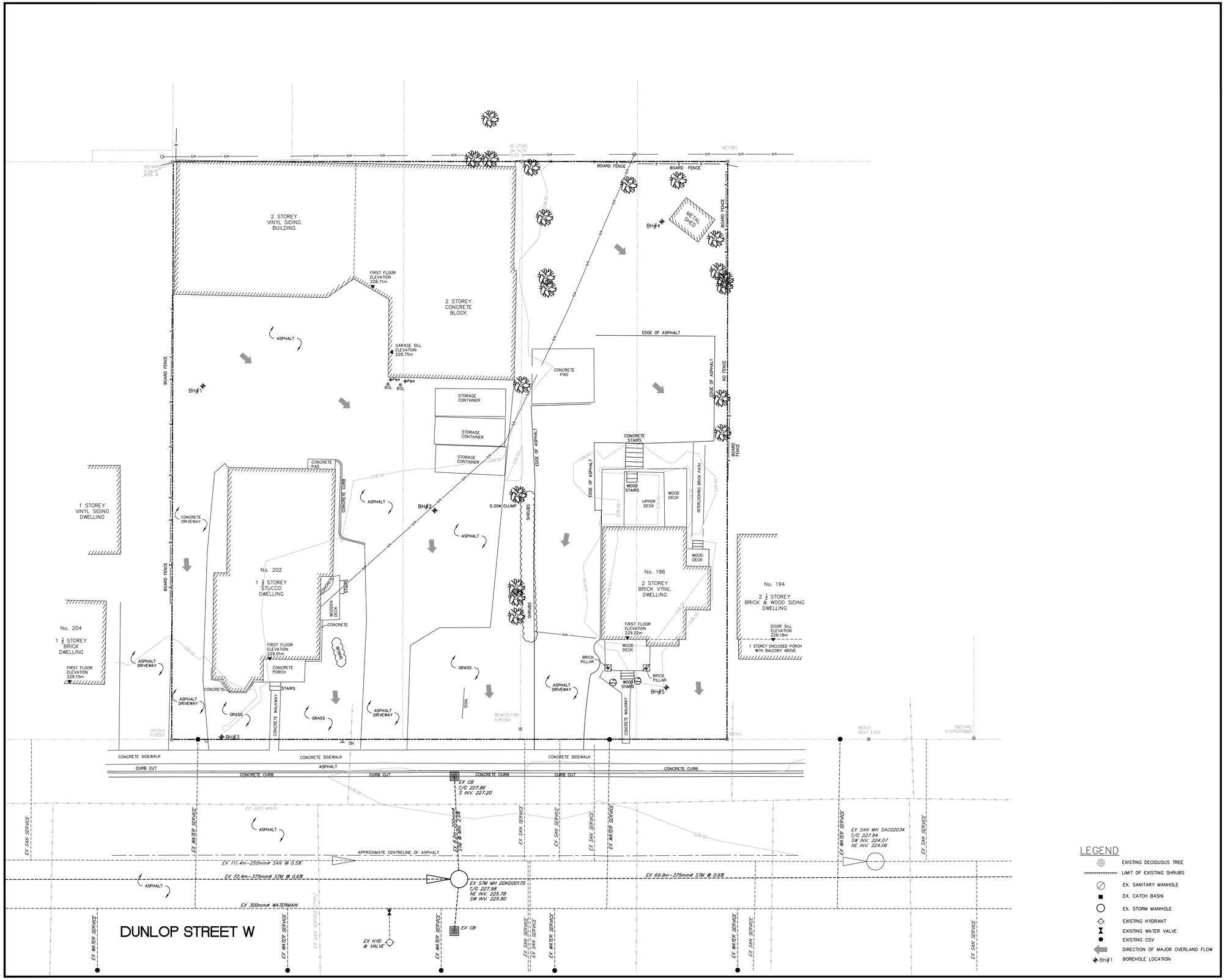


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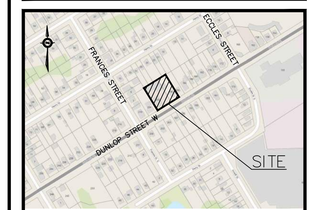


KEY MAP

NOTES

1. TOPOGRAPHIC SURVEY COMPLETED BY KRCMAR SURVEYORS LTD., DATED JUNE 10 2022.
2. SITE PLAN INFORMATION PROVIDED BY PATRICK MARKUS LUCKIE, ARCHITECT, DATED APRIL 25, 2024.

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ELEV. 226.540

| NO. | YY.MM.DD | REVISION | BY. |
|---|---|---|---|
| 1 | 24.03.21 | REVISED PER AGENCY COMMENTS | C.A. |

SEAL

LICENSED PROFESSIONAL ENGINEER
D. P. HORDYK
100530228
2024-07-19
PROVINCE OF ONTARIO

NORTH ARROW

| | |
|---|---|
| DESIGN BY: | D.H. |
| DRAWN BY: | C.A. |
| CHECKED | J.V. |
| DATE: | SEPT 2023 |
| SCALE: | 1:150 |

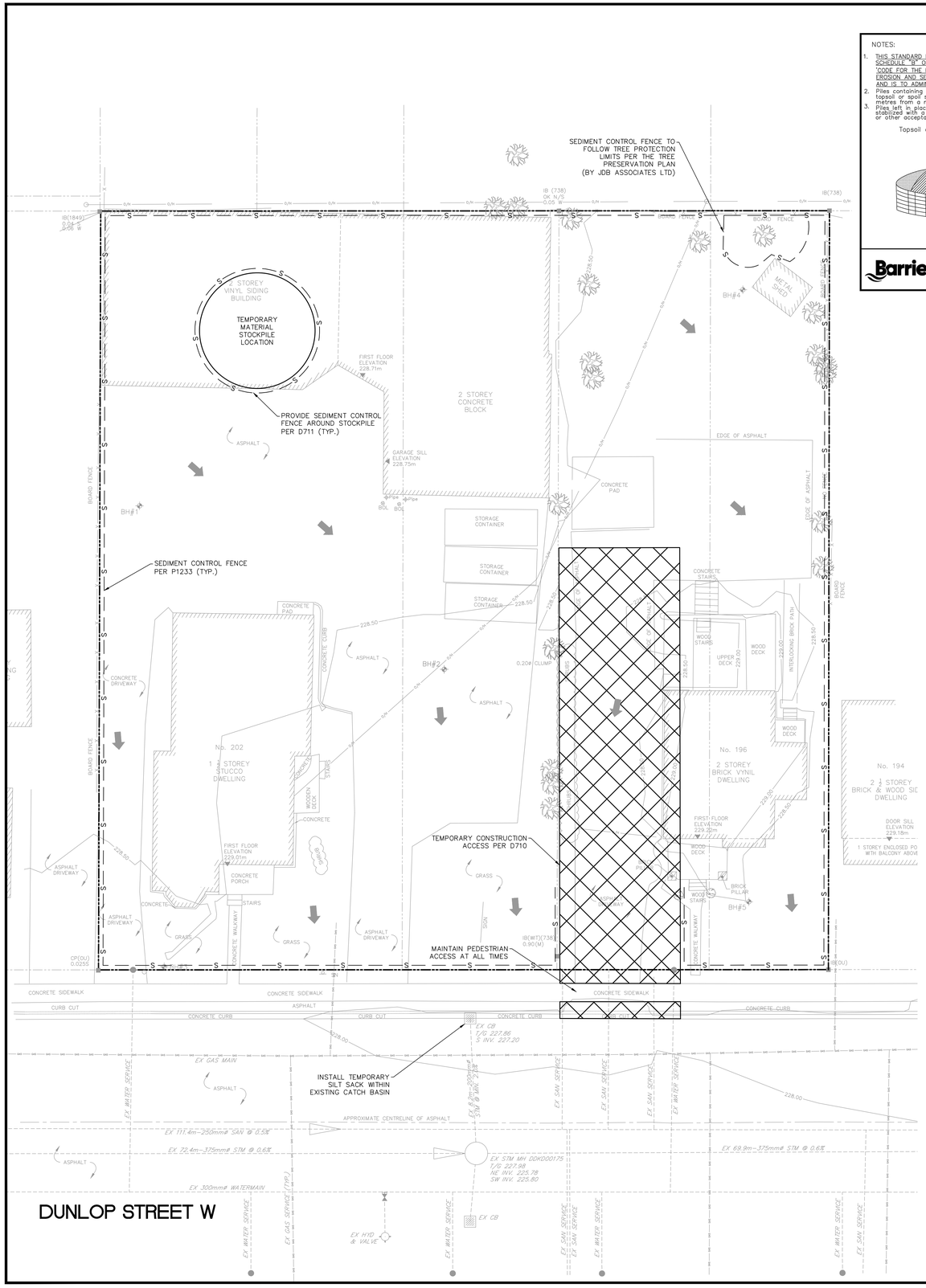
CLIENT/PROJECT

202 DUNLOP STREET WEST APARTMENT DEVELOPMENT

DRAWING TITLE

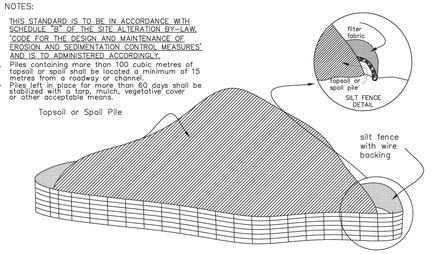
EXISTING CONDITIONS PLAN

| PROJECT NO. | DRAWING NO. | REVISION |
|---|---|---|
| 22-11713-B | EX-1 | 1 |

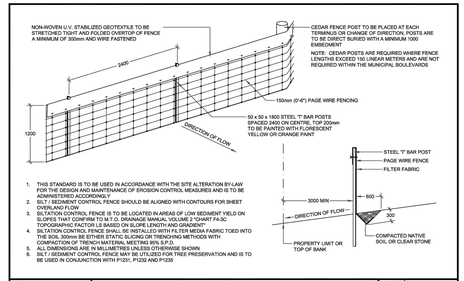



NOTES:

1. THIS STANDARD IS TO BE IN ACCORDANCE WITH SCHEDULE "B" OF THE SITE ALTERATION BY-LAW, 'CODE FOR THE DESIGN AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROL MEASURES' AND IS TO ADMINISTERED ACCORDINGLY.
2. Piles containing more than 100 cubic metres of topsoil or spoil shall be located a minimum of 15 metres from a roadway or channel.
3. Piles left in place for more than 60 days shall be stabilized with a tarp, mulch, vegetative cover or other acceptable means.

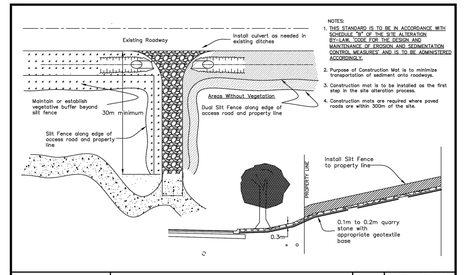



Barrie | Siltation Control | REV No. 1 | DATE: APR 2023 | SCALE: N.T.S | D711




1. THIS STANDARD IS TO BE USED IN ACCORDANCE WITH THE SITE ALTERATION BY-LAW FOR THE DESIGN AND MAINTENANCE OF EROSION CONTROL MEASURES AND IS TO BE ADMINISTERED ACCORDINGLY
2. SILT / SEDIMENT CONTROL FENCE SHOULD BE ALIGNED WITH CONTOURS FOR SHEET OVERLAND FLOW
3. SILTATION CONTROL FENCE IS TO BE LOCATED IN AREAS OF LOW SEDIMENT YIELD ON SITE WITH SLOPES NOT EXCEEDING 50% AND WITH A TOPOGRAPHIC FACTOR (LS BASED ON SLOPE LENGTH AND GRADIENT)
4. SILTATION CONTROL FENCE SHALL BE INSTALLED WITH FILTER MEDIA FABRIC TOED INTO THE SOIL 300mm BE EITHER STATIC SLICING OR TRENCHING METHODS WITH COMPACTION OF TRENCH MATERIAL MEETING 95% S.P.D.
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN
6. SILT / SEDIMENT CONTROL FENCE MAY BE UTILIZED FOR TREE PRESERVATION AND IS TO BE USED IN CONJUNCTION WITH P1231, P1232 AND P1233

Barrie | FENCE SILTATION CONTROL | REV No. 3 | DATE: APR 2023 | SCALE: N.T.S. | P1233

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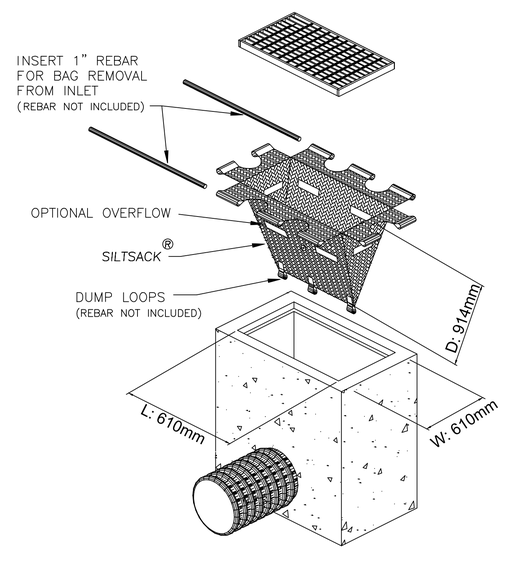
2. Purpose of Construction Mat is to minimize transportation of sediment onto roadways.
3. Construction mat is to be installed as the first step in the site alteration process.
4. Construction mats are required where paved roads are within 30m of the site.

Barrie | Construction Entrance | REV No. 2 | DATE: APR 2023 | SCALE: N.T.S | D710




TYPICAL SLIT SACK CONSTRUCTION TYPE B

LEGEND

- EXISTING TREE
- LIMIT OF EXISTING VEGETAION
- EX. SANITARY MANHOLE
- EX. CATCH BASIN
- EX. STORM MANHOLE
- EXISTING HYDRANT
- EXISTING WATER VALVE
- EXISTING CSV
- DIRECTION OF MAJOR OVERLAND FLOW
- BH1 BOREHOLE LOCATION
- PROP. SILT FENCE
- CONSTRUCTION ENTRANCE MAT

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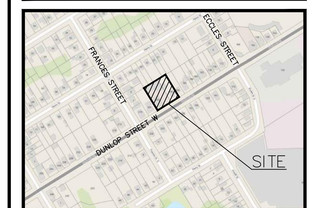


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SEAL

LICENSED PROFESSIONAL ENGINEER
D. P. HORDYK
100530728
2024-07-19
PROVINCE OF ONTARIO

NORTH ARROW

| | |
|---|---|
| DESIGN BY: | D.H. |
| DRAWN BY: | C.A. |
| CHECKED: | J.V. |
| DATE: | SEPT 2023 |
| SCALE: | 1:150 |

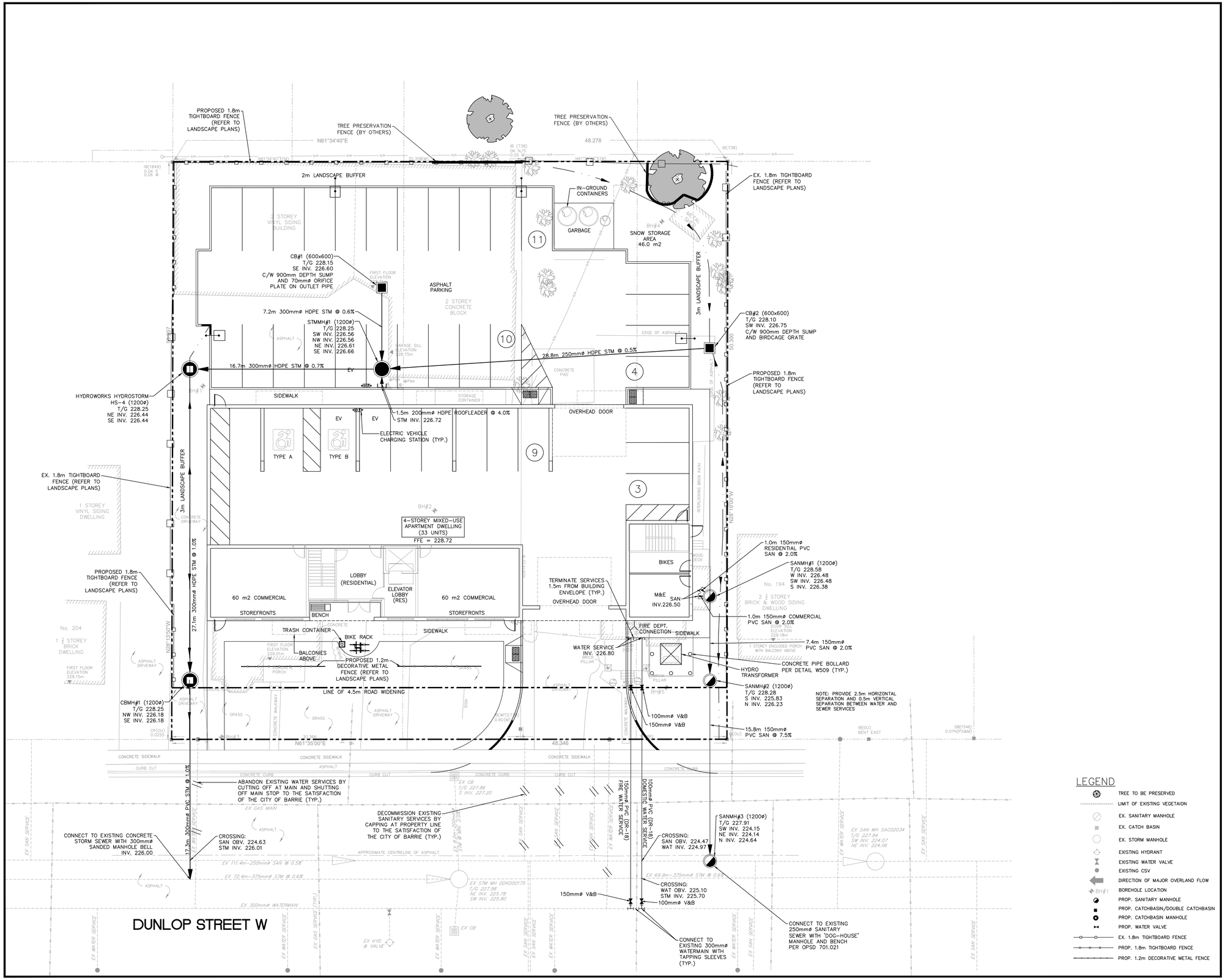
CLIENT/PROJECT

202 DUNLOP STREET WEST APARTMENT DEVELOPMENT

DRAWING TITLE

EROSION AND SEDIMENT CONTROL PLAN

| PROJECT NO. | DRAWING NO. | REVISION |
|---|---|---|
| 22-11713-B | ESC-1 | 1 |

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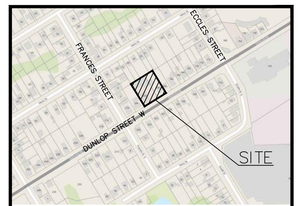


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ELEV. 226.540

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|---|---|---|---|
| 1 | 24.03.21 | REVISED PER AGENCY COMMENTS | C.A. |

SEAL

LICENSED PROFESSIONAL ENGINEER
D. P. HORDYK
100530228
2024-07-19
PROVINCE OF ONTARIO

NORTH ARROW

| | |
|---|---|
| DESIGN BY: | D.H. |
| DRAWN BY: | C.A. |
| CHECKED: | J.V. |
| DATE: | SEPT 2023 |
| SCALE: | 1:150 |

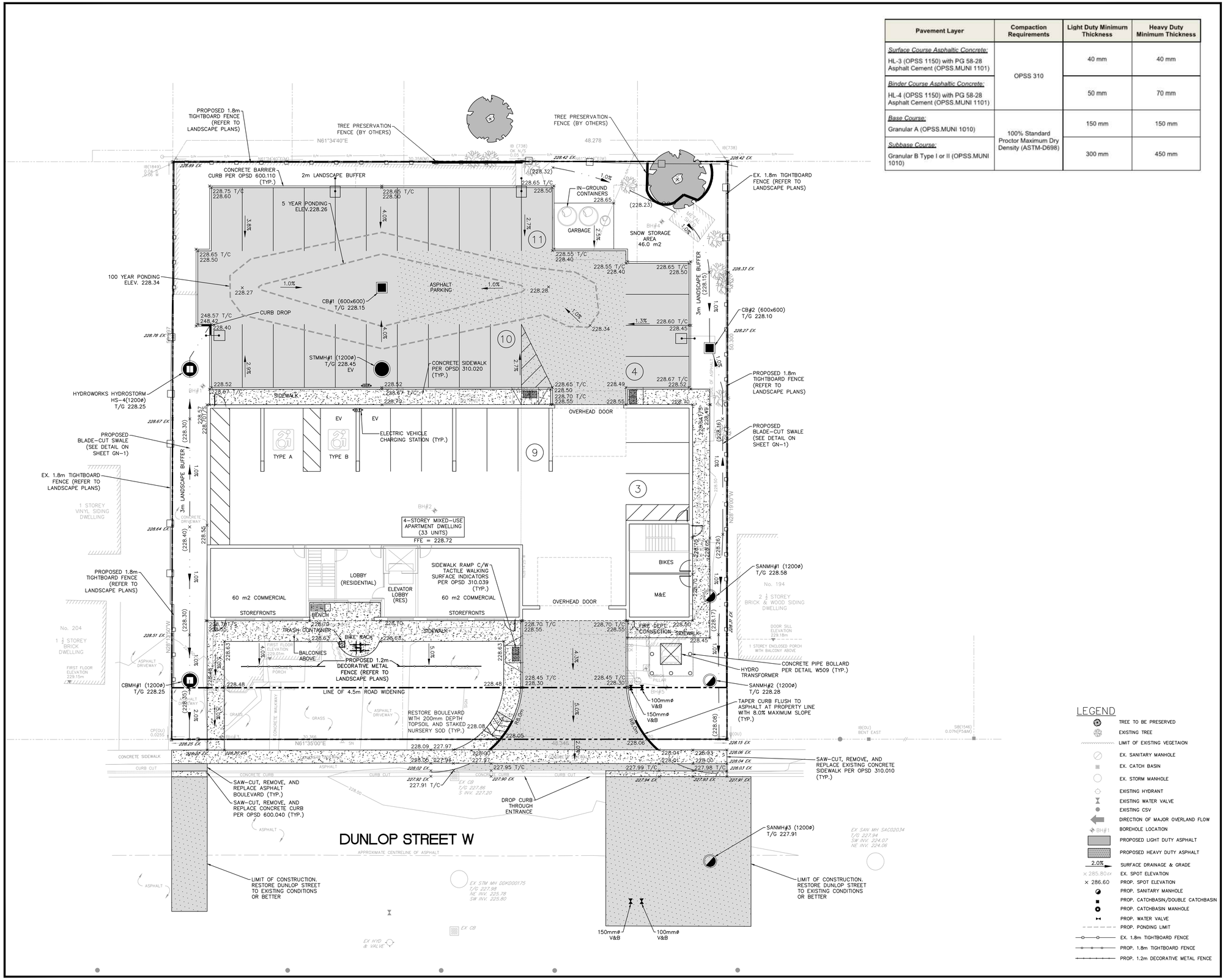
CLIENT/PROJECT

202 DUNLOP STREET WEST APARTMENT DEVELOPMENT

DRAWING TITLE

SITE SERVICING PLAN

| PROJECT NO. | DRAWING NO. | REVISION |
|---|---|---|
| 22-11713-B | SERV-1 | 1 |




| Pavement Layer | Compaction Requirements | Light Duty Minimum Thickness | Heavy Duty Minimum Thickness |
|---|---|---|---|
| *Surface Course Asphaltic Concrete:* HL-3 (OPSS 1150) with PG 58-28 Asphalt Cement (OPSS.MUNI 1101) | OPSS 310 | 40 mm | 40 mm |
| *Binder Course Asphaltic Concrete:* HL-4 (OPSS 1150) with PG 58-28 Asphalt Cement (OPSS.MUNI 1101) | | 50 mm | 70 mm |
| *Base Course:* Granular A (OPSS.MUNI 1010) | 100% Standard Proctor Maximum Dry Density (ASTM-D698) | 150 mm | 150 mm |
| *Subbase Course:* Granular B Type I or II (OPSS.MUNI 1010) | | 300 mm | 450 mm |

## LEGEND

- TREE TO BE PRESERVED
- EXISTING TREE
- LIMIT OF EXISTING VEGETAION
- EX. SANITARY MANHOLE
- EX. CATCH BASIN
- EX. STORM MANHOLE
- EXISTING HYDRANT
- EXISTING WATER VALVE
- EXISTING CSV
- DIRECTION OF MAJOR OVERLAND FLOW
- BH#1 BOREHOLE LOCATION
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED HEAVY DUTY ASPHALT
- 2.0% SURFACE DRAINAGE & GRADE
- × 285.80 ex EX. SPOT ELEVATION
- × 286.60 PROP. SPOT ELEVATION
- PROP. SANITARY MANHOLE
- PROP. CATCHBASIN/DOUBLE CATCHBASIN
- PROP. CATCHBASIN MANHOLE
- PROP. WATER VALVE
- PROP. PONDING LIMIT
- EX. 1.8m TIGHTBOARD FENCE
- PROP. 1.8m TIGHTBOARD FENCE
- PROP. 1.2m DECORATIVE METAL FENCE

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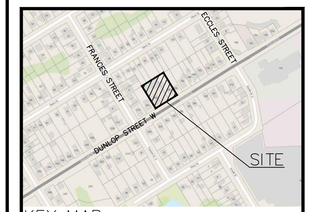


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| NO. | YY.MM.DD | REVISION | BY |
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| 1 | 24.03.21 | REVISED PER AGENCY COMMENTS | C.A. |

SEAL

LICENSED PROFESSIONAL ENGINEER
D. P. HORDYK
100530228
2024-07-19
PROVINCE OF ONTARIO

NORTH ARROW

| | |
|---|---|
| DESIGN BY: | D.H. |
| DRAWN BY: | C.A. |
| CHECKED: | J.V. |
| DATE: | SEPT 2023 |
| SCALE: | 1:150 |

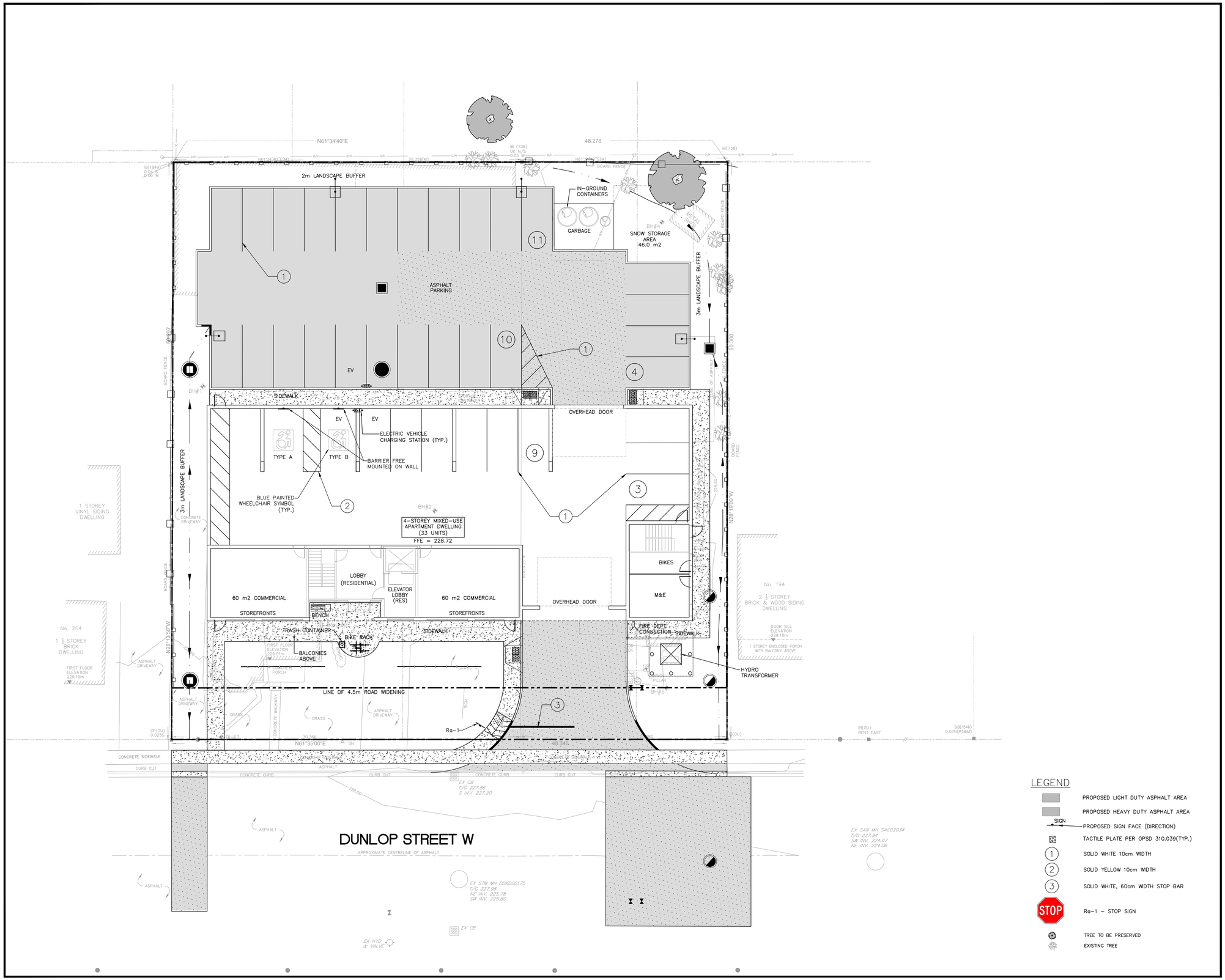
CLIENT/PROJECT

# 202 DUNLOP STREET WEST APARTMENT DEVELOPMENT

DRAWING TITLE

## SITE GRADING PLAN

| PROJECT NO. | DRAWING NO. | REVISION |
|---|---|---|
| 22-11713-B | GP-1 | 1 |




## LEGEND

- PROPOSED LIGHT DUTY ASPHALT AREA
- PROPOSED HEAVY DUTY ASPHALT AREA
- SIGN — PROPOSED SIGN FACE (DIRECTION)
- TACTILE PLATE PER OPSD 310.039(TYP.)
- (1) SOLID WHITE 10cm WIDTH
- (2) SOLID YELLOW 10cm WIDTH
- (3) SOLID WHITE, 60cm WIDTH STOP BAR
- STOP — Ra-1 – STOP SIGN
- TREE TO BE PRESERVED
- EXISTING TREE

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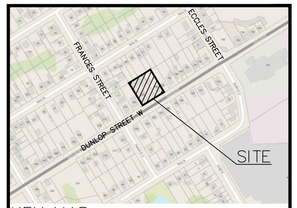


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PROVINCE OF ONTARIO

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| DATE: | SEPT 2023 |
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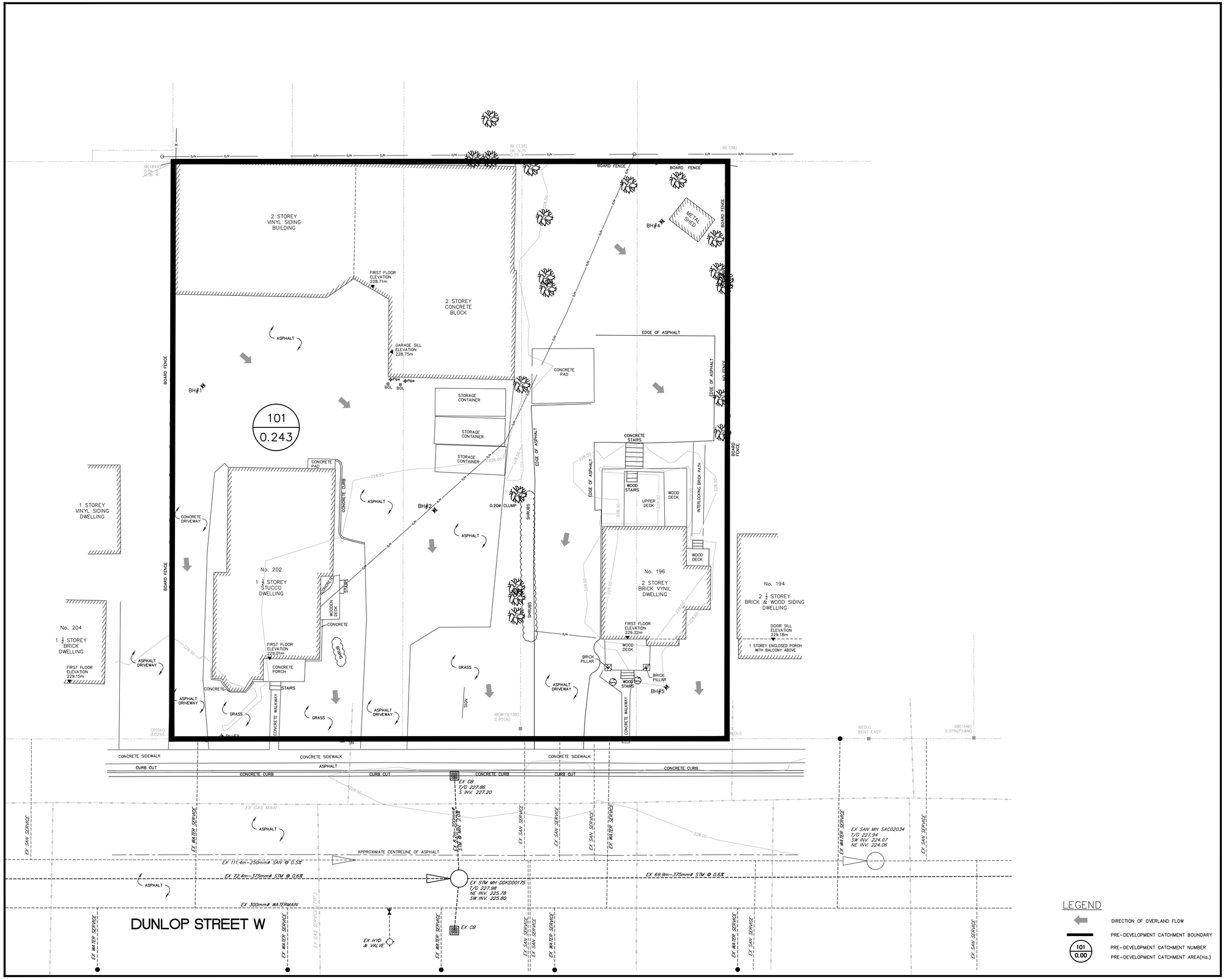
CLIENT/PROJECT

# 202 DUNLOP STREET WEST APARTMENT DEVELOPMENT

DRAWING TITLE

# PAVEMENT MARKING AND SIGNAGE PLAN

| PROJECT NO. | DRAWING NO. | REVISION |
|---|---|---|
| 22-11713-B | PM-1 | 1 |

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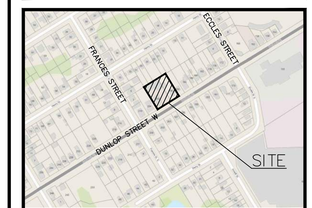


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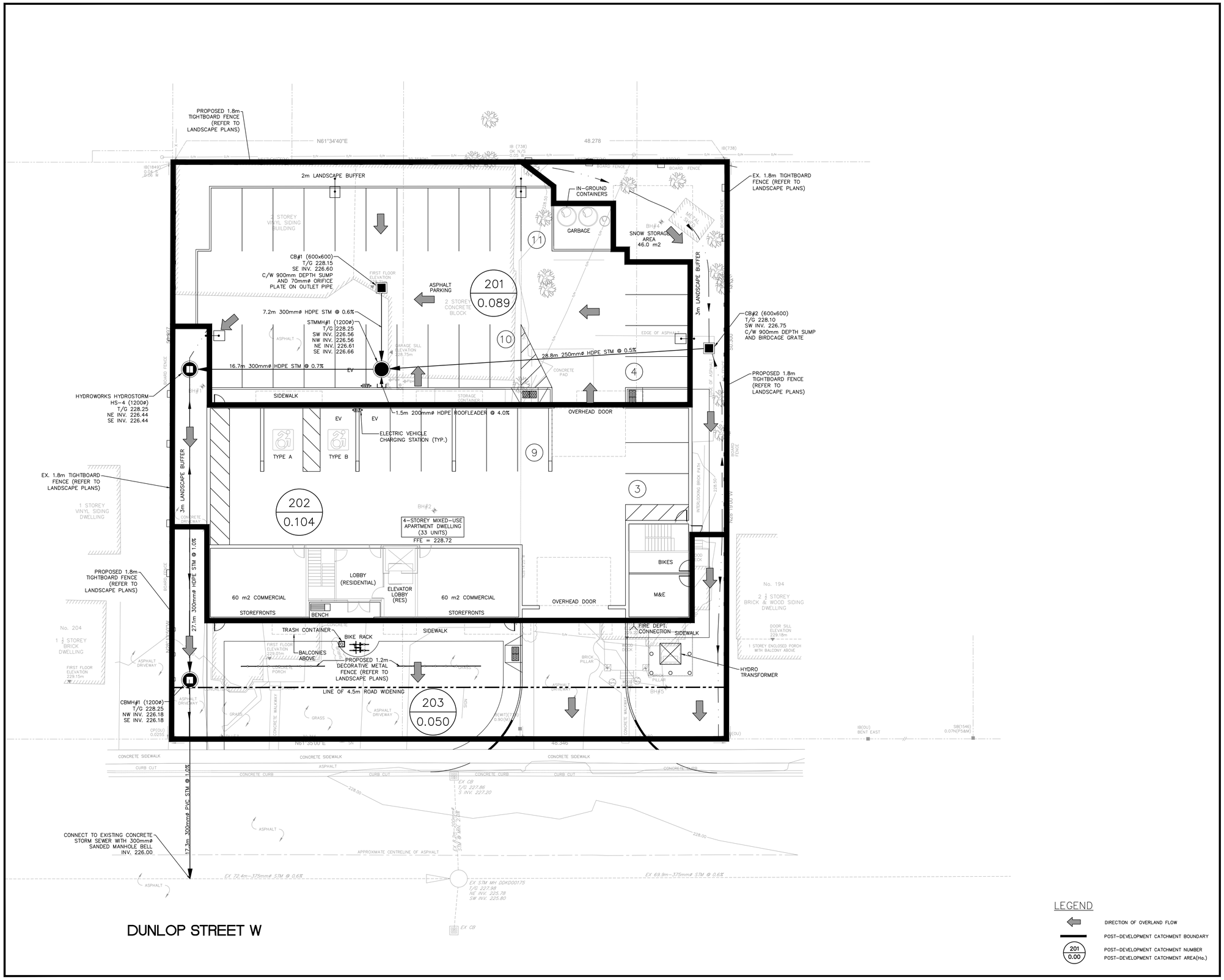
CLIENT/PROJECT

202 DUNLOP STREET WEST APARTMENT DEVELOPMENT

DRAWING TITLE

PRE-DEVELOPMENT CATCHMENT PLAN

| PROJECT NO. | DRAWING NO. | REVISION |
|---|---|---|
| 22-11713-B | PRE-1 | 1 |




## LEGEND

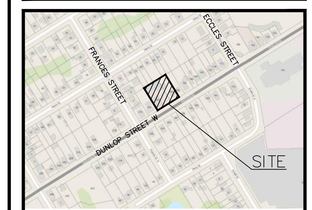
- DIRECTION OF OVERLAND FLOW
- POST-DEVELOPMENT CATCHMENT BOUNDARY
- 201 / 0.00 — POST-DEVELOPMENT CATCHMENT NUMBER / POST-DEVELOPMENT CATCHMENT AREA(Ha.)

PINESTONE ENGINEERING LIMITED | www.pel.ca

The position of existing above ground and underground utilities and facilities are not necessarily shown on the drawings, and where shown, the accuracy of the position of such utilities and facilities is not guaranteed. Before starting work, the contractor shall confirm the exact location of all existing utilities and facilities, and shall assume all liability for damage to them

Drawings shall not be used for construction unless sealed and signed. All work to be performed in accordance with the Occupational Health & Safety Act 1990.

Any errors and/or omissions shall be reported to Pinestone Engineering Ltd. without delay.




KEY MAP

NOTES

1. TOPOGRAPHIC SURVEY COMPLETED BY KRCMAR SURVEYORS LTD., DATED JUNE 10 2022.
2. SITE PLAN INFORMATION PROVIDED BY PATRICK MARKUS LUCKIE, ARCHITECT, DATED APRIL 25, 2024.

HORIZONTAL CONTROL MONUMENTS
03120080022: MONUMENT LOCATED ON SE CORNER OF INNISFIL STREET AND VESPRA STREET APPROXIMATELY 18.5m FROM CENTERLINE OF INNISFIL STREET AND APPROXIMATELY 13m FROM CENTERLINE OF VESPRA STREET
03120080023: MONUMENT LOCATED IN BROCK PARK APPROXIMATELY 22m EAST OF CENTERLINE OF INNISFIL STREET AND APPROXIMATELY 87m NORTH OF BROCK STREET.

VERTICAL CONTROL MONUMENTS
03120080022: MONUMENT LOCATED ON SE CORNER OF INNISFIL STREET AND VESPRA STREET APPROXIMATELY 18.5m FROM CENTERLINE OF INNISFIL STREET AND APPROXIMATELY 13m FROM CENTERLINE OF VESPRA STREET
ELEV: 222.437
03120080023: MONUMENT LOCATED IN BROCK PARK APPROXIMATELY 22m EAST OF CENTERLINE OF INNISFIL STREET AND APPROXIMATELY 87m NORTH OF BROCK STREET.
ELEV. 226.540

| NO. | YY.MM.DD | REVISION | BY |
|---|---|---|---|
| 1 | 24.03.21 | REVISED PER AGENCY COMMENTS | C.A. |

SEAL

LICENSED PROFESSIONAL ENGINEER
D. P. HORDYK
100330228
2024-07-16
PROVINCE OF ONTARIO

NORTH ARROW

| | |
|---|---|
| DESIGN BY: | D.H. |
| DRAWN BY: | C.A. |
| CHECKED: | J.V. |
| DATE: | SEPT 2023 |
| SCALE: | 1:150 |

CLIENT/PROJECT

**202 DUNLOP STREET WEST APARTMENT DEVELOPMENT**

DRAWING TITLE

**POST-DEVELOPMENT CATCHMENT PLAN**

| PROJECT NO. | DRAWING NO. | REVISION |
|---|---|---|
| 22-11713-B | POST-1 | 1 |

## PARKING LOT/DRIVEWAY NOTES

1) EXISTING SOILS AND GRANULAR MATERIALS TO BE REMOVED TO THE LIMITS SHOWN ON THE DRAWINGS AND ANY SURPLUS IS TO BE DISPOSED OFF-SITE AT A LOCATION CHOSEN BY, AND PAID FOR, BY THE CONTRACTOR.
2) PROPOSED SUB-GRADE TO BE INSPECTED AND PROOF-ROLLED IN THE PRESENCE OF THE GEOTECHNICAL ENGINEER AND APPROVED PRIOR TO PLACEMENT OF GRANULAR "B". DEFICIENT AREAS ARE TO BE SUB-EXCAVATED AND REPLACED WITH GRANULAR "B" AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
3) THE GRANULAR SUB-BASE IS TO BE INSPECTED AND PROOF-ROLLED IN THE PRESENCE OF THE GEOTECHNICAL ENGINEER AND APPROVED PRIOR TO PLACEMENT OF THE GRANULAR "A".
4) THE GRANULAR BASE IS TO BE INSPECTED AND PROOF-ROLLED IN THE PRESENCE OF THE GEOTECHNICAL ENGINEER AND APPROVED PRIOR TO PLACEMENT OF THE ASPHALT.
5) CONTRACTOR TO PROVIDE SAMPLES OF GRANULAR MATERIALS AND THE ASPHALT MIX DESIGNS TO THE GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION.
6) GRANULAR MATERIALS TO BE UNIFORMLY COMPACTED TO MINIMUM 100% STANDARD PROCTOR MAXIMUM DRY DENSITY. HOT LAID ASPHALT TO BE ROLLED UNIFORMLY TO A MINIMUM OF 97% MARSHALL BULK DENSITY.
7) GRASSED AREAS DISTURBED DURING CONSTRUCTION TO BE RESTORED WITH MINIMUM 200mm TOPSOIL AND SOD.
8) TOPSOIL SHALL CONFORM TO OPSS 570, EXCEPT THAT TOPSOIL SHALL CONTAIN NOT LESS THAN 4% ORGANIC MATTER FOR CLAY LOAMS AND NOT LESS THAN 2% FOR SANDY LOAMS, WITH AN ACIDITY VALUE RANGING FROM P.H. 6.0 TO P.H. 7.5 AND CAPABLE OF SUSTAINING VIGOROUS PLANT GROWTH. IT SHALL BE FREE FROM ANY ADMIXTURE OF SUBSOIL, CLAY LUMPS, STONES GREATER THAN 25MM IN DIAMETER AND ANY OTHER EXTRANEOUS MATTER.
9) SOD SHALL CONFORM TO OPSS 571.

## RESTORATION NOTES

A. REINSTATE ROADS TO PREVIOUS CONDITION OR BETTER. MINIMUM 40mm HL3, 100mm HL4, 150mm GRANULAR 'A' AND 500mm GRANULAR 'B'

B. CONTRACTOR TO RESTORE DRIVEWAYS AND BOULEVARD IN AREAS DISTURBED BY CONSTRUCTION TO EQUAL OR BETTER CONDITIONS.

C. MINIMUM GRAVEL DRIVEWAY RESTORATION TO BE 150mm, GRANULAR 'A'. ASPHALT DRIVEWAY RESTORATION TO BE 50mm OF HL3. AND 200mm GRANULAR 'A'

D. ALL GRASSED AREAS DISTURBED DURING CONSTRUCTION SHALL BE RESTORED WITH 200mm DEPTH TOPSOIL AND SOD. MAINTAIN UNTIL ESTABLISHED.

E. ALL RESTORATION WORK TO BE COMPLETED TO THE SATISFACTION OF THE ENGINEER.

GENERAL NOTES

1. DRAWINGS

A. ALL DRAWINGS SHALL BE PRODUCED IN ACCORDANCE WITH CURRENT CITY OF BARRIE STANDARDS & SYMBOLS FOR PLAN & PROFILE DRAWINGS, GENERAL SERVICE PLANS AND LOT GRADING PLANS.

2. MEASUREMENTS

A. ALL DIMENSIONS ARE IN METRES, EXCEPT PIPE DIAMETERS, WHICH ARE IN MILLIMETRES, UNLESS SPECIFIED OTHERWISE.

3. GENERAL

A. ALL WORK SHALL BE IN ACCORDANCE WITH CURRENT CITY OF BARRIE STANDARD DRAWINGS (BSD) AND ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD).

B. ORDER OF PRECEDENCE OF STANDARD DRAWINGS IS FIRSTLY CITY OF BARRIE STANDARD DRAWINGS (BSD) AND SECONDLY ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD).

C. LOCATION OF EXISTING SERVICES ARE NOT GUARANTEED. THE CONTRACTOR IS REQUIRED TO NOTIFY THE VARIOUS UTILITY COMPANIES 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY WORK.

D. A ROAD OCCUPANCY PERMIT IS REQUIRED FROM THE ROADS AND PARKS OPERATIONS BRANCH PRIOR TO THE COMMENCEMENT OF WORK WITHIN ANY CITY RIGHT-OF-WAY.

E. A SITE ALTERATION PERMIT IS REQUIRED FROM THE ENGINEERING DEPARTMENT PRIOR TO THE COMMENCEMENT OF ANY EARTH WORKS ON THE SITE.

F. NATIVE MATERIAL, SUITABLE FOR BACKFILL, SHALL BE COMPACTED TO 95% STANDARD PROCTOR MAXIMUM DRY DENSITY.

G. GRANULAR MATERIAL , USED FOR BACKFILL , SHALL BE PLACED IN LAYERS 150mm IN DEPTH MAXIMUM AND COMPACTED TO 100% STANDARD PROCTOR MAXIMUM DRY DENSITY.

H. ALL DISTURBED AREAS ARE TO BE REINSTATED TO THEIR ORIGINAL CONDITION OR BETTER, AS DETERMINED BY THE CITY ENGINEERING DEPARTMENT.

I. ALL SILT CONTROL AND EROSION PROTECTION DEVICES ARE TO BE IN PLACE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION AND SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL CONSTRUCTION IS COMPLETE AND THE GRASS HAS ESTABLISHED GROWTH, SUBJECT TO APPROVAL BY THE CITY ENGINEERING DEPARTMENT.

| Barrie | Development General Notes | REV No. 5 | DATE: APR 2023 | SCALE: N.T.S | G200B |
|---|---|---|---|---|---|

STORM SEWER

A. STORM SEWER TO BE PROVIDED ON ALL ROADS WITH CURB AND GUTTER.

B. PLACE ALL CATCH BASIN LATERALS AT 2% GRADE UNLESS OTHERWISE NOTED. PIPE SIZE MINIMUM 250mm DIA. SINGLE , 300mm DIA. DOUBLE.

C. STORM SEWERS SHALL BE CONSTRUCTED WITH BEDDING AS PER OPSD-802.010 (GRAN. 'A' EMBEDMENT MATERIAL) FOR FLEXIBLE PIPES AND OPSD-802.030 OR 802.031 CLASS B (GRAN. 'A' BEDDING MATERIAL) FOR RIGID PIPE UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF ENGINEERING.

D. MAINTENANCE HOLE TOPS (FRAMES) AND CATCH BASIN (FRAMES) ARE TO BE SET TO BASE COURSE ASPHALT GRADE AND THEN ADJUSTED TO FINAL GRADE WHEN THE TOP LIFT OF ASPHALT IS PLACED. ALL ADJUSTMENT WILL BE ACCORDANCE WITH BSD-N2.

E. STORM SEWER TO BE LOCATED OFFSET 3.0m SOUTH OR EAST OF CENTRELINE UNLESS OTHERWISE SPECIFIED.

F. ALL CONNECTIONS TO THE STORM MAIN SHALL BE MADE WITH A STORM MANHOLE OR APPROVED FACTORY TEE CONNECTION AS PER OPSD-708.01 OR 708.03.

G. PIPE MATERIAL TO BE REINFORCED CONCRETE WITH A MINIMUM STRENGTH OF 50 N/m/mm CERTIFIED TO C.S.A. STANDARD A247.2-1982, CLASS 50-D (PREVIOUSLY C.S.A. STANDARD A257.2-1974, CLASS II) OR PVC CERTIFIED TO C.S.A. STANDARDS 182.2 AND 182.4.

H. STORM SEWER TO BE MINIMUM 300mm DIAMETER WITH JOINTS CONFORMING TO C.S.A. STANDARD A257.3.

I. ALL PIPE BEDDING MUST CONFORM TO OPSD, MAXIMUM COVER TABLE. NO FLEXIBLE PIPE SEWERS WILL BE INSTALLED WITH A DEPTH OF COVER GREATER THAN 6 METRES UNLESS SPECIFICALLY APPROVED BY THE DIRECTOR OF ENGINEERING.

J. ALL PIPE HANDLING INSTALLATIONS MUST BE IN STRICT COMPLIANCE WITH MANUFACTURES INSTALLATION GUIDES AND THE O.C.P.A. OR UNIBELL GUIDELINES.

K. SUMP PUMP DISCHARGE PIPING IN BOULEVARD:
IN THE EVENT OF OVERACTIVE SUMP PUMP ACTIVITY, A 150mm DIAMETER PVC DR-28 SEWER MAY BE INSTALLED, WHEN SO DIRECTED BY THE DIRECTOR OF ENGINEERING, ALONG THE FRONTAGES OF DESIGNATED LOTS, WITH AN OFFSET OF 0.6m FROM BACK OF CURB. THIS SEWER IS TO BE CAPPED AT THE UPSTREAM END AND IS TO OUTLET INTO THE NEAREST CATCHBASIN DOWNSTREAM. DEPTH OF SEWER IS TO BE EQUAL TO SUBDRAIN DEPTH. NOT TO BE DIRECTLY CONNECTED TO FOUNDATION DRAINS.

| Barrie | Storm Sewers General Notes | REV No. 5 | DATE: APR 2023 | SCALE: N.T.S. | D788 |
|---|---|---|---|---|---|

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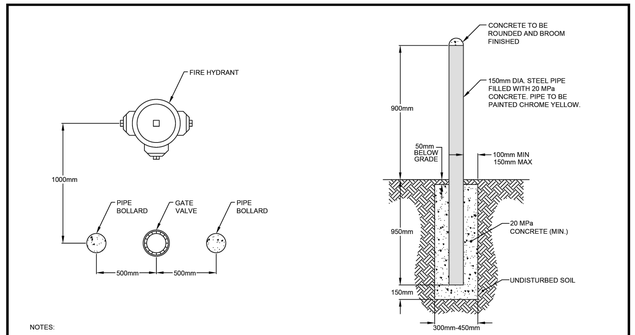



NOTES:

1. DIMENSION MAY BE REDUCED TO SUIT AVAILABLE SPACE IN BOULEVARD AREA.
   * DIMENSION - PROVIDED SPACE IS AVAILABLE
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
3. REQUIRED NUMBER OF BOLLARDS AND LOCATIONS MAY VARY WITH DIRECTION OF HAZARD(S).

| Barrie | Hydrant Bollard | REV No. 2 | DATE: APR 2023 | SCALE: N.T.S | W509 |
|---|---|---|---|---|---|

GENERAL NOTES

SANITARY SEWERS

A. SANITARY SEWER TO BE LOCATED AT THE CENTRELINE OF THE ROAD.

B. SEWERS SHALL BE CONSTRUCTED WITH BEDDINGS AS PER OPSD-1005.02, (GRAN. 'A' EMBEDMENT MATERIAL) FOR FLEXIBLE PIPES AND OPSD-1005.01 CLASS B (GRAN. 'A') FOR RIGID PIPE UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF MUNICIPAL WORKS.

C. MAXIMUM DEFLECTION FROM COMBINED LIVE AND DEAD LOADING SHALL NOT EXCEED ANY C.S.A., O.P.S. OR MANUFACTURES RECOMMENDED SPECIFICATIONS.

D. PVC, CONCRETE AND PROFILE WALL PVC SEWERS SHALL HAVE RUBBER GASKET TYPE JOINTS AND SHALL BE CERTIFIED TO CONFORM TO ALL APPLICABLE CURRENT C.S.A. SPECIFICATIONS.

E. CONCRETE SANITARY SEWERS SHALL HAVE A MINIMUM STRENGTH OF 50 N/m/mm CONFORMING TO CSA STANDARD A257.2-1982, CLASS 50-D (PREVIOUSLY C.S.A. STANDARD A257.2-1974, CLASS II).

F. MAINTENANCE HOLE TOPS (FRAMES) ARE TO BE SET TO BASE COURSE ASPHALT GRADE AND THEN ADJUSTED TO FINAL GRADE WHEN THE TOP LIFT OF ASPHALT IS PLACE. ALL ADJUSTMENT WILL BE ACCORDANCE WITH BSD-N2.

G. ALL CONNECTIONS TO NEW SANITARY MAINS SHALL BE PRE-MANUFACTURED, FABRICATED TEES CONNECTIONS TO EXISTING SANITARY SEWER SHALL BE MADE WITH APPROVED FACTORY MADE TEES OR INSERTA-TEES IN STRICT ACCORDANCE TO MANUFACTURES GUIDELINES.

| Barrie | Sanitary Sewers General Notes | REV No. 3 | DATE: APR 2023 | SCALE: N.T.S | S607 |
|---|---|---|---|---|---|

GENERAL NOTES - WATERMAIN

1. CONTRACTORS SHALL INFORM THE CITY OF BARRIE WATER OPERATIONS DEPARTMENT A MINIMUM OF 48 HOURS IN ADVANCE OF THEIR INTENTIONS TO PERFORM WORK ON WATER INFRASTRUCTURE.

2. OPERATION OF HYDRANTS AND VALVES ON THE POTABLE WATER SYSTEM BY OTHER THAN QUALIFIED WATER OPERATIONS STAFF IS PROHIBITED BY CURRENT BY-LAW. CITY SERVICE FEES ARE PER THE CURRENT FEES BY-LAW. THE CITY'S WATER OPERATIONS STAFF WILL SWAB, PRESSURE TEST, CHLORINATE AND FLUSH ALL NEW WATERMAINS.

3. MINIMUM COVER OVER WATERMAIN SHALL BE 1.7m. THE MINIMUM HORIZONTAL SEPARATION BETWEEN WATERMAIN AND SEWERS SHALL BE 2.5m. WHERE WATERMAIN CONFLICTS WITH SEWER PIPES, DEFLECT WATERMAIN HORIZONTALLY OR VERTICALLY WHILE PROVIDING A MINIMUM OF 0.5m CLEARANCE BETWEEN WATERMAIN AND SEWERS. MAINTAIN MINIMUM DEPTH OF COVER AT ALL TIMES.

4. WATERMAIN SHALL BE INSTALLED IN BEDDING AS PER OPSD 802.010 (GRANULAR 'A' EMBEDMENT MATERIAL) FOR FLEXIBLE PIPES AND OPSD 802.030 OR 802.031 CLASS 'B' (GRANULAR 'A' BEDDING MATERIAL, GRANULAR 'A' OR SELECT NATIVE COVER MATERIAL) FOR RIGID PIPE UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF WATER OPERATIONS. ALTERNATIVE EMBEDMENT MATERIAL - SAND MEETING GRADATION REQUIREMENTS OF OPSS.MUNI 1004.05.07 COMPACTED TO 95% STANDARD PROCTOR MAXIMUM DRY DENSITY IS PERMISSIBLE WHERE NOTED IN STANDARD DETAILS. GEOTECHNICAL CERTIFICATION OF MATERIAL AND COMPACTION TESTING MUST BE PROVIDED EVERY 150 METRES. THE COMPACTION TESTING MUST INCLUDE THE ENTIRE EMBEDMENT ENVELOPE (HAUNCHES, BEDDING, TOP OF PIPE AND COVER).

5. COPPER WATER MAINS AND SERVICES 25mm TO 50mm IN DIAMETER SHALL BE EMBEDDED IN SAND 100mm ABOVE AND BELOW TO CONFORM TO OPSS.MUNI 1004.05.07.

6. RESTRAINING WILL BE REQUIRED ON ALL HYDRANTS. THRUST BLOCKS, AS PER OPSD 1103.010 AND 1103.020. RESTRAINING DEVICES MAY BE REQUIRED IN ADDITION TO STANDARD CONCRETE THRUST BLOCKING WHERE SOIL CONDITIONS WARRANT AT THE CITY'S DISCRETION.

7. NEW WATERMAINS TO BE PVC DR18 CL150 MINIMUM; DUCTILE IRON CL52 AS PER THE APPROVED MANUFACTURERS PRODUCTS FOR LINEAR WATER SYSTEMS LIST.

8. TRACING WIRE SHALL BE #12 AWG HIGH STRENGTH COPPER CLAD (HS-CSS) AND SHALL BE INSTALLED ON THE TOTAL LENGTH OF ALL WATERMAIN AND BROUGHT UP AT EACH HYDRANT AND TERMINATED INSIDE A HYDRANT TEST STATION. ALL SPLICES TO UTILIZE CONNECTORS AS PER THE APPROVED MANUFACTURERS PRODUCTS FOR LINEAR WATER SYSTEMS LIST.

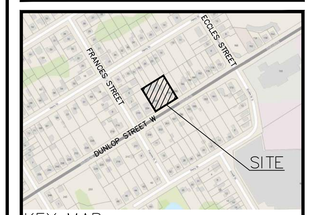
9. ALL WATER SERVICES SHALL BE MINIMUM 25mm TYPE 'K' COPPER OR 25mm CROSS-LINKED POLYETHYLENE UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF WATER OPERATIONS. WATER SERVICE SADDLES SHALL BE USED WHEN TAPPING INTO PVC WATERMAIN.

10. SERVICE TAPPINGS SHALL BE PLACED AT A MINIMUM SEPARATION OF 1.0m AND A MINIMUM OF 0.6m FROM JOINTS. (ENDS OF PIPE)

11. RISER PIPES ARE TO BE INSTALLED AS PER BSD-510, AND REMOVED AS DIRECTED. SWABBING SCHEDULE TO BE SUPPLIED BY A WATER OPERATIONS FIELD REPRESENTATIVE. ALL RISERS ARE TO BE RESTRAINED OR THRUST BLOCKED.

12. ALL NEW CURB STOPS AND BOXES TO BE LOCATED AT PROPERTY LINE AND OUT OF DRIVEWAYS AND SIDEWALKS.

| Barrie | Watermain General Notes | REV No. 4 | DATE: APR 2023 | SCALE: N.T.S. | W539 |
|---|---|---|---|---|---|




KEY MAP

NOTES

1. TOPOGRAPHIC SURVEY COMPLETED BY KRCMAR SURVEYORS LTD., DATED JUNE 10 2022.
2. SITE PLAN INFORMATION PROVIDED BY PATRICK MARKUS LUCKIE, ARCHITECT, DATED APRIL 25, 2024.

| NO. | YY.MM.DD | REVISION | BY |
|---|---|---|---|
| 1 | 24.03.21 | REVISED PER AGENCY COMMENTS | C.A. |

SEAL: LICENSED PROFESSIONAL ENGINEER D. P. HORDYK 100530228 2024-07-19 PROVINCE OF ONTARIO

NORTH ARROW

| | |
|---|---|
| DESIGN BY: | D.H. |
| DRAWN BY: | C.A. |
| CHECKED | J.V. |
| DATE: | SEPT 2023 |
| SCALE: | |

CLIENT/PROJECT

202 DUNLOP STREET WEST APARTMENT DEVELOPMENT

DRAWING TITLE

GENERAL NOTES PLAN

| PROJECT NO. | DRAWING NO. | REVISION |
|---|---|---|
| 22-11713-B | GN-1 | 1 |

**202 DUNLOP STREET W APARTMENT DEVELOPMENT**
City of Barrie

Project Number: 22-11713B
Date: July 17, 2024
Design By: DH
Checked By: JHV
File:

**SANITARY SEWER DESIGN SHEET**
**ENGINEERING AND PUBLIC WORKS**

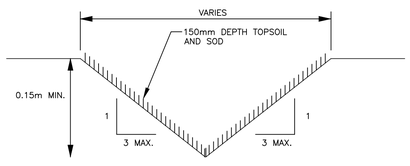
Drainage Area Plan No: N/A

**Design Parameters**

| Average Daily Flow | | | |
|---|---|---|---|
| Residential | 0.0026 L/s/c | Mannings "n" | 0.0130 |
| | | Min. Velocity | 0.60 m/sec |
| | | Max. Velocity | 3.0 m/sec |
| | | Residential Harmon Peaking Factor (F) | |
| Commercial | 0.324 L/s/ha | Infiltration | 0.10 L/s/ha |

PINESTONE ENGINEERING LTD.

| LOCATION | | | | RESIDENTIAL AREAS and POPULATION | | | | | | SCHOOL, INSTITUTIONAL | | | COMMERCIAL | | | INDUSTRIAL | | | TOTALS- C.I FLOW | INFILTRATION | | | DESIGN | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | HECTARES AND FLOW OF EACH ZONING | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | 0.00 L/s/ha | | | 0.324 L/s/ha | | | 0.00 L/s/ha | | | | | | | | | | | | | | |
| STREET | AREA NO. | MANHOLE LOCATION FROM MH | MANHOLE LOCATION TO MH | AREA | UNITS | POPUL. | CUMUL POPUL. | PEAK FACTOR "F" | PEAK RES. FLOW | AREA | CUMUL AREA | PEAK FLOW | AREA | CUMUL AREA | PEAK FLOW | AREA | CUMUL AREA | PEAK FLOW | TOTALS- C.I FLOW | AREA | CUMUL AREA | INFIL FLOW | TOTAL VOLUME FLOW | LENGTH | SLOPE | PIPE SIZE | CAPACITY | FULL FLOW VELOCITY | ACTUAL VELOCITY |
| | | | | ha | | 1000s | 1000s | | L/sec | ha | ha | L/sec | ha | ha | L/sec | ha | ha | L/sec | L/sec | ha | ha | L/sec | L/sec | m | % | mm | L/sec. | m/s | m/s |
| Proposed Apartment Building (33 Residential Units, 2 Commercial Units) | | SANMH1 | SANMH2 | 0.26 | 33.00 | 0.055 | 0.055 | 4.305976 | 0.6180 | | | | 0.012 | 0.012 | 0.0039 | | | | 0.6219 | 0.26 | 0.26 | 0.0255 | 0.6474 | 7.4 | 2.00 | 150 | 21.5267 | 1.219 | 0.543 |
| | | SANMH2 | SANMH3 | | | | 0.055 | 4.305976 | 0.6180 | | | | | 0.012 | 0.0039 | | | | 0.6219 | 0.00 | 0.26 | 0.0255 | 0.6474 | 15.8 | 7.50 | 150 | 41.6863 | 2.360 | 0.857 |
| | | | | | | | | | | | | | | | | Capacity of Immediate Downstream Reach of 250mm dia. Sanitary Sewer = | | | | | | | | 111.4 | 0.50 | 250 | 42.0285 | 0.857 | |




BLADE CUT SWALE
NTS

**202 DUNLOP STREET APARTMENT DEVELOPMENT**
City of Barrie

Project Number: 22-11713B
Date: July 17, 2024
Design By: DPH
Checked By: JHV
File:

**STORM SEWER DESIGN SHEET**
**ENGINEERING AND PUBLIC WORKS**

Drainage Area Plan No: POST-1

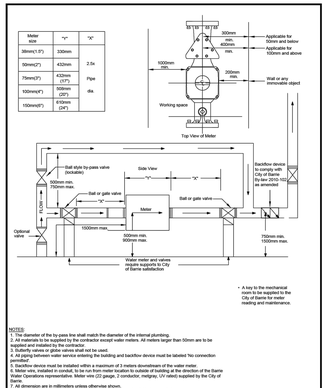
**Design Parameters**

**100 YEAR STORM**

| | | | |
|---|---|---|---|
| Q=kAIR, k=0.00278 | | Manning's "n" | 0.013 |
| Intensity (I) = a/(tc+b)$^c$ | | Min. Velocity | 0.750 m/s |
| a = | 1383.628 | Max. Velocity | 4.000 m/s |
| b = | 4.905 | | |
| c = | 0.754 | | |

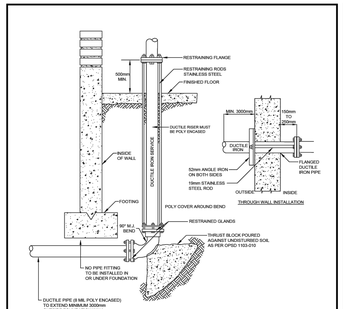
PINESTONE ENGINEERING LTD.

| LOCATION | | | | STORMWATER FLOW | | | | | | | | | DESIGN | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STREET | AREA NUMBER | MANHOLE LOCATION FROM MH | MANHOLE LOCATION TO MH | AREA (A) | RUNOFF COEFF. (C) | A x C | CUMUL. A x C | CONCENTRATION TIME TOTAL | CONCENTRATION TIME IN PIPE | RAIN INTENSITY (I) | FLOW (Q) | PIPE SIZE | LENGTH | SLOPE | CAPACITY | FULL FLOW VELOCITY | ACTUAL VELOCITY |
| | | | | ha | | ha | ha | min | min | mm/hr | L/s | mm | m | % | L/s | m/s | m/s |
| | 201 | CB#1 | STMMH#1 | 100 YEAR CONTROLLED DESIGN FLOW FROM VO MODELLING | | | | | | | 14.00000 | 300 | 7.2 | 0.60 | 74.90409 | 1.0597 | 0.8111 |
| | | CB#2 | STMMH#1 | 0.020 | 0.13 | 0.0025 | 0.0025 | 10.0000 | 1.2616 | 180.43759 | 1.24953 | 250 | 28.8 | 0.50 | 42.04989 | 0.8566 | 0.3805 |
| | 202 | BLDG | STMMH#1 | 100 YEAR CONTROLLED DESIGN FLOW FROM VO MODELLING | | | | | | | 57.00000 | 200 | 1.5 | 4.00 | 65.59688 | 2.0880 | 2.3515 |
| | 201 & 202 | STMMH#1 | HS-4 | 100 YEAR CONTROLLED DESIGN FLOW FROM VO MODELLING | | | | | | | 71.00000 | 300 | 16.7 | 0.70 | 80.90566 | 1.1446 | 1.2909 |
| | 201 & 202 | HS-4 | CBMH#1 | 100 YEAR CONTROLLED DESIGN FLOW FROM VO MODELLING | | | | | | | 71.00000 | 300 | 27.1 | 1.00 | 96.70076 | 1.3680 | 1.4947 |
| | | CBMH#1 | EXSTMSR | 0.005 | 0.13 | 0.0006 | 0.0006 | 10.0000 | 0.1927 | 180.43759 | 71.31238 | 300 | 17.3 | 1.00 | 96.70076 | 1.3680 | 1.4961 |



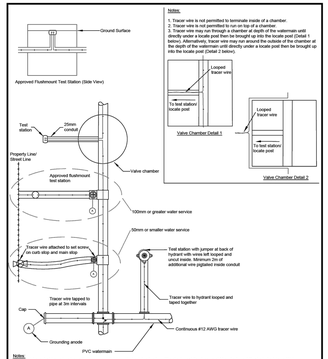

NOTES:
1. The diameter of the by pass line shall match the diameter of the internal plumbing.
2. All materials to be supplied by the contractor except water meters. All meters larger than 50mm are to be supplied and installed by the contractor.
3. Butterfly valves or globe valves shall not be used.
4. The piping between water service entering the building and backflow device must be labeled "No connection permitted".
5. Backflow device must be installed within a maximum of 3 meters downstream of the water meter.
6. Backflow device must be tested by a City of Barrie approved tester to outside of building at the direction of the Barrie Water Operations representative. Meter wire (22 gauge, 2 conductor, melights, UV rated) supplied by the City of Barrie.
7. All dimension are in millimeters unless otherwise shown.
8. Contractor to provide flat secure (vertical) surface for the smart point to be mounted on.

| Barrie | Water Meter Installation with By-Pass Assembly | REV No. 4 | DATE: APR 2023 SCALE: N.T.S | W533 |
|---|---|---|---|---|




NOTES:
1. INSTALLATION MUST MEET THE CURRENT NATIONAL FIRE PROTECTION ACT.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

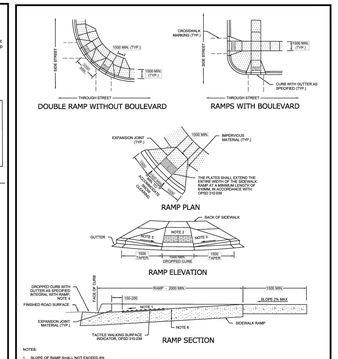
| Barrie | Water Service 100mm to 300mm | REV No. 2 | DATE: APR 2023 SCALE: N.T.S | W505 |
|---|---|---|---|---|



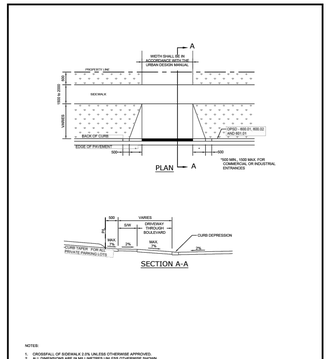

Notes:
1. Tracer wire is not permitted to terminate inside of a chamber.
2. Tracer wire is not permitted to run on top of a chamber.
3. Tracer wire may run through a chamber at depth of the watermain until directly under a locate post then be brought up into the locate post (Detail 1 below). Alternatively, tracer wire may run around the outside of the chamber at depth of the watermain until directly under a locate post then be brought up into the locate post (Detail 2 below).

Notes:
1. To be interpreted in conjunction with the current Drinking Water Infrastructure Standards and the Approved Manufacturers' Products for Linear Water Systems list. Tracer wire to be installed as per the City's Tracer Wire Infrastructure Standards.
2. Tracer wire shall be installed at a minimum of 25mm installed to a depth of 600mm below grade.
3. All connections must be watertightcoded.
4. Splicing of tracer wire is not allowed unless specified or approved.
5. Heat shrink is to be completed by a heat gun and not using an open flame.
6. SnakePits are to be placed inside of a SSL road leader with lid.

| Barrie | Water Infrastructure Tracer Wire | REV No. 5 | DATE: APR 2023 SCALE: N.T.S | W515 |
|---|---|---|---|---|

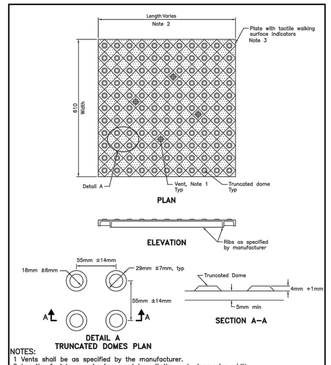

DOUBLE RAMP WITHOUT BOULEVARD
RAMPS WITH BOULEVARD
CROSSWALK MARKING (TYP.)
1500 MIN. (TYP.)
CURB WITH GUTTER AS SPECIFIED (TYP.)
THROUGH STREET
SIDE STREET
RAMP PLAN
RAMP ELEVATION
RAMP SECTION
EXPANSION JOINT (TYP.)
APPROVOUS MATERIAL (TYP.)
THE PLATES SHALL EXTEND THE FULL WIDTH OF THE CONCRETE RAMP AT A MINIMUM SLOPE OF 1:50 IN ACCORDANCE WITH AODA 4.8.2
BACK OF SIDEWALK
GUTTER
DROPPED CURB
DROPPED CURB WITH GUTTER AS SPECIFIED INTERNAL WITH RAMP
FINISHED ROAD SURFACE
EXPANSION JOINT MATERIAL (TYP.)
TACTILE WALKING SURFACE INDICATOR, OPSD 310.030
SIDEWALK RAMP
SLOPE 2% MAX
NOTES:
1. SLOPE OF RAMP SHALL NOT EXCEED 8%.
2. CROSS SLOPE OF RAMP SHALL NOT EXCEED 2% IN EITHER DIRECTION.
3. CROSS SLOPE OF FLARED SIDE OF RAMP SHALL NOT EXCEED 8%.
4. PROVIDE 1500 MIN. DIAMETER LEVEL LANDING AT TOP OF STEP AT GUTTER LINE.
5. ACCESSIBLE PEDESTRIAN SIGNAL TO HAVE TACTILE ARROW THAT ALIGNS WITH DIRECTION OF CROSSWALK.
6. MINIMUM THICKNESS OF RAMP IS 200mm. MINIMUM THICKNESS OF SIDEWALK AND FLARED SIDES ADJACENT TO RAMP IS 150mm.
7. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.
8. FOR CROSSWALK MARKINGS AND DRAINAGE REFER TO OTM BOOK 12.

| Barrie | SIDEWALK RAMPS UNSIGNALIZED INTERSECTIONS | REV No. 2 | DATE: APR 2023 SCALE: N.T.S | R318 |
|---|---|---|---|---|



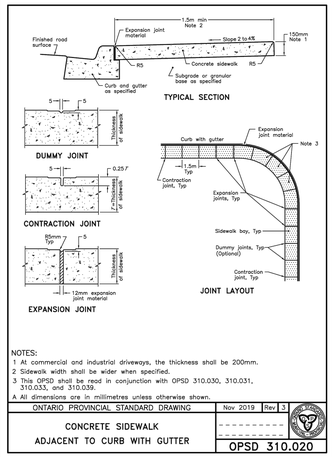

NOTES:
1. CROSSFALL OF SIDEWALK 2.0% UNLESS OTHERWISE APPROVED.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
3. DRIVEWAYS ON HOME TURNS OVER PRIVATE PARKING SLOPES MAY BE CONSIDERED WHEN THE BOULEVARD WIDTH IS LESS THAN 2.4M OR DURING ROAD RECONSTRUCTION.
4. REVISED SINGES ARE NOT APPROVED.

| Barrie | DRIVEWAY AND ENTRANCE DETAIL | REV No. 2 | DATE: APR 2023 SCALE: N.T.S | R319 |
|---|---|---|---|---|



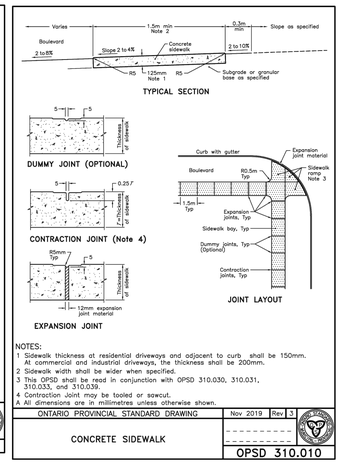

NOTES:
1 Vents shall be as specified by the manufacturer.
2 Length of plate may be increased to suit the curb depression width.
3 Material of plate shall be as specified in Contract Documents.
A Adjacent cast iron plates shall be permanently connected using a locking mechanism and any hardware shall be hot dipped galvanized.
B All dimensions are in millimetres unless otherwise shown.

| ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2019 | Rev 1 |
|---|---|---|
| CONCRETE SIDEWALK RAMPS TACTILE WALKING SURFACE INDICATORS COMPONENT | OPSD 310.039 | |



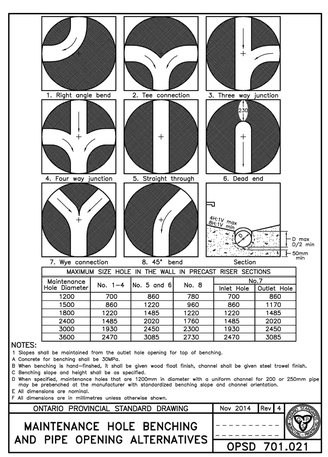

NOTES:
1 At commercial and industrial driveways, the thickness shall be 200mm.
2 Sidewalk width shall be wider when specified.
3 This OPSD shall be read in conjunction with OPSD 310.030, 310.031, 310.033, and 310.039.
A All dimensions are in millimetres unless otherwise shown.

| ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2019 | Rev 3 |
|---|---|---|
| CONCRETE SIDEWALK ADJACENT TO CURB WITH GUTTER | OPSD 310.020 | |




NOTES:
1 Sidewalk thickness at residential driveways and adjacent to curb shall be 150mm. At commercial and industrial driveways, the thickness shall be 200mm.
2 Sidewalk width shall be wider when specified.
3 This OPSD shall be read in conjunction with OPSD 310.030, 310.031, 310.033, and 310.039.
4 Contraction Joint may be tooled or sawcut.
A All dimensions are in millimetres unless otherwise shown.

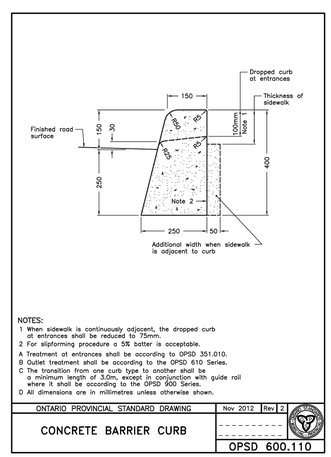
| ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2019 | Rev 3 |
|---|---|---|
| CONCRETE SIDEWALK | OPSD 310.010 | |




| MAXIMUM SIZE HOLE IN THE WALL IN PRECAST RISER SECTIONS | | | | | |
|---|---|---|---|---|---|
| Maintenance Hole Diameter | No. 1–4 | No. 5 and 6 | No. 8 | No. 9 | |
| | | | | Inlet Hole | Outlet Hole |
| 1200 | 700 | 860 | 780 | 700 | 860 |
| 1500 | 860 | 1220 | 960 | 860 | 1170 |
| 1800 | 1220 | 1485 | 1220 | 1220 | 1485 |
| 2400 | 1485 | 2020 | 1760 | 1485 | 2020 |
| 3000 | 1930 | 2450 | 2300 | 1930 | 2450 |
| 3600 | 2470 | 3085 | 2730 | 2470 | 3085 |

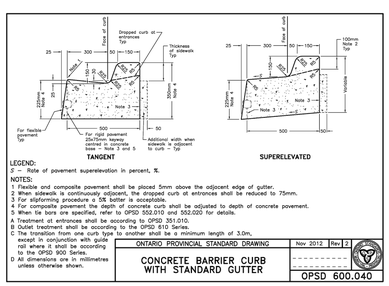
NOTES:
1 Slopes shall be maintained from the outlet hole opening for top of benching.
A Concrete for benching shall be 30MPa.
B When benching is hand-finished, it shall be given wood float finish, channel shall be given steel trowel finish.
C Benching slope and height shall be as specified.
D When specified, maintenance holes that are 1200mm in diameter with a uniform channel for 200 or 250mm pipe may be prebenched at the manufacturer with standardized benching slope and channel orientation.
E All dimensions are nominal.
F All dimensions are in millimetres unless otherwise shown.

| ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2014 | Rev 4 |
|---|---|---|
| MAINTENANCE HOLE BENCHING AND PIPE OPENING ALTERNATIVES | OPSD 701.021 | |




NOTES:
1 When sidewalk is continuously adjacent, the dropped curb at entrances shall be reduced to 75mm.
2 For slipforming procedure a 5% batter is acceptable.
A Treatment at entrances shall be according to OPSD 351.010.
B Outlet treatment shall be according to the OPSD 610 Series.
C The transition from one curb type to another shall be a minimum length of 3.0m, except in conjunction with guide rail where it shall be according to the OPSD 900 Series.
D All dimensions are in millimetres unless otherwise shown.

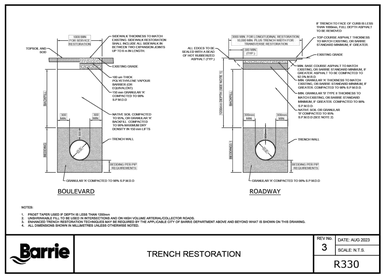
| ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2012 | Rev 2 |
|---|---|---|
| CONCRETE BARRIER CURB | OPSD 600.110 | |




LEGEND:
S = Rate of pavement superelevation in percent, %.

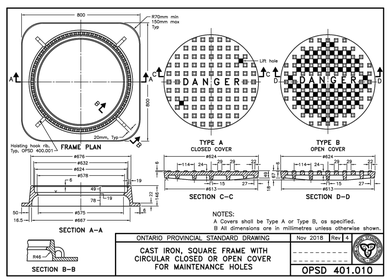
NOTES:
1 Flexible and composite pavement shall be placed 5mm above the adjacent edge of gutter.
2 When sidewalk is continuously adjacent, the dropped curb at entrances shall be reduced to 75mm.
3 For slipforming procedure a 5% batter is acceptable.
4 For composite pavement the depth of concrete curb shall be adjusted to depth of concrete pavement.
5 When tie bars are specified, refer to OPSD 552.010 and 552.020 for details.
A Treatment at entrances shall be according to OPSD 351.010.
B Outlet treatment shall be according to the OPSD 610 Series.
C The transition from one curb type to another shall be a minimum length of 3.0m, except in conjunction with guide rail where it shall be according to the OPSD 900 Series.
D All dimensions are in millimetres unless otherwise shown.

| ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2012 | Rev 2 |
|---|---|---|
| CONCRETE BARRIER CURB WITH STANDARD GUTTER | OPSD 600.040 | |



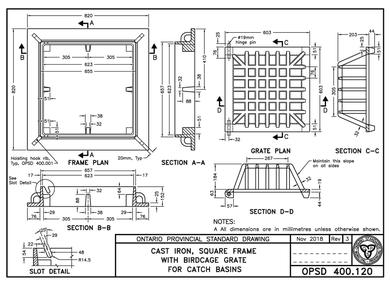

NOTES:
1. FRONT TAPERS USED IF DEPTH IS LESS THAN 100mm
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
3. DRAWING TRENCH RESTORATION TECHNIQUES MAY BE REQUIRED ON HIGH VOLUME ARTERIAL/COLLECTOR ROADS.
4. ALL DIMENSIONS MUST BE VERIFIED BY THE APPLICABLE CITY OF BARRIE DEPARTMENT ABOVE AND BEYOND WHAT IS SHOWN ON THIS DRAWING.
5. ALL DIMENSIONS MUST BE VERIFIED BY THE APPLICABLE CITY OF BARRIE DEPARTMENT.

| Barrie | TRENCH RESTORATION | REV No. 3 | DATE: AUG 2023 SCALE: N.T.S | R330 |
|---|---|---|---|---|



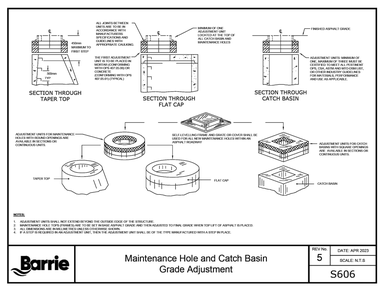

NOTES:
A Covers shall be Type A or Type B, as specified.
B All dimensions are in millimetres unless otherwise shown.

| ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2018 | Rev 1 |
|---|---|---|
| CAST IRON, SQUARE FRAME WITH CIRCULAR CLOSED OR OPEN COVER FOR MAINTENANCE HOLES | OPSD 401.010 | |

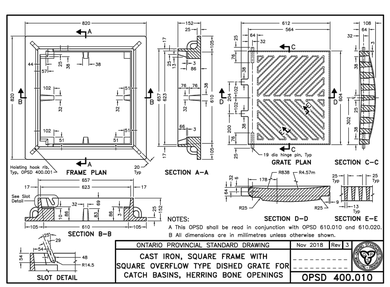



NOTES:
A The separator must be watertight.
B All dimensions are in millimetres unless otherwise shown.

| ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2018 | Rev 1 |
|---|---|---|
| CAST IRON, SQUARE FRAME WITH BIRDCAGE GRATE FOR CATCH BASINS | OPSD 400.120 | |

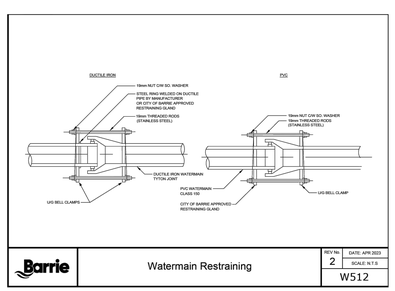



| Barrie | Maintenance Hole and Catch Basin Grade Adjustment | REV No. 5 | DATE: APR 2023 SCALE: N.T.S | S606 |
|---|---|---|---|---|

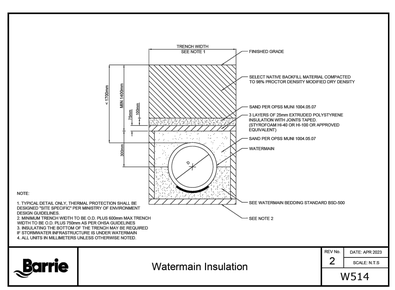



NOTES:
A This OPSD shall be read in conjunction with OPSD 610.010 and 610.020.
B All dimensions are in millimetres unless otherwise shown.

| ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2018 | Rev 3 |
|---|---|---|
| CAST IRON, SQUARE FRAME WITH SQUARE OVERFLOW TYPE DISHED GRATE FOR CATCH BASINS, HERRING BONE OPENINGS | OPSD 400.010 | |




| Barrie | Watermain Restraining | REV No. 2 | DATE: APR 2023 SCALE: N.T.S | W512 |
|---|---|---|---|---|




NOTE:
1. TYPICAL DETAIL ONLY. THERMAL PROTECTION SHALL BE DESIGNED TO THE SPECIFIC PER MINISTRY OF ENVIRONMENT DESIGN GUIDELINES.
2. TRENCH BASE MINIMUM WIDTH TO BE O.D. PLUS 600mm MAX TRENCH WIDTH TO BE O.D. PLUS 750mm AS PER OHSA GUIDELINES
3. INSULATING THE BOTTOM OF THE TRENCH MAY BE REQUIRED
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.
5. ALL UNITS IN MILLIMETRES UNLESS OTHERWISE NOTED.

| Barrie | Watermain Insulation | REV No. 2 | DATE: APR 2023 SCALE: N.T.S | W514 |
|---|---|---|---|---|

## Specifications

1. Must be independently tested to the 2013 NJDEP Laboratory Protocol and 2013 ETV Canada protocol (ISO 14024:2016). Separator must be sized based on this data.

2. Any testing performed by the manufacturer is unacceptable to demonstrate an alternate equal.

3. Field Testing is unreliable, site and storm specific, and subject to compounding equipment and analytical errors and therefore is unacceptable as verification of an alternate equal. TARP verification as per NJDEP is testing consistent with the 2013 NJDEP laboratory protocol.

4. The separator must be designed based on the following criteria:

| Flow Criteria | |
|---|---|
| Water Quality Flow Rate cfs (L/s) | |
| Peak Design Flow Rate cfs (L/s) | |

| TSS Removal Criteria | |
|---|---|
| Annual TSS Removal (%) | |
| NJDEP/ETV Canada TSS | |
| OK110 Sand | |
| City of Toronto | |
| Other | |

Notes:

1. Headloss K factor of 1.04 for hydraulic gradeline calculations

2. Sump depths shown are typical. Additional depth can be added as required

3. Multiple inlet pipes allowed

4. Drops allowed

5. Inlet invert elevations should be the same or higher than the outlet invert elevation. Inlet can be up to 12" (300 mm) lower than outlet if pretreatment area is omitted but 12" (300 mm) must be added to sump depth to maintain overall treatment volume

6. Solid Cover shown. HydroStorm can be designed with an inlet grate if required.

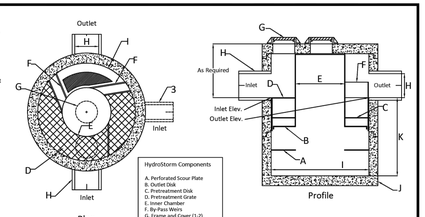
7. Oil capacities given are spill capacities.

8. Sediment depths are maximum holding capacities and not recommended capacities for regular maintenance.

9. Capacities are rounded down to nearest 5 gal or ft3 (1L or 0.1 m3 for metric units)

10. Base Extensions not provided on standard units larger than the HS 6. Extensions can be provided if required due to groundwater/buoyancy concerns at the request of the engineer of record.

11. HS4 to HS6 models require one frame and cover. HS7 to HS12 models require two covers




HydroStorm Components

A. Perforated Scour Plate
B. Outlet Disk
C. Pretreatment Disk
D. Perforated Flared Grate
E. Inner Chamber
F. By-Pass Weirs
G. Frame and Cover (1-2)
H. Inlet and Outlet Pipes
I. Structure Diameter
J. Base Extension (HS4 - HS6)
K. Sump Depth

HydroStorm by Hydroworks, LLC
US Patent No. 10,710,907
www.hydroworks.com
888-290-7900

HydroStorm Dimensions / Capacities

| Model | Diameter ft (m) (B) | Sump Depth ft (m) (K) | Inner Chamber Diam. ft (m) (E) | Max. Pipe dia (mm) (H) | Oil Spill Volume gal (L) | Sediment Volume ft3 (m3) | Total Volume gal (L) |
|---|---|---|---|---|---|---|---|
| HS 3 | 3 (0.9) | 3 (0.9) | 1.5 (0.45) | 18 (450) | 40 (155) | 10 (0.35) | 155 (600) |
| HS 4 | 4 (1.2) | 4 (1.2) | 2 (0.6) | 24 (600) | 95 (375) | 30 (0.85) | 375 (1420) |
| HS 5 | 5 (1.5) | 5 (1.5) | 2.5 (0.8) | 30 (750) | 165 (635) | 60 (1.8) | 730 (2780) |
| HS 6 | 6 (1.8) | 6 (1.8) | 3 (0.9) | 36 (900) | 270 (1030) | 110 (3.2) | 1265 (4800) |
| HS 7 | 7 (2.1) | 6.5 (2.0) | 3.5 (1.0) | 42 (1050) | 410 (1560) | 160 (4.6) | 1870 (7080) |
| HS 8 | 8 (2.4) | 7 (2.1) | 4 (1.2) | 48 (1200) | 615 (2330) | 220 (6.2) | 2630 (9960) |
| HS 10 | 10 (3.0) | 9 (2.7) | 5 (1.5) | 60 (1500) | 1130 (4285) | 465 (13.1) | 5285 (20015) |
| HS 12 | 12 (3.6) | 11 (3.3) | 6 (1.8) | 72 (1800) | 1875 (7100) | 835 (23.7) | 9305 (35225) |

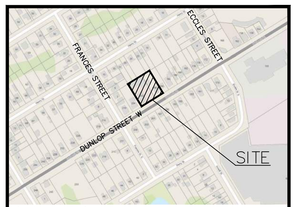
| Hydroworks HydroStorm | |
|---|---|
| PROJECT: | |
| LOCATION: | |
| REVISION DATE: 08/07/2020 | |

PEL
PINESTONE ENGINEERING LIMITED | www.pel.ca

The position of existing above ground and underground utilities and facilities are not necessarily shown on the drawings, and where shown, the accuracy of the position of such utilities and facilities is not guaranteed. Before starting work, the contractor shall confirm the exact location of all existing utilities and facilities, and shall assume all liability for damage to them

Drawings shall not be used for construction unless sealed and signed. All work to be performed in accordance with the Occupational Health & Safety Act 1990.

Any errors and/or omissions shall be reported to Pinestone Engineering Ltd. without delay.




KEY MAP

NOTES
1. TOPOGRAPHIC SURVEY COMPLETED BY KRCMAR SURVEYORS LTD., DATED JUNE 10 2022.
2. SITE PLAN INFORMATION PROVIDED BY PATRICK MARKUS LUCKIE, ARCHITECT, DATED APRIL 25, 2024.

| NO. | YY.MM.DD | REVISION | BY |
|---|---|---|---|
| 1 | 24.03.21 | REVISED PER AGENCY COMMENTS | C.A. |

SEAL
LICENSED PROFESSIONAL ENGINEER
D. P. HORDYK
100330228
2024-07-19
PROVINCE OF ONTARIO

NORTH ARROW

| | |
|---|---|
| DESIGN BY: | D.H. |
| DRAWN BY: | C.A. |
| CHECKED: | J.V. |
| DATE: | SEPT 2023 |
| SCALE: | |

CLIENT/PROJECT

202 DUNLOP STREET WEST
APARTMENT DEVELOPMENT

DRAWING TITLE

STANDARD DETAILS PLAN

| PROJECT NO. | DRAWING NO. | REVISION |
|---|---|---|
| 22-11713-B | DET-1 | 1 |