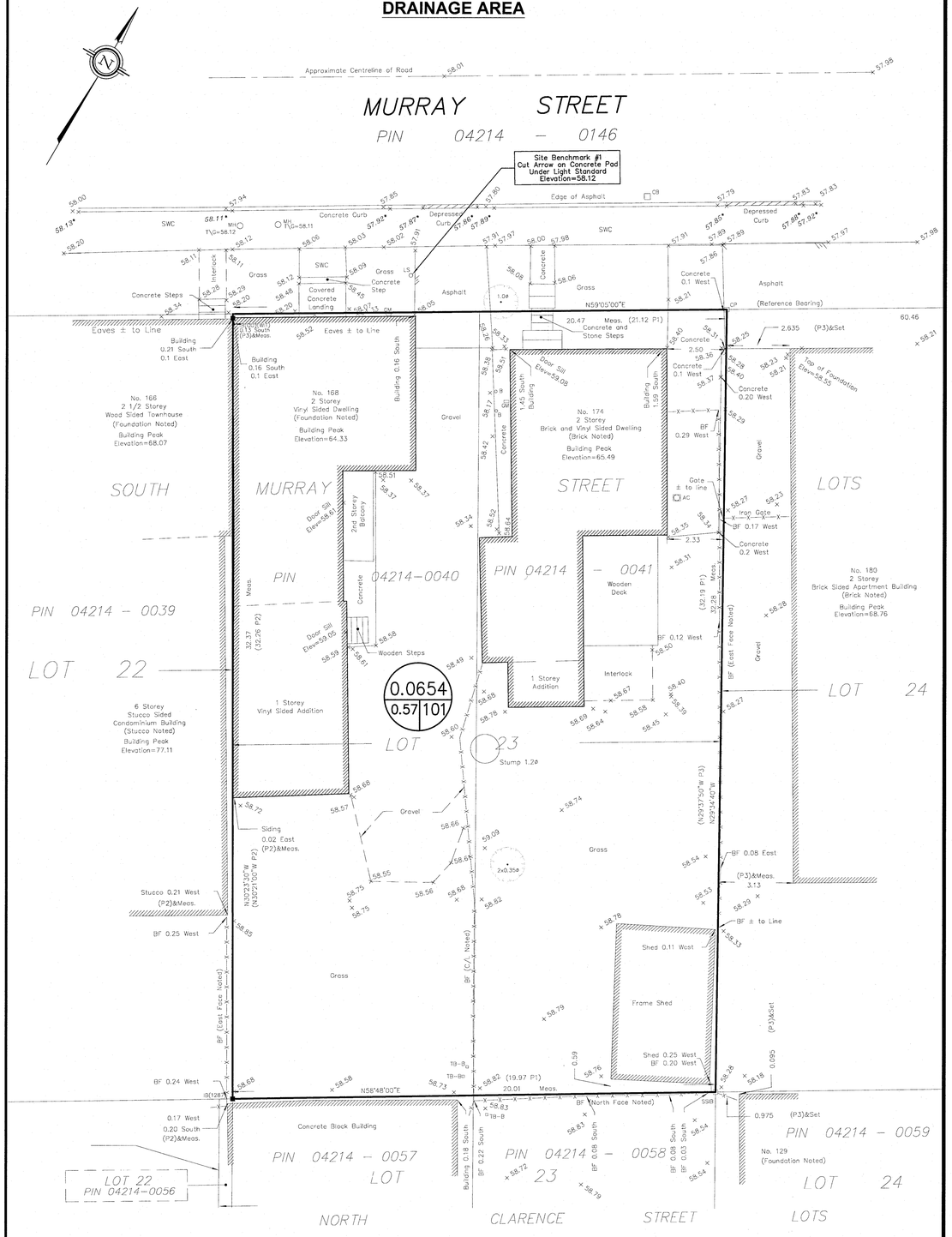
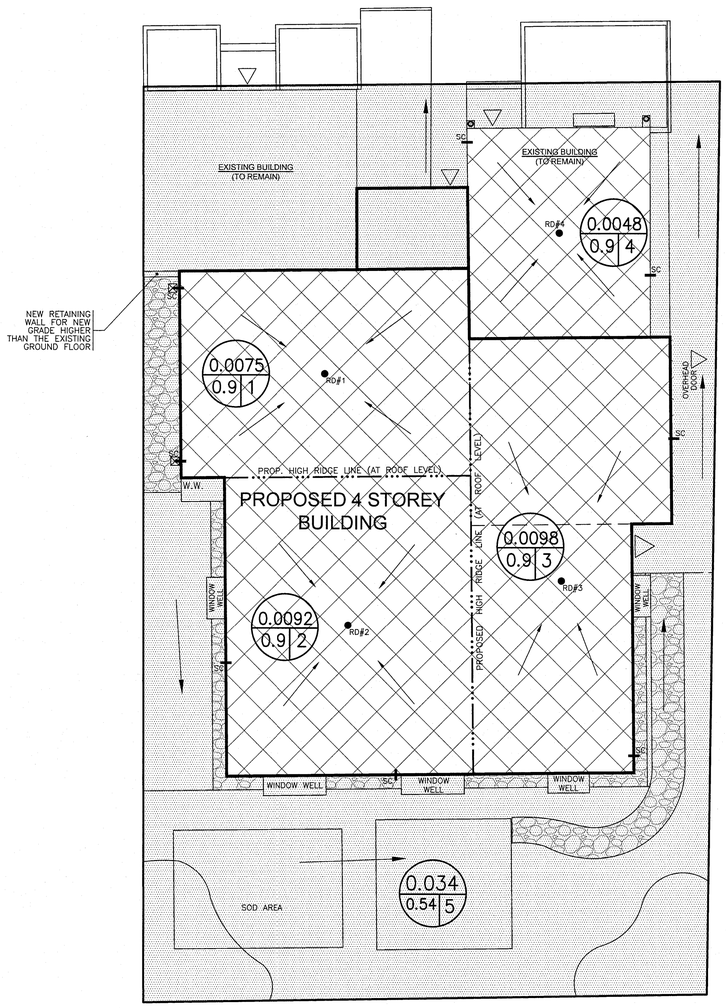
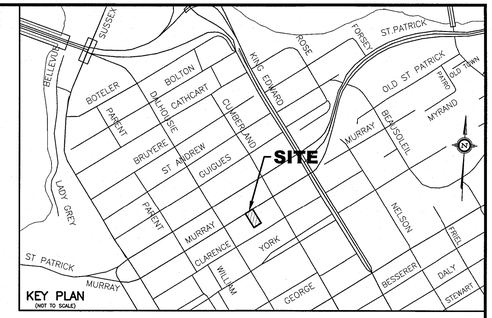
PRE - DEVELOPMENT STORM DRAINAGE AREA



POST DEVELOPMENT STORM DRAINAGE AREA





LEGEND

- RD#1 — PROPOSED ROOF DRAIN NUMBER AND LOCATION
- SC — PROPOSED ROOF SCUPPER LOCATION
- PROPOSED HIGH RIDGE LINE
- 0.03 / 0.9 | 1 — DRAINAGE AREA IN HECTARES; DRAINAGE NODE NUMBER
- COEFFICIENT OF RUNOFF
- DENOTES STORMWATER SURFACE FLOW DIRECTION
- UN-CONTROLLED DRAINAGE AREA
- CONTROLLED DRAINAGE AREA

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.

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

LICENSED PROFESSIONAL ENGINEER — TONY L. T. MAK — PROVINCE OF ONTARIO

SCALE: 0 1 3 5m — 1:100 HORIZONTAL — VERTICAL

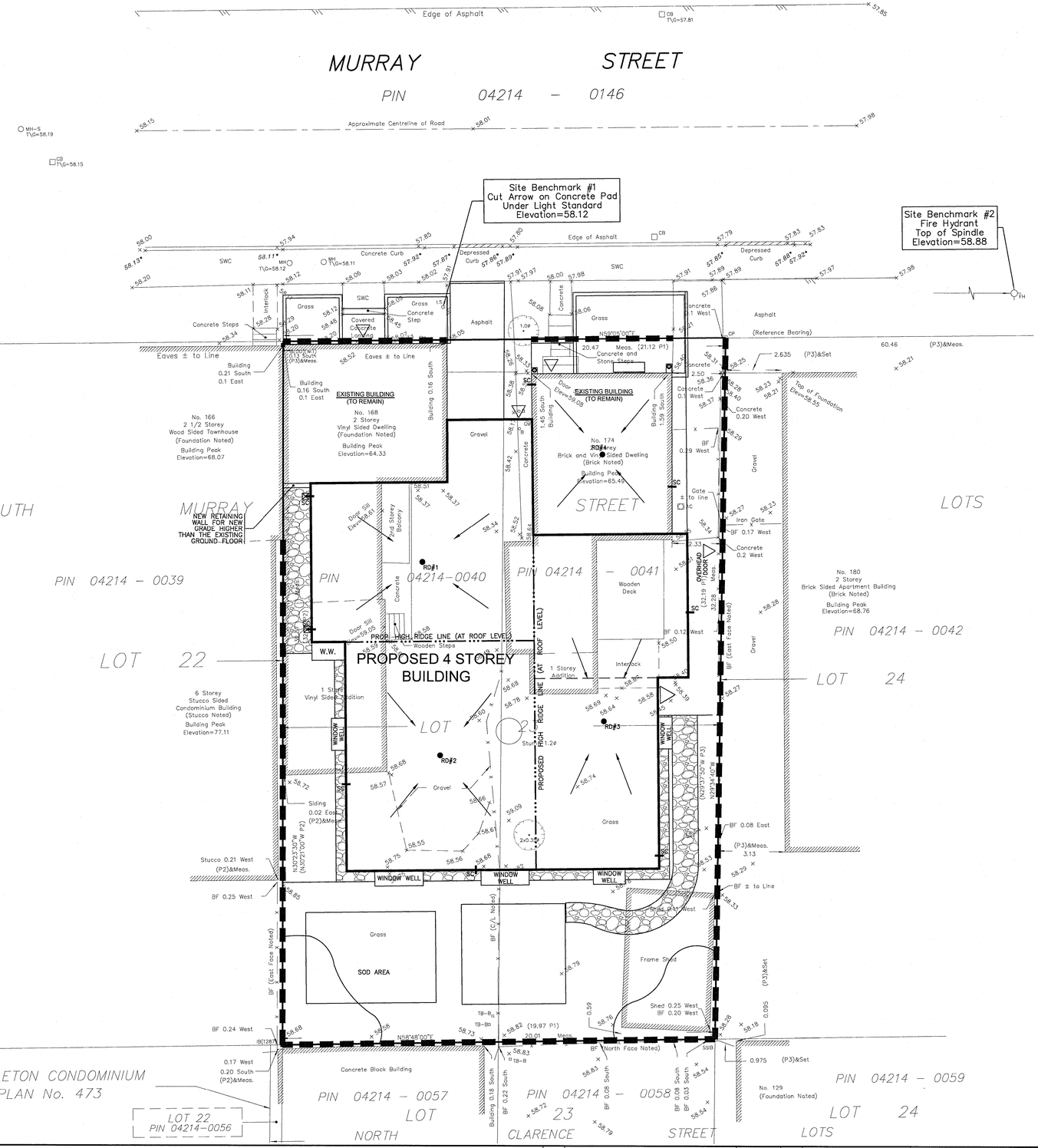
DESIGN	T.L.M.
CHECKED	T.L.M.
DRAWN BY	P.M.
CHECKED	T.L.M.
APPROVED	T.L.M.

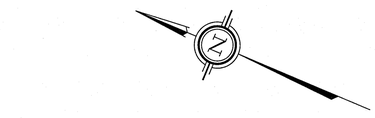
PROJECT: 168–174 MURRAY STREET
LOT 23 (SOUTH MURRAY STREET)
REGISTERED PLAN 42482
CITY OF OTTAWA

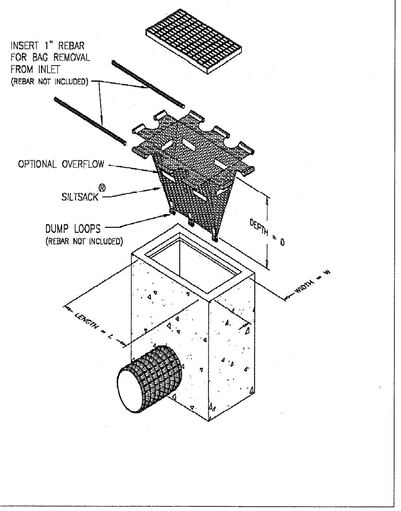
DRAWING TITLE: STORM DRAINAGE AREA PLAN

T.L. MAK ENGINEERING CONSULTANTS LTD.
CONSULTING ENGINEERS

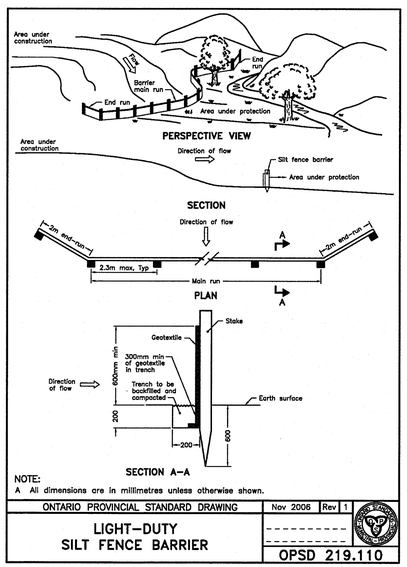
PROJECT No.	DATE	DRAWING No.
822-43	MAY 2022	D-1

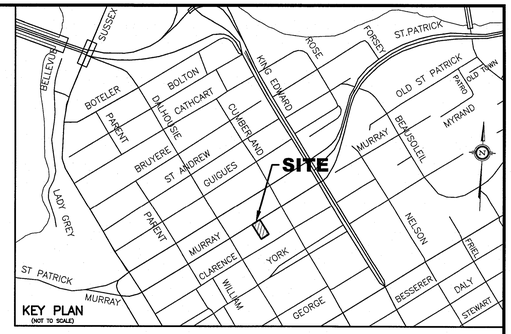






TYPICAL CATCH BASIN CONTROL DEVICE
N.T.S.





LEGEND

SILT FENCE BARRIER LOCATION

EROSION AND SEDIMENT CONTROL NOTES

BEST MANAGEMENT PRACTICES

EROSION AND SEDIMENT CONTROLS (BEST MANAGEMENT PRACTICES) SHALL BE PROVIDED DURING CONSTRUCTION OF THIS PROJECT. EROSION MUST BE MINIMIZED AND SEDIMENTS MUST BE REMOVED FROM CONSTRUCTION SITE RUNOFF IN ORDER TO PROTECT DOWNSTREAM AREAS. DURING ALL CONSTRUCTION, EROSION AND SEDIMENTATION SHOULD BE CONTROLLED BY THE FOLLOWING TECHNIQUES:

1. MINIMIZE THE EXTENT OF EXPOSED SOILS.

2. MINIMIZE THE AREA TO BE CLEARED AND GRUBBED.

3. PROTECT EXPOSED SLOPES WITH PLASTIC OR SYNTHETIC MULCHES.

4. INSTALL "SILTSACK" CATCH BASIN SEDIMENT CONTROL DEVICE OR EQUAL IN CATCH BASINS ALONG MURRAY STREET ON–SITE AND OFF–SITE WITHIN THE ROAD RIGHT OF WAY ADJACENT TO THIS PROPERTY AS RECOMMENDED BY THE MANUFACTURER. SILTACK SHALL BE INSPECTED EVERY 2 TO 3 WEEKS AND AFTER EVERY MAJOR STORM.

5. INSTALL SILT FENCES AROUND THE PERIMETER OF STOCKPILES OF TOPSOIL TO BE USED OR REMOVED FROM SITE. (LOCATION TO BE DETERMINED).

6. SEDIMENT CONTROL DEVICES SHALL BE INSPECTED EVERY 2 TO 3 WEEKS AND AFTER MAJOR STORMS AND CLEANED OF ANY ACCUMULATED SILT AS REQUIRED. THE DEPOSITS WILL BE DISPOSED OF AS PER THE REQUIREMENTS OF THE CONTRACT.

7. IN SOME CASES SOME FILTER BARRIERS MAY BE REMOVED TEMPORARILY TO ACCOMMODATE CONSTRUCTION OPERATIONS. THE AFFECTED BARRIERS WILL BE REINSTATED AT NIGHT WHEN CONSTRUCTION IS COMPLETED. REMOVAL SHALL NOT OCCUR IF RUNOFF OR RAINFALL IS PREDICTED UNLESS A NEW DEVICE HAS BEEN INSTALLED TO PROTECT THE EXISTING STORM AND SANITARY SEWER SYSTEMS.

8. NO REFUELING OR CLEANING OF EQUIPMENT IS PERMITTED NEAR ANY EXISTING WATERWAYS.

9. DURING THE CONSTRUCTION PERIOD, THE CONTRACTOR SHALL INSPECT, MAINTAIN AND REMOVE THE CONTROL MEASURES.

10. THIS PROPOSED EROSION AND SEDIMENT CONTROL PLAN IS CONSIDERED BY (RVCA) A LIVING DOCUMENT WHICH MAY BE MODIFIED IN THE EVENT THE CONTROL MEASURES ARE INSUFFICIENT.

11. CONTRACTOR IS RESPONSIBLE TO KEEP THE ROADS FREE AND CLEAN FROM MUD AND DEBRIS DURING THE CONSTRUCTION PERIOD.

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

LICENSED PROFESSIONAL ENGINEER — 12/05/23 — TONY L. MAK — PROVINCE OF ONTARIO

SCALE
0 1 3 5m
1:100 HORIZONTAL
VERTICAL

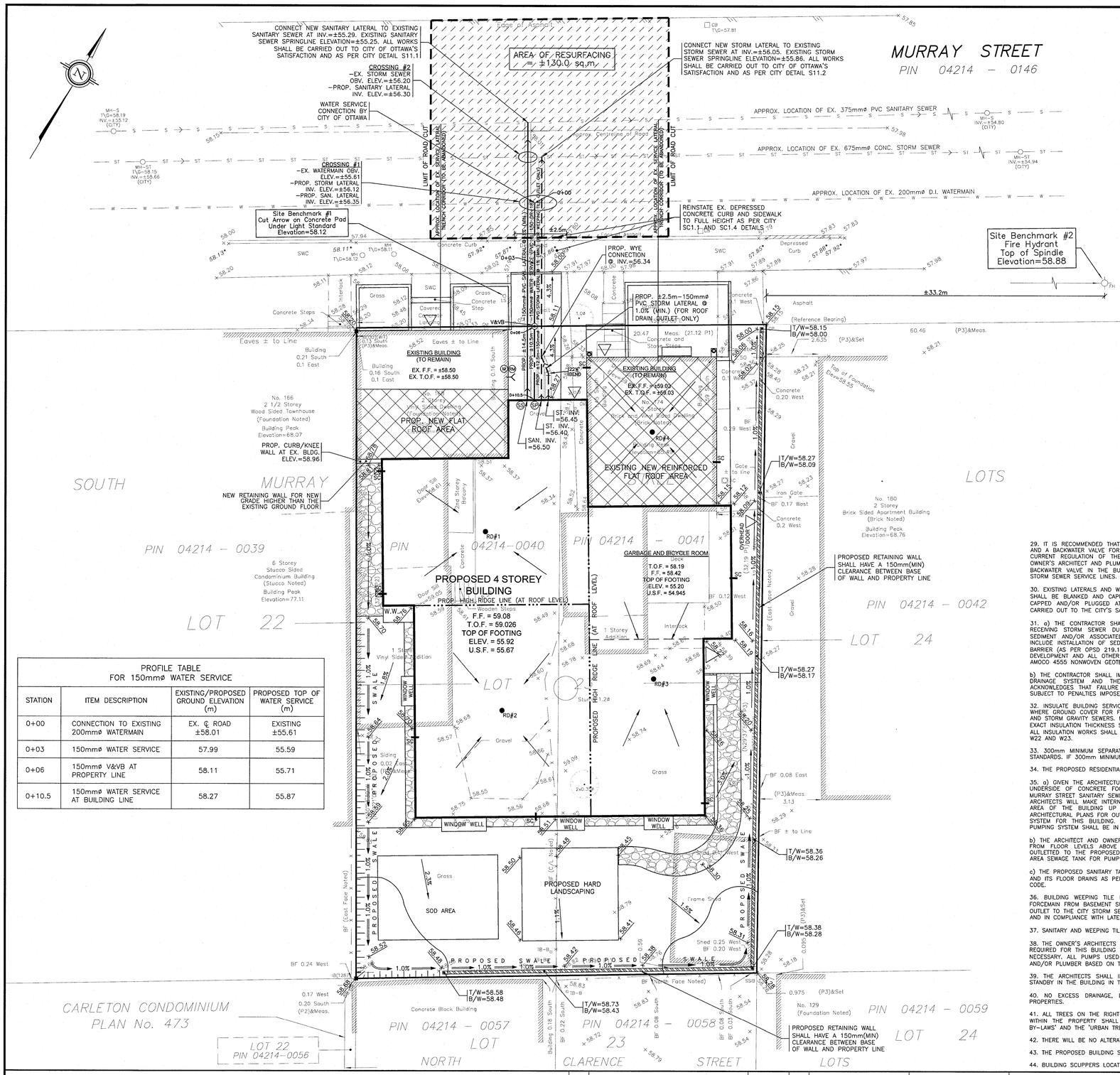
DESIGN	T.L.M.
CHECKED	T.L.M.
DRAWN BY	P.M.
CHECKED	T.L.M.
APPROVED	T.L.M.

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

DRAWING TITLE
PROPOSED EROSION AND SEDIMENT CONTROL PLAN

T.L. MAK ENGINEERING CONSULTANTS LTD.
CONSULTING ENGINEERS

PROJECT No.	DATE	DRAWING No.
822–43	MAY 2022	ESC–1



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

LEGEND

- 58.20 — PROPOSED ELEVATION
- ×58.18 — EXISTING ELEVATION
- F.F. — PROPOSED TOP OF GROUND FLOOR ELEVATION
- T.O.F. — PROPOSED TOP OF CONCRETE FOUNDATION ELEVATION
- U.S.F. — PROPOSED UNDERSIDE OF CONCRETE FOOTING ELEVATION
- D/W — PROPOSED DRIVEWAY
- S — EXISTING SANITARY SEWER
- ST — EXISTING STORM SEWER
- W — EXISTING WATERMAIN
- PROPOSED 150mmø PVC SANITARY LATERAL SERVICE @ 1% (MIN.) SLOPE
- PROPOSED 150mmø PVC STORM LATERAL SERVICE @ 1% (MIN.) SLOPE
- PROPOSED 150mmø WATER SERVICE (PVC CL 150 DR–18)
- MH–S — EXISTING SANITARY MANHOLE
- MH–ST — EXISTING STORM MANHOLE
- CB — EXISTING CATCH BASIN
- WV — EXISTING WATER VALVE
- FH — EXISTING FIRE HYDRANT
- UP — EXISTING UTILITY POLE
- OHW — EXISTING OVERHEAD WIRES
- V&VB — PROPOSED VALVE AND VALVE BOX (V&VB)
- PROPOSED GENERAL DIRECTION OF LOT GRADING AND SURFACE FLOW
- PROPOSED HIGH RIDGE LINE
- PROPOSED TERRACING 3:1 (MAX.) TO 1 V
- PROPOSED RETAINING WALL
- T/W — PROPOSED TOP OF RETAINING WALL ELEVATION
- B/W — PROPOSED BOTTOM OF RETAINING WALL ELEVATION
- RD#1 — PROPOSED ROOF DOWNSPOUT LOCATION AND NUMBER
- PROPOSED RIGID STYROFOAM INSULATION 50mm THICK (MIN.)
- FD — PROPOSED FLOOR DRAIN LOCATION
- SP — PROPOSED WEEPING TILE SUMP PIT LOCATION C/W DUPLEX SUMP PUMPS (REFER TO ARCHITECTURAL DRAWINGS FOR DETAILS)
- SS — PROPOSED SANITARY HOLDING TANK LOCATION C/W DUPLEX SEWAGE PUMPS
- SC — PROPOSED ROOF SCUPPER LOCATION
- PROPOSED ASPHALT OVERLAY AREA CONSISTING OF: A 40mm LIFT OF HMA SUPERPAVE 12.5mm PG 58–34 LEVEL B
- PROPOSED SIAMESE LOCATION AS PER ARCHITECT'S MARKED–UP DETAILS OF DECEMBER 4, 2023
- SC — PROPOSED ROOF SCUPPER LOCATION WITH CONCRETE SPLASH PAD BELOW (SEE NOTE #44 ALSO FOR DETAILS)
- M — DENOTES PROPOSED WATER METER LOCATION AS PER ARCHITECT'S MARKED–UP DETAILS OF DECEMBER 4, 2023
- RM — DENOTES PROPOSED REMOTE WATER METER LOCATION AS PER ARCHITECT'S MARKED–UP DETAILS OF DECEMBER 4, 2023
- DENOTES LIMIT OF ROAD CUT AND RESURFACING
- DENOTES PROPOSED DRAINAGE SWALE LOCATION
- DENOTES NEW FLAT ROOF AREA AT EXISTING BUILDING

NOTES

1. 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 STRUCUTRES AND CHECK WITH AUTHORITIES AND UTILITIES TO HIS SATISFACTION BEFORE DIGGING.

2. 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).

3. 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 AT MANHOLES 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. R1730–R–10 REV. No. 3 DATED 27/02/92 SHEET 10 OF 26 CONTRACT No. 89–507 FOR ADDITIONAL DETAILS.

4. SITE LAYOUT AND DETAILS FOR GRADING AND SERVICING DESIGN WERE PROVIDED BY THE OWNER'S ARCHITECT REDLINE ARCHITECTURE INC. AS DETAILED ON THEIR SITE PLAN (SHEET No. A0 DATED MAY 11, 2021) RECEIVED ON MAY 30, 2022 AND UPDATED ON NOVEMBER 7, 2023. BUILDING DETAILS BY E–MAIL 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.

5. 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.

6. PIPE SIZES SHOWN ON THIS PLAN ARE METRIC.

7. 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.

8. CONNECTION OF THE 150mmø WATER SERVICE TO THE EXISTING 200mmø MURRAY STREET WATERMAIN SHALL BE CARRIED OUT BY THE CITY OF OTTAWA. EXCAVATION, BACKFILLING, AND RESTORATION SHALL BE CARRIED OUT BY OWNER'S THE 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.

9. CONSTRUCT ALL WATERMAINS, WATER SERVICES, SANITARY AND STORM SEWER SYSTEMS IN ACCORDANCE WITH CITY OF OTTAWA'S LATEST REVISED STANDARD OTHERWISE AS PER OPSS REQUIREMENT AND DONE TO THE SATISFACTION OF THE CITY.

10. BEDDING AND HAUNCHING MATERIAL FOR SEWER INSTALLATIONS TO BE GRANULAR "A" INSTALLED AND COMPACTED AS PER CITY STANDARD DETAIL DWG. No. S6 AND S7.

11. STORM AND SANITARY LATERALS (150mmø) SHALL BE PVC DR–28 OR EQUIVALENT.

12. ALL WATER SERVICES/MAINS SHALL HAVE 2.4m COVER (min.). THE 150mmø 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.

13. 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).

14. ALL PROPOSED BUILDING SANITARY, STORM AND WATER SERVICES SHALL TERMINATE ± 1.0m OUTSIDE THE FOUNDATION WALL AND CONNECTION TO PLUMBING BY OTHERS.

15. 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.

16. 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.

17. 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.

18. 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.

19. 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, OPSS 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.

20. 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.

21. 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.

22. SITE SERVICING 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.

23. THE EXISTING CONCRETE CURB ON MURRAY STREET IF DAMAGED BY THE CONTRACTOR DURING CONSTRUCTION SHALL BE REINSTATED BY THE CONTRACTOR TO THE SATISFACTION OF THE CITY OF OTTAWA AND IN ACCORDANCE WITH THE LATEST REVISED CITY ENGINEERING STANDARDS.

24. THE CONTRACTOR, UPON COMPLETION OF THE NEW DRIVEWAY, SHALL RESTORE THE EXISTING MURRAY STREET ROADWAY BOULEVARD 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.

25. 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, REQUIREMENTS AND DETAILS PER CITY DWG. NO. SC13 DATED MARCH 2006. ALL WORKS SHALL BE CARRIED OUT TO THE CITY'S SATISFACTION.

26. 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.

27. 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.

28. WHERE FROST COVER FROM UNDERSIDE OF BUILDING CONCRETE FOOTING TO PROPOSED FINISHED GROUND ELEVATION IS LESS THAN 1.55m, 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.

29. IT IS RECOMMENDED THAT A FULL PORT BACKWATER VALVE BE INSTALLED FOR THE SANITARY SERVICE LATERAL AND A BACKWATER VALVE FOR THE STORM SERVICE LATERAL PROPOSED TO SERVICE THE NEW BUILDING UNDER THE CURRENT REGULATION OF THE ONTARIO PLUMBING CODE AS PER CITY OF OTTAWA S14, S14.1 AND S14.2. THE OWNER'S ARCHITECT AND PLUMBER SHALL CHECK THE CURRENT ONTARIO PLUMBING CODE FOR REQUIREMENTS FOR A BACKWATER VALVE IN THE BUILDING AND AS PER THE MECHANICAL ENGINEER'S DRAWINGS AT THE SANITARY AND STORM SEWER SERVICE LINES.

30. EXISTING LATERALS AND WATER SERVICE PIPING HAVE BEEN AND/OR SHALL BE ABANDONED. THE WATER SERVICE SHALL BE BLANKED AND CAPPED AT THE MAIN AS PER CITY'S REQUIREMENTS. THE SEWER LATERAL(S) SHALL BE CAPPED AND/OR PLUGGED AT THE FRONT PROPERTY LINE. ALL WATER AND SEWER LATERAL WORKS SHALL BE CARRIED OUT TO THE CITY'S SATISFACTION.

31. a) THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES TO PROVIDE FOR PROTECTION OF THE RECEIVING STORM SEWER DURING CONSTRUCTION ACTIVITIES. THESE PRACTICES ARE REQUIRED TO ENSURE NO SEDIMENT AND/OR ASSOCIATED POLLUTANTS ARE RELEASED TO THE RECEIVING WATERCOURSE. THESE PRACTICES INCLUDE INSTALLATION OF SEDIMENT BARRIERS ON ALL CATCH BASIN AND MAINTENANCE HOLES AND A SILT FENCE BARRIER (AS PER OPSD 219.110 AND ASSOCIATED SPECIFICATIONS) ALONG THE PROPERTY LIMITS OF THE PROPOSED DEVELOPMENT AND ALL OTHER AREAS THAT SHEET DRAIN OFF SITE. MAINTENANCE HOLE SEDIMENT BARRIERS TO BE AMOCO 4555 NONWOVEN GEOTEXTILE OR APPROVED EQUIVALENT.

b) THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.

32. INSULATE BUILDING SERVICE LATERALS AND STORM PIPES WITHIN PRIVATE PROPERTY AND ROAD RIGHT OF WAY WHERE GROUND COVER FOR FROST PROTECTION IS LESS THAN 2.4m FOR WATER SERVICE AND 2.4m FOR SANITARY AND STORM GRAVITY SEWERS. MINIMUM GROUND COVER OVER HOUSE SERVICE PIPES SHALL NOT BE LESS THAN 2.0m. EXACT INSULATION THICKNESS SHALL BE DETERMINED BY OWNER'S INSPECTOR ON–SITE AND/OR OWNER'S SOILS ENGINEER. ALL INSULATION WORKS SHALL BE CARRIED OUT AS PER CITY OF OTTAWA'S CURRENT ENGINEERING STANDARDS DETAILS W22 AND W23.

33. 300mm MINIMUM SEPARATION BETWEEN EXISTING WATERMAIN AND PROPOSED SERVICE LATERALS AS PER CITY STANDARDS. IF 300mm MINIMUM SEPARATION CANNOT BE MET, UNSHRINKABLE FILL SHALL BE USED.

34. THE PROPOSED RESIDENTIAL APARTMENT BUILDING WILL HAVE A SPRINKLER SYSTEM FOR FIRE PROTECTION.

35. a) GIVEN THE ARCHITECTURAL REQUIREMENTS FOR THE PROPOSED BUILDING BASEMENT AND SUNKEN AREA, THE UNDERSIDE OF CONCRETE FOOTING IS BELOW THE PROPOSED SANITARY LATERAL INVERT WHICH OUTLET TO THE MURRAY STREET SANITARY SEWER. THE OWNER'S ARCHITECT IS AWARE OF THIS CONSTRAINT. THE DEVELOPER AND HIS ARCHITECTS WILL MAKE INTERNAL SEWAGE PUMPING PROVISIONS TO PUMP SANITARY SEWAGE FLOW FROM BASEMENT AREA OF THE BUILDING UP TO THE SANITARY LATERAL FOR THIS APARTMENT BUILDING. SEE LATEST REVISED ARCHITECTURAL PLANS FOR OUTLET LOCATION, DISCHARGE PIPE HEIGHT DETAILS, SEWAGE PIT/TANK SIZE, AND PUMPING SYSTEM FOR THIS BUILDING. IT IS RECOMMENDED THAT THE SANITARY SEWAGE TANK BE OVERSIZED. A DUPLEX PUMPING SYSTEM SHALL BE IN THE SANITARY SEWAGE TANK.

b) THE ARCHITECT AND OWNER'S/DEVELOPER'S MECHANICAL ENGINEER SHALL ENSURE THAT SANITARY SEWAGE FLOW FROM FLOOR LEVELS ABOVE THE BASEMENT AND SUNKEN AREA LEVEL OF THIS BUILDING BE DIRECTED AND OUTLETTED TO THE PROPOSED GRAVITY FLOW SANITARY LATERAL PIPE AND NOT INTO THE BASEMENT AND SUNKEN AREA SEWAGE TANK FOR PUMPING.

c) THE PROPOSED SANITARY TANK AND PUMPING SYSTEM ARE FOR DRAINAGE OF BASEMENT AND SUNKEN AREA ONLY AND ITS FLOOR DRAINS AS PER ARCHITECT'S DRAWINGS IN ACCORDANCE WITH THE LATEST REVISED ONTARIO BUILDING CODE.

36. BUILDING WEEPING TILE DRAINAGE FOR THE PROPOSED APARTMENT BUILDING SHALL BE SUMP–PUMPED VIA FORCEMAIN FROM BASEMENT SUMP PIT(S) AND DIRECTED TO THE PROPOSED 150mm DIA. PVC STORM LATERAL THEN OUTLET TO THE CITY STORM SEWER AT MURRAY STREET. ALL WORKS SHALL BE CARRIED OUT TO CITY'S REQUIREMENTS AND IN COMPLIANCE WITH LATEST REVISED ENGINEERING STANDARDS.

37. SANITARY AND WEEPING TILE WATER SUMP PIT(S) LOCATION AS PER ARCHITECT'S BASEMENT FLOOR PLAN.

38. THE OWNER'S ARCHITECTS SHALL INFORM THE OWNERS THAT AN ONGOING YEAR ROUND MAINTENANCE PROGRAM IS REQUIRED FOR THIS BUILDING TO ENSURE THAT THE SEWAGE TANK SHALL BE ANNUALLY INSPECTED AND CLEANED IF NECESSARY. ALL PUMPS USED IN THIS BUILDING ARE TO BE DETERMINED BY THE OWNER'S MECHANICAL ENGINEER AND/OR PLUMBER BASED ON THEIR SPECIFIC USAGE UNDER THE PRESENT PLUMBING CODE AND CITY REQUIREMENTS.

39. THE ARCHITECTS SHALL INFORM THE OWNERS TO HAVE AVAILABLE AT ALL TIMES A BACKUP GENERATOR ON STANDBY IN THE BUILDING IN THE EVENT OF A POWER BLACKOUT OR OTHER EMERGENCIES.

40. NO EXCESS DRAINAGE, DURING AND AFTER CONSTRUCTION, WILL BE DIRECTED TOWARDS THE NEIGHBORS' PROPERTIES.

41. ALL TREES ON THE RIGHT–OF–WAY ARE TO BE MAINTAINED BEFORE AND AFTER CONSTRUCTION AND ALL TREES WITHIN THE PROPERTY SHALL BE PROTECTED AS PER THE 'MUNICIPAL TREES AND NATURAL AREAS PROTECTION BY–LAWS' AND THE 'URBAN TREES CONSERVATION BY–LAW' AS AMENDED FROM TIME TO TIME.

42. THERE WILL BE NO ALTERATION TO THE EXISTING GRADE AND DRAINAGE PATTERN ON THE PROPERTY LINES.

43. THE PROPOSED BUILDING SEWER SERVICES WILL BE SLEEVED THROUGH THE FOUNDATION WALL.

44. BUILDING SCUPPERS LOCATED WITHIN 1.5m FROM PROPERTY LINES WILL BE EQUIPPED WITH A SPLASH PAD.

NO.	REVISION	DATE	BY
4	REVISIONS AS PER CITY'S REVIEW COMMENTS OF AUGUST 31, 2023	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

LICENSED PROFESSIONAL ENGINEER — 12/05/23 — TOM L. MAK — PROVINCE OF ONTARIO

SCALE
0 1 3 5m
1:100 HORIZONTAL
VERTICAL

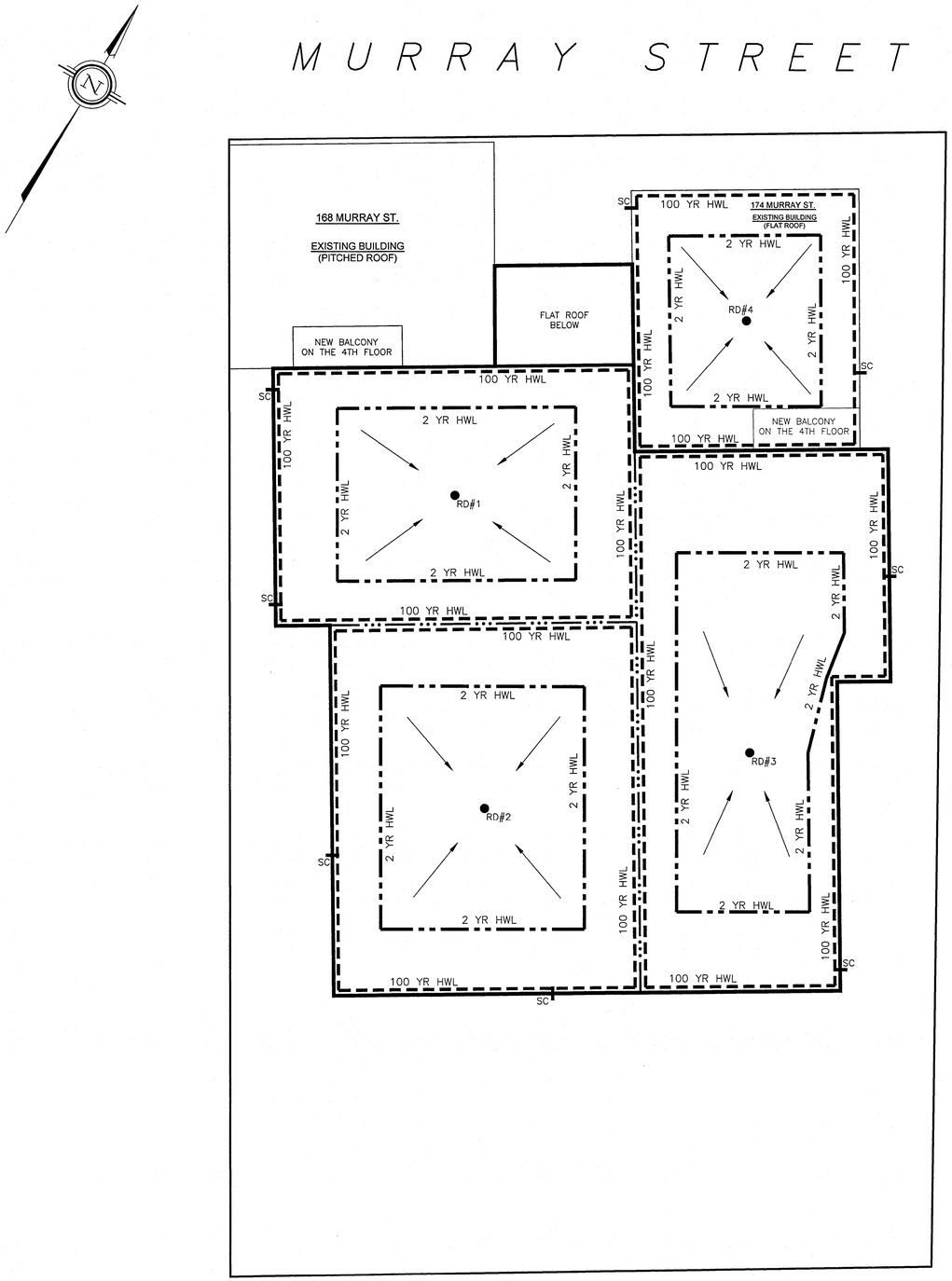
DESIGN T.L.M.
CHECKED T.L.M.
DRAWN BY P.M.
CHECKED T.L.M.
APPROVED T.L.M.

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

DRAWING TITLE
PROPOSED SITE GRADING AND SERVICING PLAN

T.L. MAK ENGINEERING CONSULTANTS LTD.
CONSULTING ENGINEERS

PROJECT No.	DATE	DRAWING No.
822–43	MAY 2022	G–1



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 (m³)		MAX. STORAGE AVAILABLE (m³)
			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.

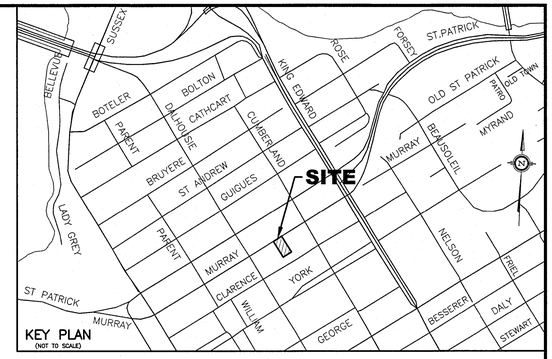
– SEE STORM DRAINAGE REPORT No. R-822-43 DATED JUNE 2023 FOR DETAILS ALSO.

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

WATTS® | **Adjustable Accutrol Weir** Tag: _____ | **Adjustable Flow Control for Roof Drains**

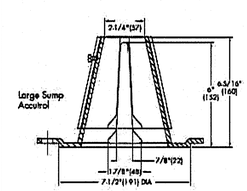
ADJUSTABLE ACCUTROL (for Large Sump Roof Drains only)

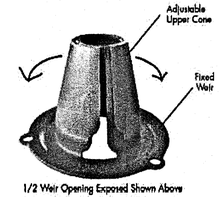
For more flexibility in controlling flow with heads deeper than 2", Watts Drainage offers the Adjustable Accutrol. The Adjustable Accutrol Weir is designed with a single parabolic opening that can be covered to restrict flow above 2" of head to less than 5 gpm per inch, up to 6" of head. To adjust the 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.





1/2 Weir Opening Exposed Shown Above

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	25
1/2	5	10	12.5	15	17.5	20
1/4	5	10	11.25	12.5	13.75	15
Closed	5	5	5	5	5	5

NO.	REVISION	DATE	BY

LICENSED PROFESSIONAL ENGINEER — TONY L.M. MAK — 06/28/23 — PROVINCE OF ONTARIO

SCALE: 0 0.75 2.25 3.75m — 1:75 HORIZONTAL — VERTICAL

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