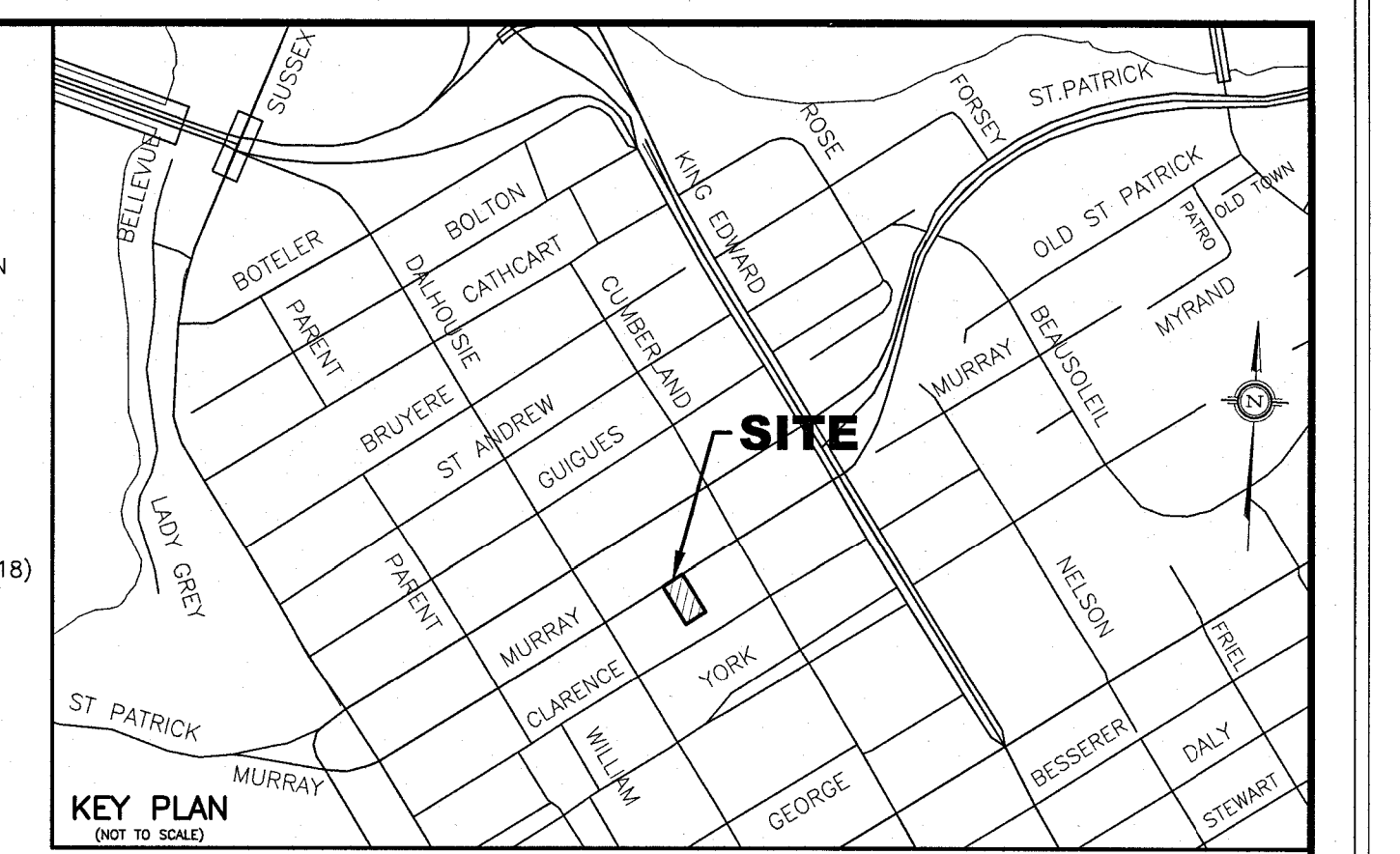
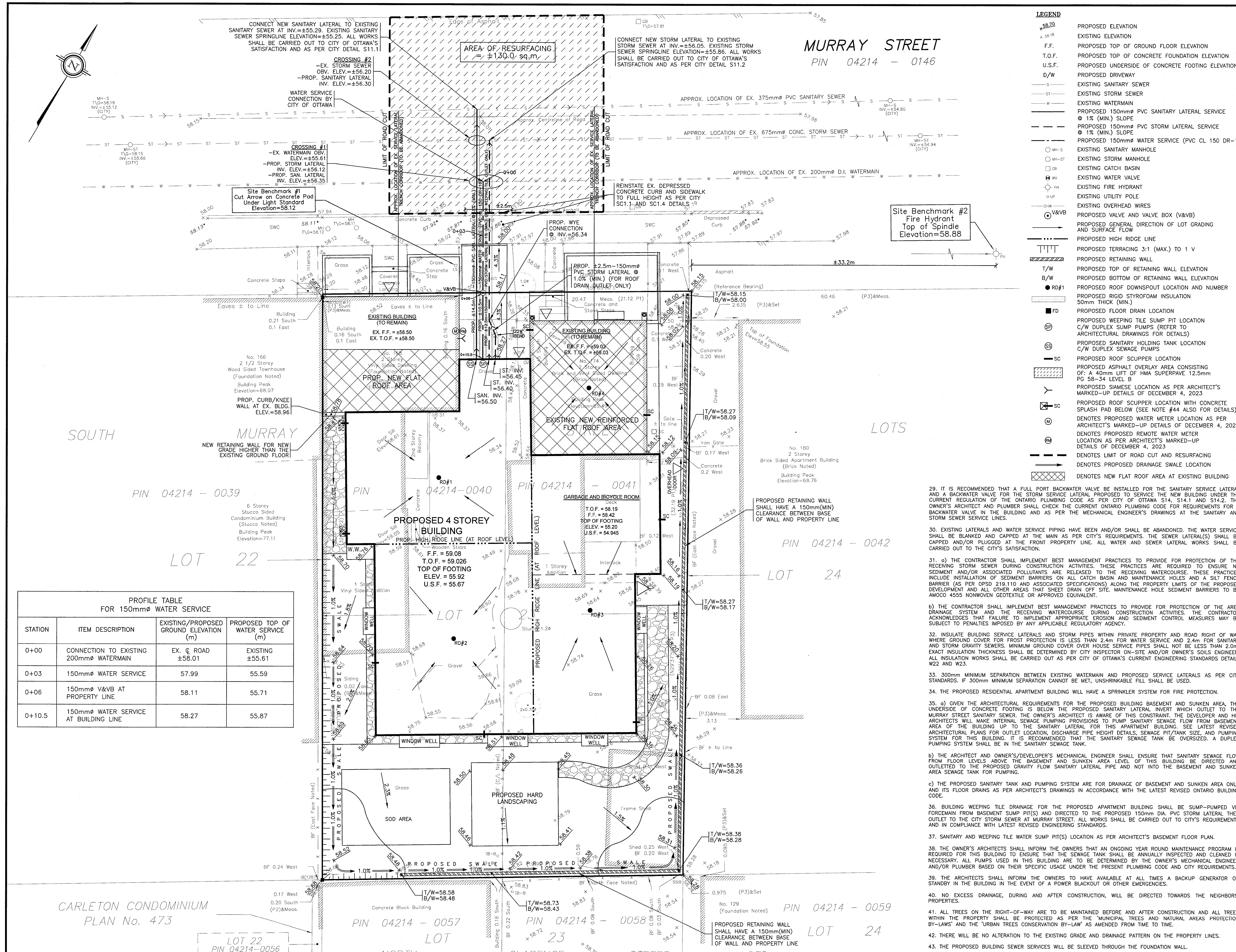


	DESIGN	T.L.M.
m	CHECKED	T.L.M.
	DRAWN BY	P.M.
	CHECKED	T.L.M.
	APPROVED	T.L.M.

PROJECT	168-174 MURRAY STREET LOT 23 (SOUTH MURRAY STREET) REGISTERED PLAN 42482 CITY OF OTTAWA
DRAWING TITLE	STORM DRAINAGE AREA PLAN

		
T.L. MAK ENGINEERING CONSULTANTS LTD. CONSULTING ENGINEERS		
PROJECT No.	DATE	DRAWING No.
822-43	MAY 2022	D-1

 <p>T.L. MAK ENGINEERING CONSULTANTS LTD. CONSULTING ENGINEERS</p>		
PROJECT No.	DATE	DRAWING No.
822-43	MAY 2022	ESC-1



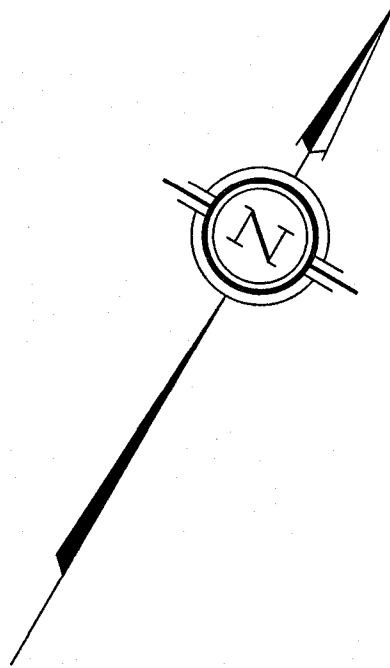
- NOTES**
- EXISTING SERVICES AND UTILITIES SHOWN ON THIS DRAWING WERE TAKEN FROM THE BEST AVAILABLE RECORDS BUT ARE NOT COMPLETE. CONTRACTOR IS REQUESTED TO CHECK IN THE FIELD FOR LOCATION AND ELEVATION OF PIPES, UNDERGROUND STRUCTURES AND CHECK WITH AUTHORITIES AND UTILITIES TO HIS SATISFACTION BEFORE DIGGING.
 - CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS AS DEEMED NECESSARY. REFER TO THE SITE GEOTECHNICAL INVESTIGATION REPORT PREPARED BY THE OWNER'S SOILS ENGINEER PATERSON GROUP (REPORT No. PG6242-1 DATED AUGUST 11, 2022).
 - EXISTING HORIZONTAL AND VERTICAL SURVEY DATA SHOWN ON THIS PLAN INCLUDING GEODETIC SITE BENCHMARK, ROAD ELEVATIONS, STORM AND WATERMAIN LOCATION AND THE TOPOGRAPHICAL INFORMATION OF THE LOT WERE PROVIDED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD. AS DEPICTED ON THEIR TOPOGRAPHICAL SURVEY PLAN (JOB No. 21122-20 COMPLETED JANUARY 7, 2021). T.L. MAK ENGINEERING CONSULTANTS LTD. DOES NOT TAKE ANY RESPONSIBILITY FOR THE SURVEY INFORMATION SHOWN HERE. FOR INFORMATION ABOUT THE STORM AND SANITARY INVERT ELEVATION, STORM AND WATERMAIN LOCATION AND SIZE, THE CONTRACTOR SHALL FIELD CHECK EXISTING SANITARY SEWER, STORM SEWER, AND WATERMAIN DEPTH TO THEIR SATISFACTION AND REFER TO CITY PLAN AND PROFILE DRAWING ENTITLED MURRAY STREET - RECONSTRUCTION STA. 0+400 TO STA. 0+525 DWG. No. RT30-R-10 REV. No. 3 DATED 27/02/92 SHEET 10 OF 26 CONTRACT No. 89-507 FOR ADDITIONAL DETAILS.
 - SITE LAYOUT AND DETAILS FOR GRADING AND SERVING DESIGN WERE PROVIDED BY THE OWNER'S ARCHITECT REDLINE ARCHITECTURE INC. AS DETAILED ON THEIR SITE PLAN (SHEET No. AD DATED MAY 11, 2021) RECEIVED ON MAY 30, 2022 AND UPDATED ON NOVEMBER 7, 2023. BUILDING DETAILS BY F-MAK AND RECEIVED FROM THE ARCHITECT ON MAY 9, 2023 AND UPDATED ON MAY 23, 2023 WAS USED TO ESTABLISH THE TOP OF GROUND FLOOR, TOP OF FOUNDATION, TOP OF BASEMENT SLAB, TOP OF FOOTING AND U.S.F. ELEVATIONS FOR THE MAIN BUILDING.
 - ALL GRADES SHOWN ARE GEODETIC AND METRIC (SEE ANNIS, O'SULLIVAN, VOLLEBEKK LTD.'S TOPOGRAPHICAL PLAN). ALL GRADING SHALL BE DONE TO THE SATISFACTION OF THE CITY OF OTTAWA.
 - PIPE SIZES SHOWN ON THIS PLAN ARE METRIC.
 - THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY EQUIPMENT, LABOUR AND MATERIALS RELATING TO ALL CIVIL WORKS REQUIRED FOR THIS SITE AND BY THE CITY OF OTTAWA TO CONNECT INTO THE WATERMAIN.
 - CONNECTION OF THE 150mm ϕ WATER SERVICE TO THE EXISTING 200mm ϕ MURRAY STREET WATERMAIN SHALL BE CARRIED OUT BY THE CITY OF OTTAWA. EXCAVATION, BACKFILLING, AND RESTORATION SHALL BE CARRIED OUT BY OWNER'S CONTRACTOR. CONNECTION SHALL BE CARRIED OUT AS PER CITY OF OTTAWA DWG. No. W50 DETAILS. ALL WATERWORKS TO BE CONSTRUCTED TO THE CITY OF OTTAWA WATER ENGINEERING STANDARDS AND SPECIFICATIONS.
 - CONSTRUCT ALL WATERMANS, WATER SERVICES, SANITARY AND STORM SEWER SYSTEMS IN ACCORDANCE WITH CITY OF OTTAWA'S LATEST REVISED STANDARD OTHERWISE AS PER OPS ϕ REQUIREMENT AND DONE TO THE SATISFACTION OF THE CITY.
 - BEDDING AND HAUNCHING MATERIAL FOR SEWER INSTALLATIONS TO BE GRANULAR "A" INSTALLED AND COMPACTED AS PER CITY STANDARD DETAIL DWG. No. S6 AND S7.
 - STORM AND SANITARY LATERALS (150mm ϕ) SHALL BE PVC DR-28 OR EQUIVALENT.
 - ALL WATER SERVICES/MAIN ϕ SHALL HAVE 2.4m COVER (min.). The 150mm ϕ WATER SERVICE SHALL BE PVC CL 150 DR-18. WATER SERVICE AND WATERMAIN TRENCH DETAILS AS PER CITY OF OTTAWA W17 AND W22. THRUST BLOCK DETAILS ARE AS PER CITY DETAIL W25.3 DATED MAY 2001. FITTINGS SHALL CONFORM TO APPROVED AWWA AND/OR CSA STANDARDS.
 - IF WATER SERVICE IS LESS THAN 2.4m FROM SEWER, MANHOLE OR CATCHBASIN, CONTRACTOR IS REQUESTED TO INSULATE BETWEEN THEM WITH S/M RIGID INSULATION (SEE CITY DETAIL DRAWING No. W23).
 - ALL PROPOSED BUILDING SANITARY, STORM AND WATER SERVICES SHALL TERMINATE \pm 1.0m OUTSIDE THE FOUNDATION WALL AND CONNECTION TO PUMPING BY OTHERS.
 - SANITARY BUILDING DRAIN TO BE EQUIPPED WITH A FULL PORT BACKWATER VALVE AND INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS. STORMWATER DRAIN TO BE EQUIPPED WITH A BACKWATER VALVE AND INSTALLED AS PER CITY'S REQUIREMENTS.
 - PRIOR TO CONCRETE FOOTING AND FOUNDATION POURING, THE OWNERS AND/OR CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THE SUBGRADE ON THIS LOT IS SUFFICIENT TO SUPPORT THE PROPOSED BUILDING.
 - FOR DEVELOPMENT OF THIS LOT, THE CONTRACTOR MUST FIRST CONSTRUCT THE UNDERGROUND SANITARY, STORM AND WATER SERVICES FROM THE SEWER AND WATERMAIN TO SERVICE THE ENTIRE PROPERTY. PRIOR TO BUILDING CONCRETE FOUNDATION POURING, THE CONTRACTOR SHALL VERIFY SEWER DEPTHS TO ENSURE THAT SEWER LATERALS CAN ACHIEVE A SLOPE OF 1% (MIN.) AND STILL BE BELOW PROPOSED UNDERSIDE OF CONCRETE FOOTING ELEVATION, IF THIS IS FOUND NOT POSSIBLE, THE CONTRACTOR SHALL CONTACT THE OWNER TO REPORT THE FINDING IN ORDER TO ADJUST THE BUILDING FOUNDATION GRADES PRIOR TO CONCRETE POURING.
 - THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY EQUIPMENT, LABOUR AND MATERIALS RELATING TO THE CIVIL WORKS REQUIRED FOR INSTALLATION OF NEW SITE SERVICES. PROVINCIAL HEALTH AND SAFETY REGULATIONS MUST BE FOLLOWED DURING CONSTRUCTION.
 - IT IS THE RESPONSIBILITY OF THE SITE SERVICES CONTRACTOR TO OBTAIN AND CONSTRUCT THE WORKS TO MEET THE LATEST REVISIONS IN CURRENT CIRCULATION OF THE CITY OF OTTAWA'S ENGINEERING STANDARDS, OPS ϕ AND OPSD STANDARDS, AND ONTARIO BUILDING/PLUMBING CODES. WHERE THE LATEST REVISION DIFFERS FROM THE REQUIREMENTS SET OUT IN THIS PLAN, THE CONTRACTOR SHALL PRICE THE WORKS TO MEET LATEST REVISED STANDARDS IN HIS PRICE BID FOR THIS PROJECT. THE CONTRACTOR SHALL INFORM THE ENGINEERS OF ANY CHANGES PRIOR TO COMMENCEMENT OF THE WORKS.
 - PROPOSED TOP OF ENTRY, TOP OF FOUNDATION, TOP OF BASEMENT SLAB, UNDERSIDE OF FOOTING ELEVATIONS SHALL BE REVIEWED AND APPROVED BY OWNER'S ARCHITECTS PRIOR TO CONSTRUCTION.
 - IF EXISTING GRADES ALONG ANY EXISTING ABUTTING PROPERTY LIMITS EXCEED THE PROPOSED GRADES ON THIS PROPERTY BY A HEIGHT DIFFERENTIAL THAT EXCEEDS TERRACING OF 3H TO 1V, THEN INSTALL A RETAINING WALL AS PER OWNER'S REQUIREMENTS.
 - SITE SERVING BEDDING, BACKFILL REQUIREMENTS ALONG WITH ROADWAY AND PARKING LOT PAVEMENT STRUCTURES SHALL MEET RECOMMENDATIONS AND REQUIREMENTS SET OUT IN THE OWNER'S SOILS ENGINEER'S REPORT. ALL WORKS TO BE CARRIED OUT BY THE CONTRACTOR ON THE PROPOSED ASPHALT ACCESS LANEWAY AND PRIVATE DRIVEWAY STRUCTURE SHALL BE APPROVED BY SOILS ENGINEER ON SITE PRIOR TO CONSTRUCTION.
 - THE EXISTING CONCRETE CURB ON MURRAY STREET IF DAMAGED BY THE CONTRACTOR DURING CONSTRUCTION SHALL BE REINSTATE BY THE CONTRACTOR TO THE SATISFACTION OF THE CITY OF OTTAWA AND IN ACCORDANCE WITH THE LATEST REVISED CITY ENGINEERING STANDARDS.
 - THE CONTRACTOR, UPON COMPLETION OF THE NEW DRIVEWAY, SHALL RESTORE THE EXISTING MURRAY STREET ROADWAY BOUNDARY DISTURBED BY CONSTRUCTION WORKS ON THIS PROPERTY. ADDITIONALLY, THE ROADWAY GRADING SHALL BE RESTORED AND REGRADED TO DRAIN POSITIVELY TO EXISTING STORMWATER OUTLET AS REQUIRED BY THE CITY INSPECTOR.
 - CONSTRUCT DEPRESSED CURBING AND DEPRESS ANY EXISTING CONCRETE/ASPHALT SIDEWALKS FOR THE NEW DRIVEWAY ENTRANCE ALONG MURRAY STREET FOR DEVELOPMENT OF THIS PROPERTY IN ACCORDANCE WITH CITY OF OTTAWA ENGINEERING STANDARDS AND DETAILS PER CITY DWG. No. SC13 DATED MARCH 2006. ALL WORKS SHALL BE CARRIED OUT TO THE CITY'S SATISFACTION.
 - CONCRETE BARRIER CURB AND DEPRESSED CURB DETAILS AS PER CITY OF OTTAWA STANDARDS (DWG. No. SC1.1, MARCH 2007 AND SC6, MAY 2007). CONCRETE CURB AND CONCRETE SIDEWALK CONSTRUCTION AND REINSTATEMENT SHALL BE DONE TO THE SATISFACTION OF THE CITY OF OTTAWA AND IN ACCORDANCE WITH THE LATEST REVISED CITY ENGINEERING STANDARDS.
 - THE RETAINING WALL TO BE CONSTRUCTED AND MATERIAL TYPE SHALL BE SPECIFIED BY THE OWNER'S ARCHITECT AND/OR HIS STRUCTURAL ENGINEER. ANY RETAINING WALLS BUILT ON THIS LOT EXCEEDING 1.0m IN HEIGHT FROM PROPOSED FINISHED GROUND ELEVATION WILL BE REQUIRED TO BE PREPARED AND CERTIFIED BY THE OWNER'S STRUCTURAL ENGINEER AND APPROVED BY THE CITY PRIOR TO CONSTRUCTION.
 - WHERE FROST COVER FROM UNDERSIDE OF BUILDING CONCRETE FOOTING TO PROPOSED FINISHED GROUND ELEVATION IS LESS THAN 1.5m, IT IS RECOMMENDED THAT INSULATION (50mm THICK) MINIMUM BE INSTALLED AT THE BUILDING FOOTING AND FOUNDATION TO PROVIDE SUFFICIENT FROST COVER FOR THE FOUNDATION STRUCTURES. THE FOOTINGS WILL NEED TO BE REVIEWED FOR INSULATION BY THE OWNER'S SOILS ENGINEER. EXACT INSULATION REQUIREMENTS SHALL BE AS PER ARCHITECT'S INSULATION DETAILS AS SHOWN ON THEIR ARCHITECTURAL DRAWINGS AND CONFIRMED BY THE OWNER'S SITE SOILS ENGINEER.

PROFILE TABLE FOR 150mm ϕ WATER SERVICE			
STATION	ITEM DESCRIPTION	EXISTING/PROPOSED GROUND ELEVATION (m)	PROPOSED TOP OF WATER SERVICE (m)
0+00	CONNECTION TO EXISTING 200mm ϕ WATERMAIN	EX. @ ROAD \pm 58.01	EXISTING \pm 55.61
0+03	150mm ϕ WATER SERVICE	57.99	55.59
0+06	150mm ϕ V&VB AT PROPERTY LINE	58.11	55.71
0+10.5	150mm ϕ WATER SERVICE AT BUILDING LINE	58.27	55.87

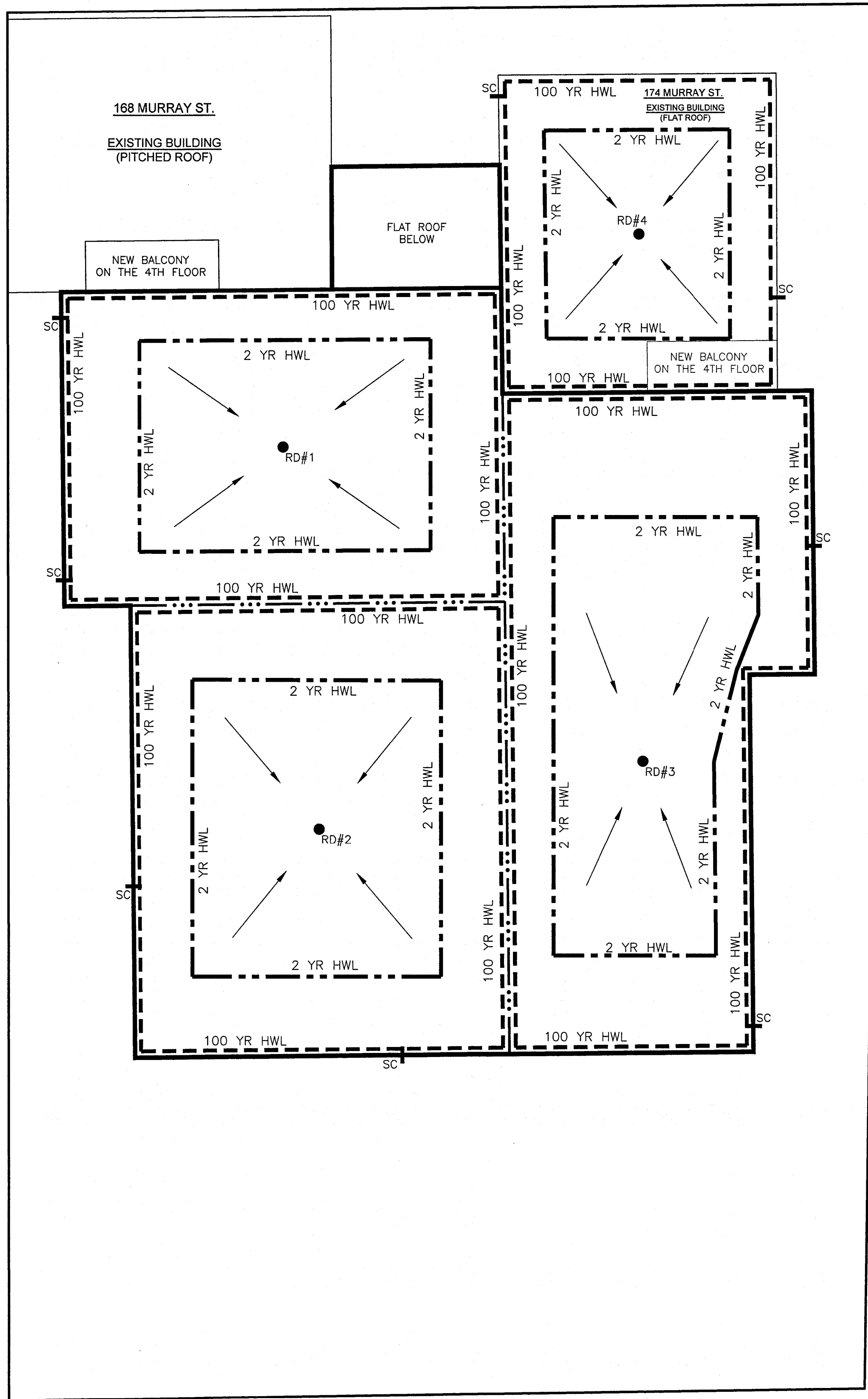
4	REVISIONS AS PER CITY'S REVIEW COMMENTS	12/04/23	TLM
3	REVISIONS AS PER ARCHITECT'S REVISED SITE PLAN PROVIDED ON NOVEMBER 7, 2023	11/08/23	TLM
2	REVISIONS AS PER ARCHITECT'S BUILDING ELEVATIONS DETAILS OF MAY 9, 2023	06/28/23	TLM
1	REVISIONS AS PER ARCHITECT'S REVIEW COMMENTS OF MARCH 21, 2023	03/24/23	TLM
NO.	REVISION	DATE	BY

DESIGN	T.L.M.
CHECKED	T.L.M.
DRAWN BY	P.M.
CHECKED	T.L.M.
APPROVED	T.L.M.

PROJECT	168-174 MURRAY STREET LOT 23 (SOUTH MURRAY STREET) REGISTERED PLAN 42482 CITY OF OTTAWA
DRAWING TITLE	PROPOSED SITE GRADING AND SERVING PLAN
PROJECT No.	822-43
DATE	MAY 2022
DRAWING No.	G-1



MURRAY STREET



NOTES

1. STORMWATER MANAGEMENT NOTES

ROOF DRAIN DETAILS

MODEL TYPE: WATTS MODEL "ADJUSTABLE ACCUTROL WEIR" (MODEL No. RD-100A-ADJ), (WEIR OPENING EXPOSED IS : CLOSED) TO PERMIT A RELEASE FLOW RATE OF 5.0 US GAL/MIN. OR 0.32 L/s UNDER A HEAD OF 100mm AND AT MAXIMUM FLOW RATE OF 5.0 US GAL/MIN. OR 0.32 L/s UNDER A HEAD OF UP TO 150mm.

NUMBER OF CONTROL DEVICES: 1 CONTROLLED ROOF DRAIN PER DESIGNATED ROOF AREA FOR SWM ATTENUATION

MAXIMUM FLOW PER ROOF DRAIN: 5.0 U.S. GAL/MIN. OR 0.32 L/s.

TOTAL FLOW FROM FLAT ROOFTOP OF BUILDING AT MAXIMUM HEAD OF 150mm PER DRAIN AT THE (4) PROPOSED DRAINS = 1.28 L/s

DEPTH AND VOLUME:

ROOF DRAIN ID & DRAINAGE AREA (ha)	NUMBER OF ROOF DRAINS	WATTS ROOF DRAIN MODEL ID (WEIR OPENING)	CONTROLLED FLOW PER DRAIN (L/s)		APPROXIMATE PONDING DEPTH ABOVE DRAINS (m)		STORAGE VOLUME REQUIRED (m ³)		MAX. STORAGE AVAILABLE (m ³)
			2 YR	100 YR	2 YR	100 YR	2 YR	100 YR	
RD-1 (0.0075 ha)	1	RD-100-A-ADJ (CLOSED)	0.32	0.32	0.10	0.15	0.80	3.07	3.65
RD-2 (0.0092 ha)	1	RD-100-A-ADJ (CLOSED)	0.32	0.32	0.10	0.15	1.10	4.05	4.55
RD-3 (0.0098 ha)	1	RD-100-A-ADJ (CLOSED)	0.32	0.32	0.10	0.15	1.19	4.37	5.00
RD-4 (0.0048 ha)	1	RD-100-A-ADJ (CLOSED)	0.32	0.32	0.10	0.15	0.40	1.64	2.46
TOTAL ROOF (0.0313 ha)	4		1.28	1.28	-	-	3.49	13.13	15.66

SCUPPER LOCATION: AS SHOWN ON THIS DRAWING

2 YEAR ELEVATION: 100mm ABOVE THE ROOF DRAIN FOR ROOF AREA #1, #2, #3 AND #4

100 YEAR ELEVATION: 150mm ABOVE THE ROOF DRAIN FOR ROOF AREA #1, #2, #3 AND #4

- EACH ROOF DRAIN SHALL BE SIZED FOR A (MAX) RELEASE RATE OF 5.0 U.S. GAL/MIN. OR 0.32 L/s. UNDER A HEAD OF 150mm. THE OWNER'S MECHANICAL ENGINEER SHALL SPECIFY THE REQUIRED ROOF DRAIN TYPE AND MODEL No. AND PROVIDE THE NECESSARY INFORMATION TO THE CITY OF OTTAWA FOR THEIR RECORDS TO ENSURE PROPER RELEASE RATE FOR STORMWATER MANAGEMENT COMPLIANCE.

- ROOF PITCH IS ASSUMED TO HAVE 1.6% (MIN.) SLOPE.

- ROOF SCUPPERS ARE RECOMMENDED TO BE INSTALLED 0mm ABOVE EDGE OF ROOFTOP ELEVATION FOR EMERGENCY OVERFLOW PURPOSES AT ROOF AREA #1, #2, #3 AND #4 AT PERIMETER OF BUILDING.

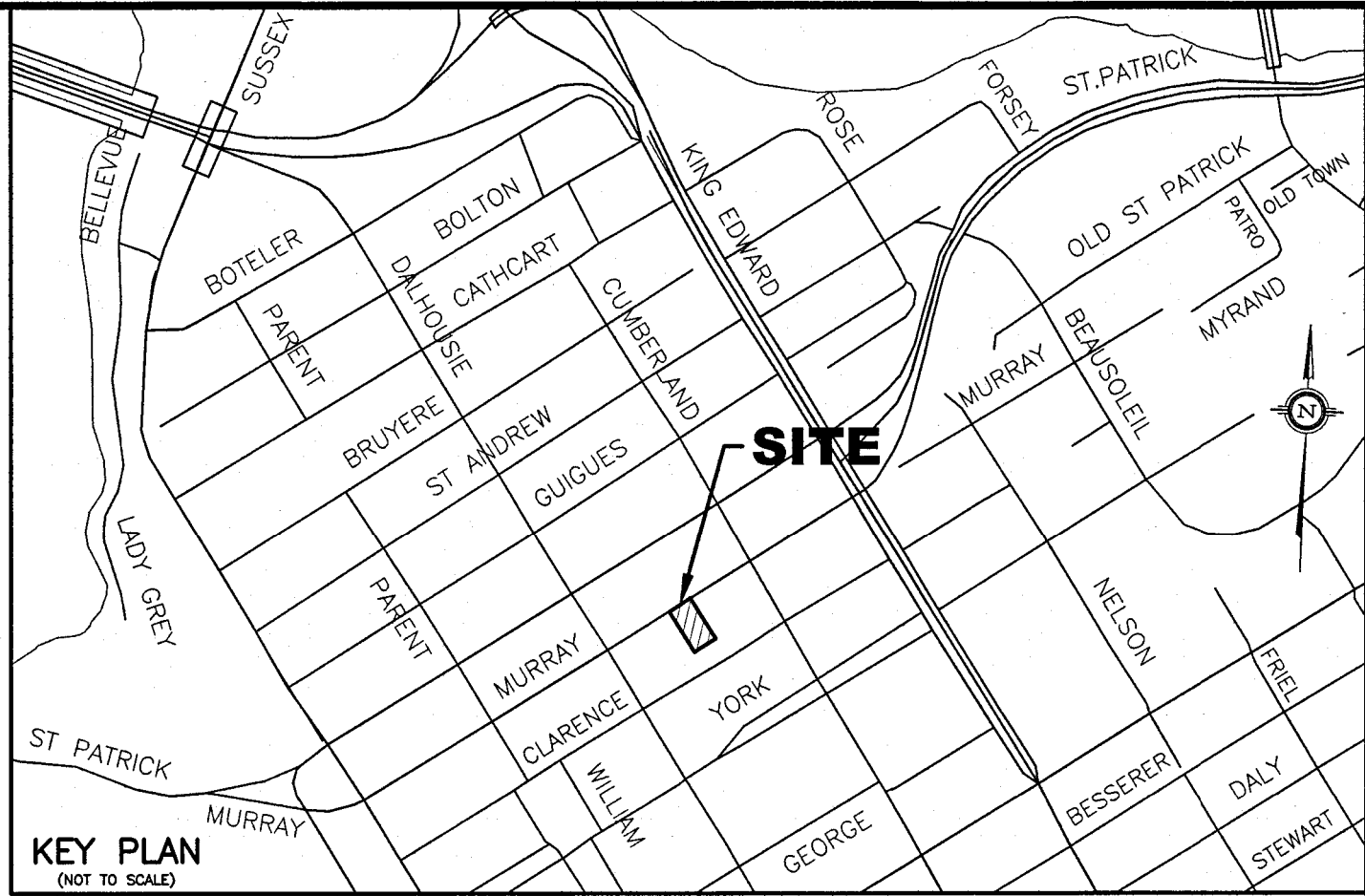
- SEE STORM DRAINAGE REPORT No. R-822-43 DATED JUNE 2023 FOR DETAILS ALSO.

2. PROPOSED ROOF DRAINS AND SCUPPER LOCATIONS SHOWN ON THIS PLAN SHALL BE REVIEWED BY THE OWNER AND OWNER'S BUILDING DESIGNER FOR APPROVAL.

3. THE OWNER'S BUILDING DESIGNER AND STRUCTURAL ENGINEER SHALL ENSURE THAT THE ADDITIONAL STORMWATER STORAGE VOLUME FROM STORMWATER MANAGEMENT MEASURES ARE ACCOUNTED FOR IN THE STRUCTURAL DESIGN OF AND WATERPROOFING OF ROOF AREA #1, #2, #3 AND #4 AND ANY OF THE SUPPORTING STRUCTURES THAT MAY BE AFFECTED BY THE STORED WATER.

4. ROOF DRAIN #1, #2, #3 AND #4 INCLUSIVE SHALL OUTLET INTO THE DESIGNATED 150mmø PVC STORMWATER PIPE AS SHOWN ON THE PROPOSED GRADING AND SERVICING PLAN (DWG No. 822-43, G-1).

5. FOR GRADING AND SERVICING DETAILS OF THIS SITE, REFER TO DWG. No. 822-43, G-1.



LEGEND

- 100 YR HIGH WATER LEVEL
- - - 2 YR HIGH WATER LEVEL
- PROPOSED HIGH RIDGE LINE
- RD#1 PROPOSED ROOF DRAIN NUMBER AND LOCATION
- SC PROPOSED ROOF SCUPPER LOCATION
- PROPOSED GENERAL DIRECTION OF LOT GRADING AND SURFACE FLOW



Adjustable Accutrol Weir

Adjustable Flow Control for Roof Drains

ADJUSTABLE ACCUTROL (for Large Sump Roof Drains only)

For more flexibility in controlling flow with heads deeper than 2", Watts Drainage offers the Adjustable Accutrol. The Adjustable Accutrol Weir is designed with a single parabolic opening that can be covered to restrict flow above 2" of head to less than 5 gpm per inch, up to 6" of head. To adjust the flow rate for depths over 2" of head, set the slot in the adjustable upper cone according to the flow rate required. Refer to Table 1 below.
Note: Flow rates are directly proportional to the amount of weir opening that is exposed.

EXAMPLE:

For example, if the adjustable upper cone is set to cover 1/2 of the weir opening, flow rates above 2" of head will be restricted to 2-1/2 gpm per inch of head.

Therefore, at 3" of head, the flow rate through the Accutrol Weir that has 1/2 the slot exposed will be:
[5 gpm (per inch of head) x 2 inches of head] + 2-1/2 gpm (for the third inch of head) = 12-1/2 gpm.

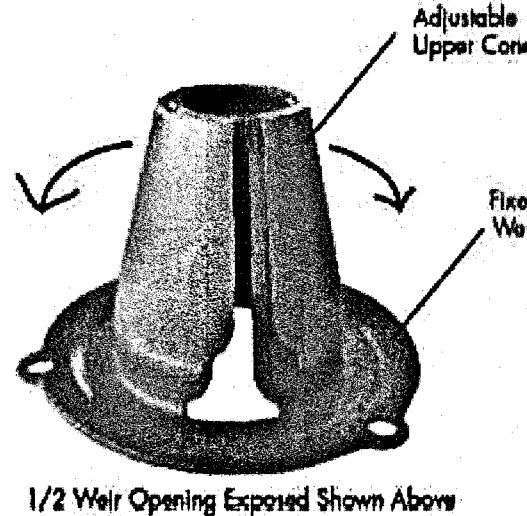
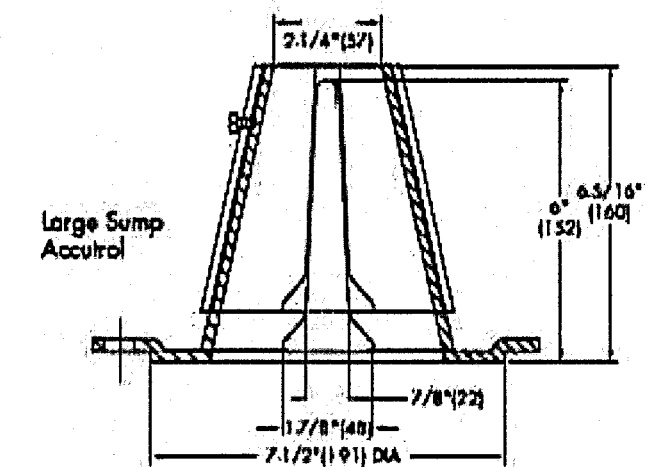
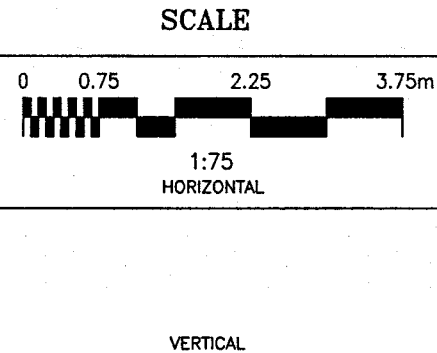
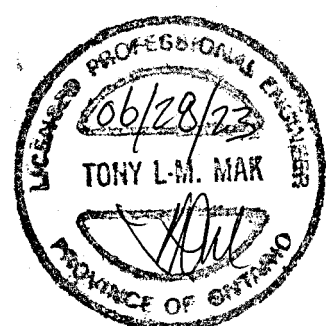


TABLE 1. Adjustable Accutrol Flow Rate Settings

Weir Opening Exposed	1"	2"	3"	4"	5"	6"
	Flow Rate (gallons per minute)					
Fully Exposed	5	10	15	20	25	30
3/4	5	10	13.75	17.5	21.25	35
1/2	5	10	9.5	15	17.5	30
1/4	5	10	11.25	13.5	13.75	15
Closed	5	5	5	5	5	5

NO.	REVISION	DATE	BY	



DESIGN	T.L.M.
CHECKED	T.L.M.
DRAWN BY	P.M.
CHECKED	T.L.M.
APPROVED	T.L.M.

PROJECT

168-174 MURRAY STREET
LOT 23 (SOUTH MURRAY STREET)
REGISTERED PLAN 42482
CITY OF OTTAWA

DRAWING TITLE

PROPOSED ROOFTOP
STORMWATER MANAGEMENT PLAN



T.L. MAK ENGINEERING CONSULTANTS LTD.
CONSULTING ENGINEERS

PROJECT No.	DATE	DRAWING No.
822-43	MAY 2022	SWM-1