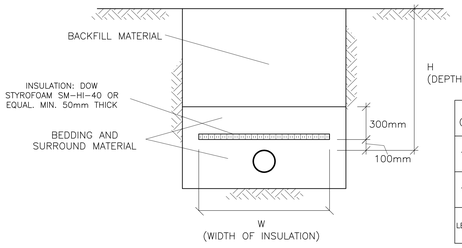
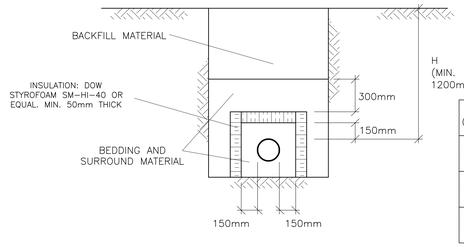


H (DEPTH OF COVER)	INSULATION THICKNESS	W (WIDTH OF INSULATION)
1400 TO 2000mm	50mm	1200mm + DIAMETER OF PIPE
1100 TO 1400mm	75mm	1800mm + DIAMETER OF PIPE
LESS THAN 1100mm	100mm	2400mm + DIAMETER OF PIPE

INSULATE SEWER AS INDICATED AND WHERE DEPTH OF COVER COVER IS LESS THAN 2000mm.

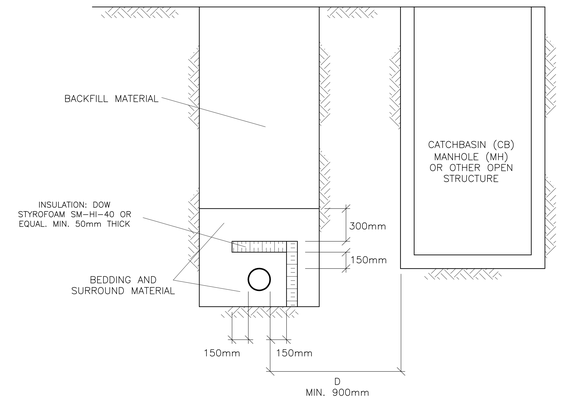
INSULATION OF SEWERS IN SHALLOW TRENCHES
N.T.S.



H (DEPTH OF COVER)	INSULATION THICKNESS
1800 TO 2400mm	50mm
1500 TO 1800mm	75mm
1200 TO 1500mm	100mm

INSULATE WATERMAIN AS INDICATED AND WHERE DEPTH OF COVER COVER IS LESS THAN 2400mm. PROVIDE A MINIMUM 1200mm COVER.

INSULATION OF WATERMAINS & WATER SERVICE CONNECTIONS IN SHALLOW TRENCHES
AND AS PER CITY OF OTTAWA DRAWING No. W22
N.T.S.

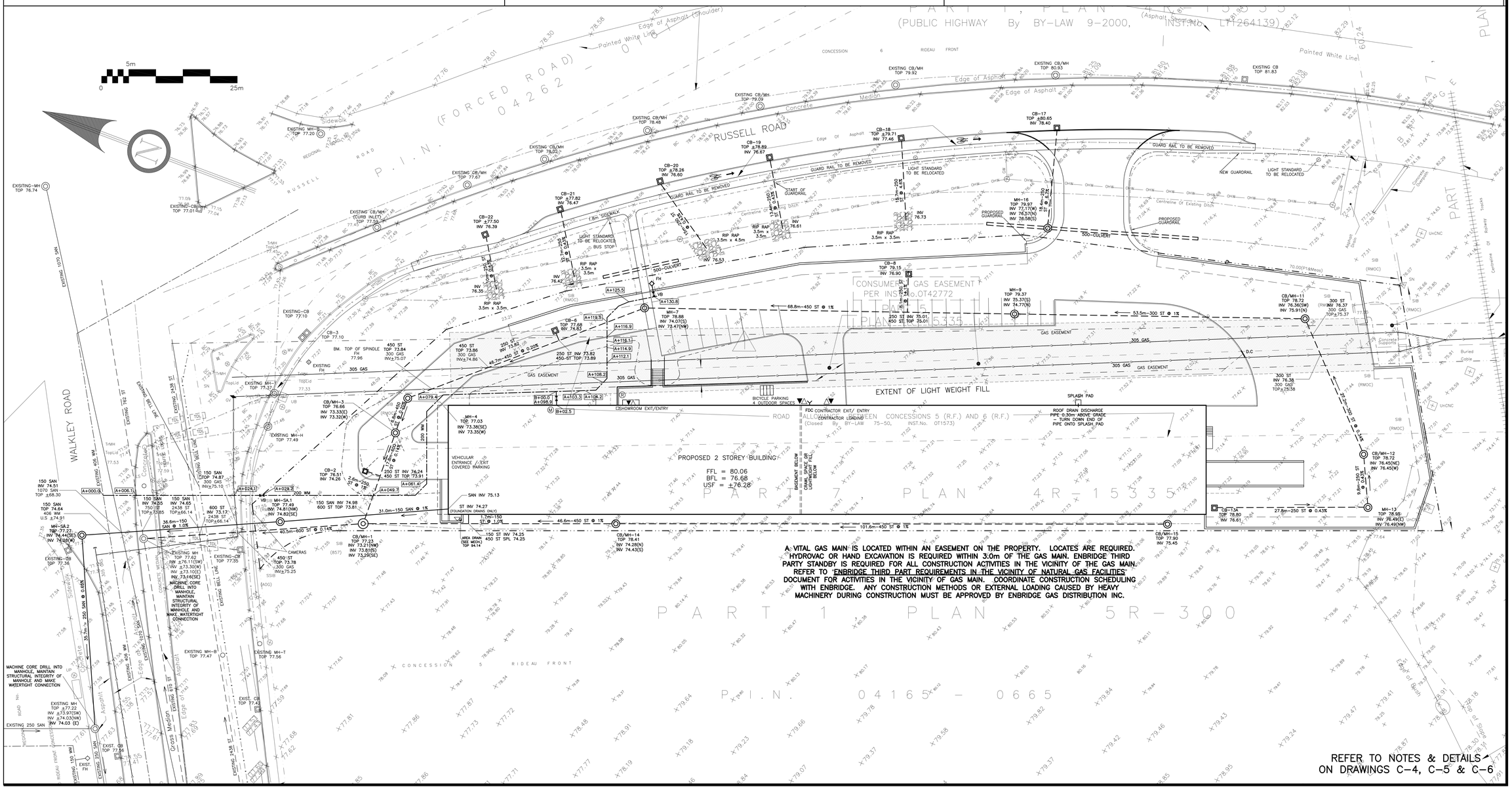


D (DISTANCE TO CB OR MH WALL)	INSULATION THICKNESS
1800 TO 2400mm	50mm
1500 TO 1800mm	75mm
1200 TO 1500mm	100mm
900 TO 1200mm	125mm

INSULATION OF WATERMAINS & WATER SERVICE CONNECTIONS AT OPEN STRUCTURES
AND AS PER CITY OF OTTAWA DRAWING No. W23
N.T.S.

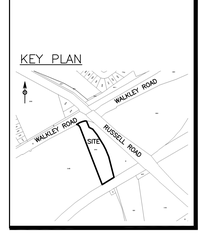
DRAWING LEGEND

- CB — CATCH BASIN
- MH — MANHOLE
- CB/MH — CATCH BASIN/MANHOLE
- WS / WM — WATER SERVICE / WATERMAIN
- SAN — SANITARY SEWER
- ST — STORM SEWER
- SUBDRAINS AT CB/MH
- SUBDRAINS AT CB
- CS — CURB STOP & STAND POST
- VB — VALVE & VALVE BOX
- FH — FIRE HYDRANT
- FDC — FIRE DEPARTMENT CONNECTION
- W — WATER METER
- R — REMOTE WATER METER READOUT
- UP — UTILITY POLE
- 246 — EXISTING GRADE ELEVATION
- + 93.79 — PROPOSED GRADE ELEVATION
- LIGHT DUTY PAVEMENT
- HEAVY DUTY PAVEMENT
- LIGHT WEIGHT FILL
- 0.5% — SLOPE OF GRADE
- 0.5% — EXISTING SLOPE OF GRADE
- EMERGENCY OVERLAND FLOW
- SWALE/DITCH (CENTERLINE)
- T.O.S. — TOP OF SLOPE
- B.O.S. — BOTTOM OF SLOPE
- D.C. — 150mm CURB / DEPRESSED CURB
- SILT FENCE BARRIER
- PROPERTY LINE
- FFL — FIRST FLOOR ELEVATION
- TOF — TOP OF FOUNDATION ELEVATION
- BFL — BASEMENT FLOOR ELEVATION
- USF — UNDERSIDE OF FOOTING ELEVATION
- H — HYDRO
- SEC — HYDRO (SECONDARY)
- TEL — BELL TELEPHONE
- CAB — ROGERS CABLE
- GAS



REFER TO NOTES & DETAILS ON DRAWINGS C-4, C-5 & C-6

KEY PLAN



No.	Date	Revision
2	MAR 8–18	ISSUED FOR APPROVAL
1	JAN 30–18	ISSUED FOR COORDINATION

D.B. GRAY ENGINEERING INC.
Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains
700 Long Point Circle, Ottawa, Ontario, K1T 4E9
Tel: (613) 825-8044
email: d.gray@dbgrayengineering.com

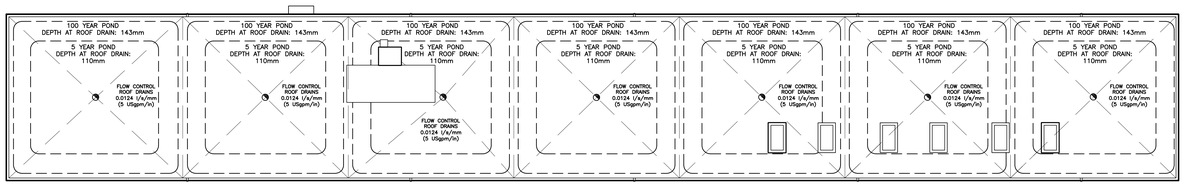
Project
PROPOSED 2 STOREY BUILDING
2510 WALKLEY ROAD
OTTAWA, ONTARIO

Drawing Title
SITE SERVICING PLAN

Engineer's Seal
LICENSED PROFESSIONAL ENGINEER
D.B. GRAY
17016502
MAR 8-18
PROVINCE OF ONTARIO
NOT VALID UNLESS SIGNED & DATED

Drawn	D.B.G.
Hor. Scale	1:250
Vert. Scale	
Date	OCT 3–17
Job	12075

Drawing No.
C-1 of 8



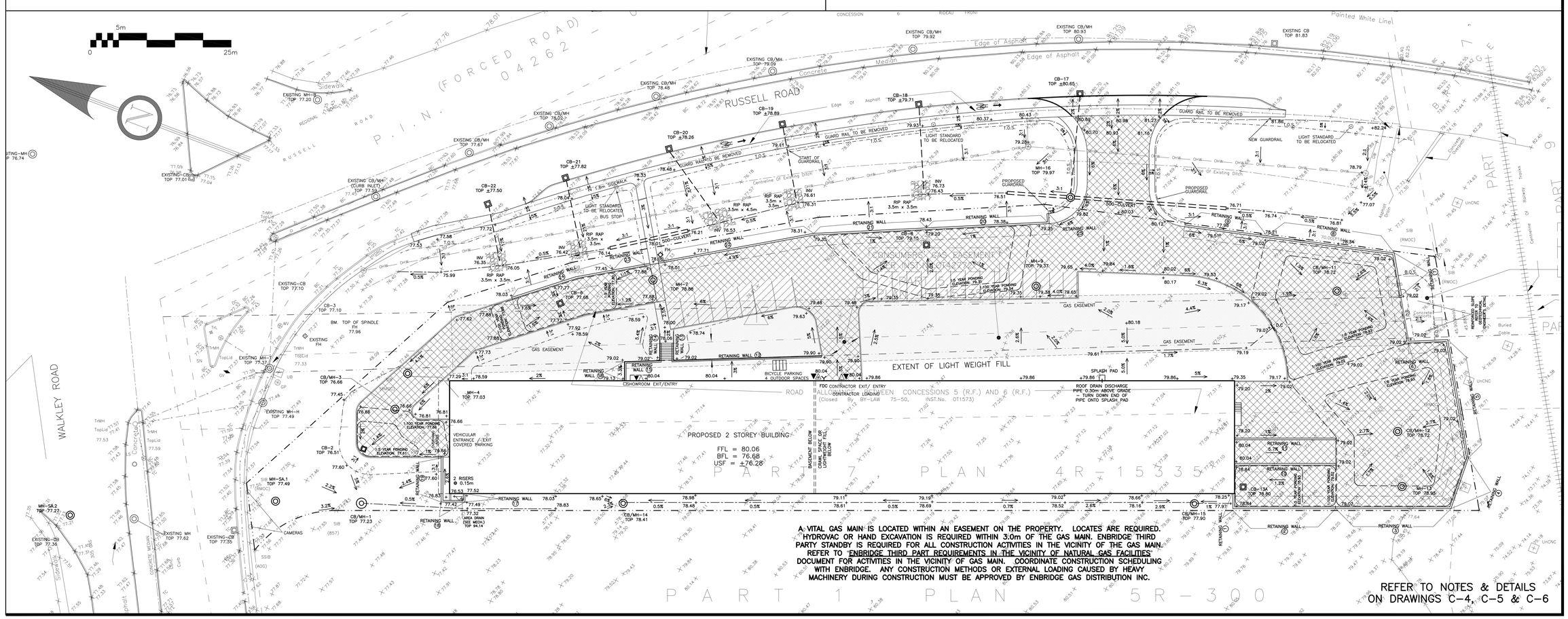
ROOF PLAN

RETAINING WALL SCHEDULE

REF	TOP OF WALL	HEIGHT	NOTES	REF	TOP OF WALL	HEIGHT	NOTES
				13	79.93 TO 78.06	0.91m TO 0.00m	REFER TO STRUCTURAL
1	78.99	±0.74m TO 1.02m	REFER TO STRUCTURAL	14	79.93 TO 78.06	0.91m TO 0.00m	REFER TO STRUCTURAL
2	78.99 TO 79.17	±0.74m TO ±1.15m	REFER TO STRUCTURAL	15	79.93	0.91m	REFER TO STRUCTURAL
3	79.17	±1.15m TO ±2.08m	REFER TO STRUCTURAL	16	80.04 TO 79.90	0.91m TO 0.88m	REFER TO STRUCTURAL
4	79.17	±2.08m TO ±2.18m	REFER TO STRUCTURAL	17	77.52 TO 77.49	0.99m TO 0.96m	REFER TO STRUCTURAL
5	79.17	±2.18m TO ±2.24m	REFER TO STRUCTURAL	18	77.42 TO 77.49	0.59m TO 0.96m	REFER TO STRUCTURAL
6	79.17	±2.24m TO ±2.09m	REFER TO STRUCTURAL	19	76.81 TO 77.42	0.15m TO 0.59m	REFER TO STRUCTURAL
7	79.17	±2.09m TO ±1.84m	REFER TO STRUCTURAL	20	79.35 TO 79.50	0.92m TO 0.15m	REFER TO STRUCTURAL
8	79.17	±0.96m TO ±1.84m	REFER TO STRUCTURAL	21	79.50 TO 79.35	1.17m TO 0.92m	REFER TO STRUCTURAL
9	80.05 TO 79.17	±0.15m TO ±0.96m	REFER TO STRUCTURAL	22	78.16 TO 79.50	0.15m TO 1.17m	REFER TO STRUCTURAL
10	80.19 TO 79.17	1.35m TO ±0.15m	REFER TO STRUCTURAL	23	77.99 TO 78.03	0.54m TO 0.15m	REFER TO STRUCTURAL
11	80.19 TO 79.17	0.99m TO 0.15m	REFER TO STRUCTURAL	24	78.03 TO 77.99	0.15m TO 0.54m	REFER TO STRUCTURAL
12	79.93	0.91m TO 0.00m	REFER TO STRUCTURAL	25	79.50 TO 79.97	0.12m TO 1.59m	REFER TO STRUCTURAL

DRAWING LEGEND

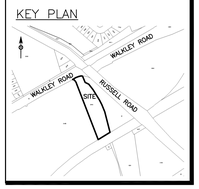
- CB — CATCH BASIN
- MH — MANHOLE
- CB/MH — CATCH BASIN/MANHOLE
- WS / WM — WATER SERVICE / WATERMAIN
- SAN — SANITARY SEWER
- ST — STORM SEWER
- SUBDRAINS AT CB/MH
- SUBDRAINS AT CB
- CS — CURB STOP & STAND POST
- VB — VALVE & VALVE BOX
- FH — FIRE HYDRANT
- FDC — FIRE DEPARTMENT CONNECTION
- W — WATER METER
- R — REMOTE WATER METER READOUT
- UP — UTILITY POLE
- 74.46 — EXISTING GRADE ELEVATION
- + 93.79 — PROPOSED GRADE ELEVATION
- LIGHT DUTY PAVEMENT
- HEAVY DUTY PAVEMENT
- LIGHT WEIGHT FILL
- 0.5% — SLOPE OF GRADE
- 0.5% — EXISTING SLOPE OF GRADE
- EMERGENCY OVERLAND FLOW
- SWALE/DITCH (CENTERLINE)
- T.O.S. — TOP OF SLOPE
- B.O.S. — BOTTOM OF SLOPE
- D.C. — 150mm CURB / DEPRESSED CURB
- SILT FENCE BARRIER
- PROPERTY LINE
- FFL — FIRST FLOOR ELEVATION
- TOF — TOP OF FOUNDATION ELEVATION
- BFL — BASEMENT FLOOR ELEVATION
- USF — UNDERSIDE OF FOOTING ELEVATION
- H — HYDRO
- SEC — HYDRO (SECONDARY)
- TEL — BELL TELEPHONE
- CAB — ROGERS CABLE
- G — GAS



A VITAL GAS MAIN IS LOCATED WITHIN AN EASEMENT ON THE PROPERTY. LOCATES ARE REQUIRED. HYDROVAC OR HAND EXCAVATION IS REQUIRED WITHIN 3.0m OF THE GAS MAIN. ENBRIDGE THIRD PARTY STANDBY IS REQUIRED FOR ALL CONSTRUCTION ACTIVITIES IN THE VICINITY OF THE GAS MAIN. REFER TO 'ENBRIDGE THIRD PART REQUIREMENTS IN THE VICINITY OF NATURAL GAS FACILITIES' DOCUMENT FOR ACTIVITIES IN THE VICINITY OF GAS MAIN. COORDINATE CONSTRUCTION SCHEDULING WITH ENBRIDGE. ANY CONSTRUCTION METHODS OR EXTERNAL LOADING CAUSED BY HEAVY MACHINERY DURING CONSTRUCTION MUST BE APPROVED BY ENBRIDGE GAS DISTRIBUTION INC.

REFER TO NOTES & DETAILS ON DRAWINGS C-4, C-5 & C-6

KEY PLAN



No.	Date	Revision
2	MAR 8-18	ISSUED FOR APPROVAL
1	JAN 30-18	ISSUED FOR COORDINATION

D.B. GRAY ENGINEERING INC.
Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains
700 Long Point Circle
Ottawa, Ontario.
K1T 4E9
Tel: (613) 825-8044
email: d.gray@dbgrayengineering.com

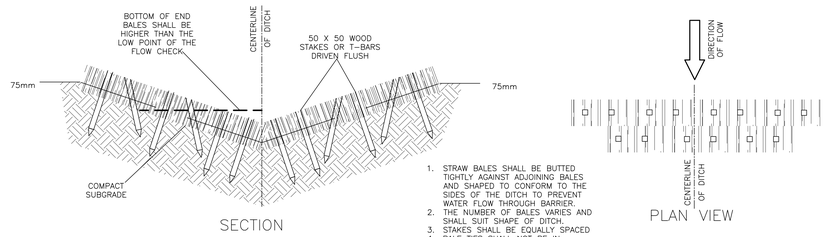
Project
PROPOSED
2 STOREY BUILDING
2510 WALKLEY ROAD
OTTAWA, ONTARIO

Drawing Title
GRADING PLAN

Engineer's Seal
LICENSED PROFESSIONAL ENGINEER
D.B. GRAY
17016502
MAR 8-18
PROVINCE OF ONTARIO
NOT VALID UNLESS SIGNED & DATED

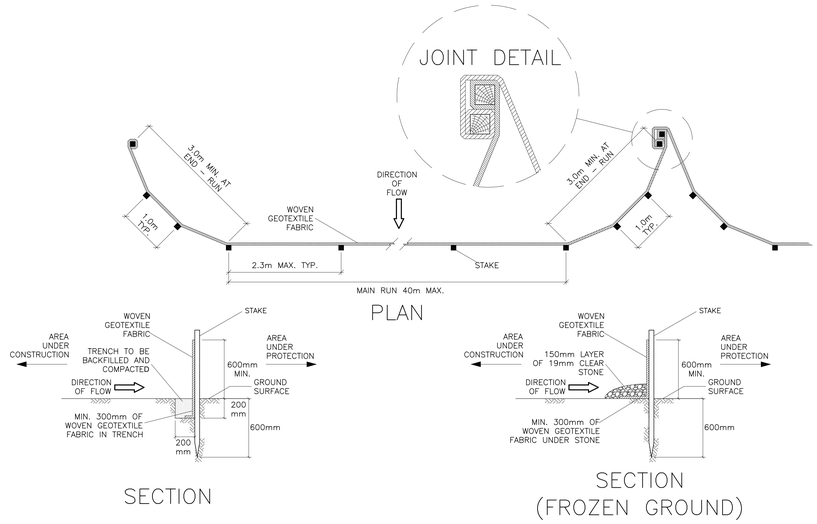
Drawn	D.B.G.
Hor. Scale	1:250
Vert. Scale	
Date	OCT 3-17
Job	12075

Drawing No.
C-2
of 8

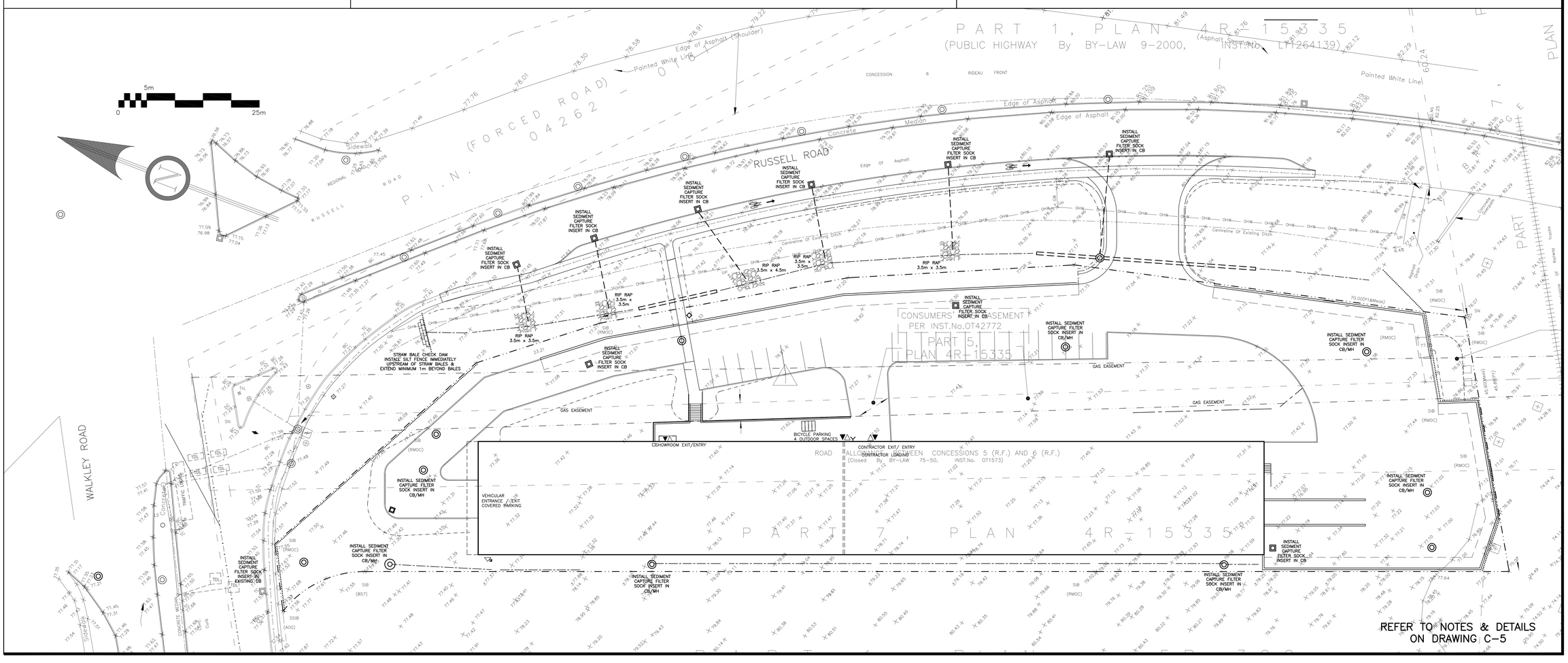


1. STRAW BALES SHALL BE BUTTED TIGHTLY AGAINST ADJOINING BALES AND SHAPED TO CONFORM TO THE SIDES OF THE DITCH TO PREVENT WATER FLOW THROUGH BARRIER.
2. THE NUMBER OF BALES VARIES AND SHALL SUIT SHAPE OF DITCH.
3. STAKES SHALL BE EQUALLY SPACED
4. BALE TIES SHALL NOT BE IN CONTACT WITH GROUND.

STRAW BALE FLOW CHECK DAM
AS PER OPSD 219.180
N.T.S.



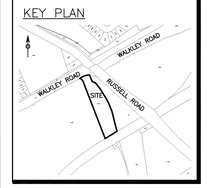
SILT FENCE BARRIER
N.T.S.



DRAWING LEGEND

- CB — CATCH BASIN
- MH — MANHOLE
- CB/MH — CATCH BASIN/MANHOLE
- WS / WM — WATER SERVICE / WATERMAIN
- SAN — SANITARY SEWER
- ST — STORM SEWER
- SUBDRAINS AT CB/MH
- SUBDRAINS AT CB
- CS — CURB STOP & STAND POST
- VB — VALVE & VALVE BOX
- FH — FIRE HYDRANT
- FDC — FIRE DEPARTMENT CONNECTION
- W — WATER METER
- R — REMOTE WATER METER READOUT
- UP — UTILITY POLE
- 74.65 — EXISTING GRADE ELEVATION
- + 93.79 — PROPOSED GRADE ELEVATION
- LIGHT DUTY PAVEMENT
- HEAVY DUTY PAVEMENT
- LIGHT WEIGHT FILL
- 0.5% — SLOPE OF GRADE
- 0.5% — EXISTING SLOPE OF GRADE
- EMERGENCY OVERLAND FLOW
- SWALE/DITCH (CENTERLINE)
- T.O.S. — TOP OF SLOPE
- B.O.S. — BOTTOM OF SLOPE
- D.C. — 150mm CURB / DEPRESSED CURB
- SILT FENCE BARRIER
- PROPERTY LINE
- FFL — FIRST FLOOR ELEVATION
- TOF — TOP OF FOUNDATION ELEVATION
- BFL — BASEMENT FLOOR ELEVATION
- USF — UNDERSIDE OF FOOTING ELEVATION
- H — HYDRO
- SEC — HYDRO (SECONDARY)
- TEL — BELL TELEPHONE
- CAB — ROGERS CABLE
- GAS

KEY PLAN



No.	Date	Revision
2	MAR 8–18	ISSUED FOR APPROVAL
1	JAN 30–18	ISSUED FOR COORDINATION

D. B. GRAY ENGINEERING INC.
Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains
700 Long Point Circle
Ottawa, Ontario.
K1T 4E9
Tel: (613) 825-8044
email: d.gray@dbgrayengineering.com

Project

PROPOSED
2 STOREY BUILDING
2510 WALKLEY ROAD
OTTAWA, ONTARIO

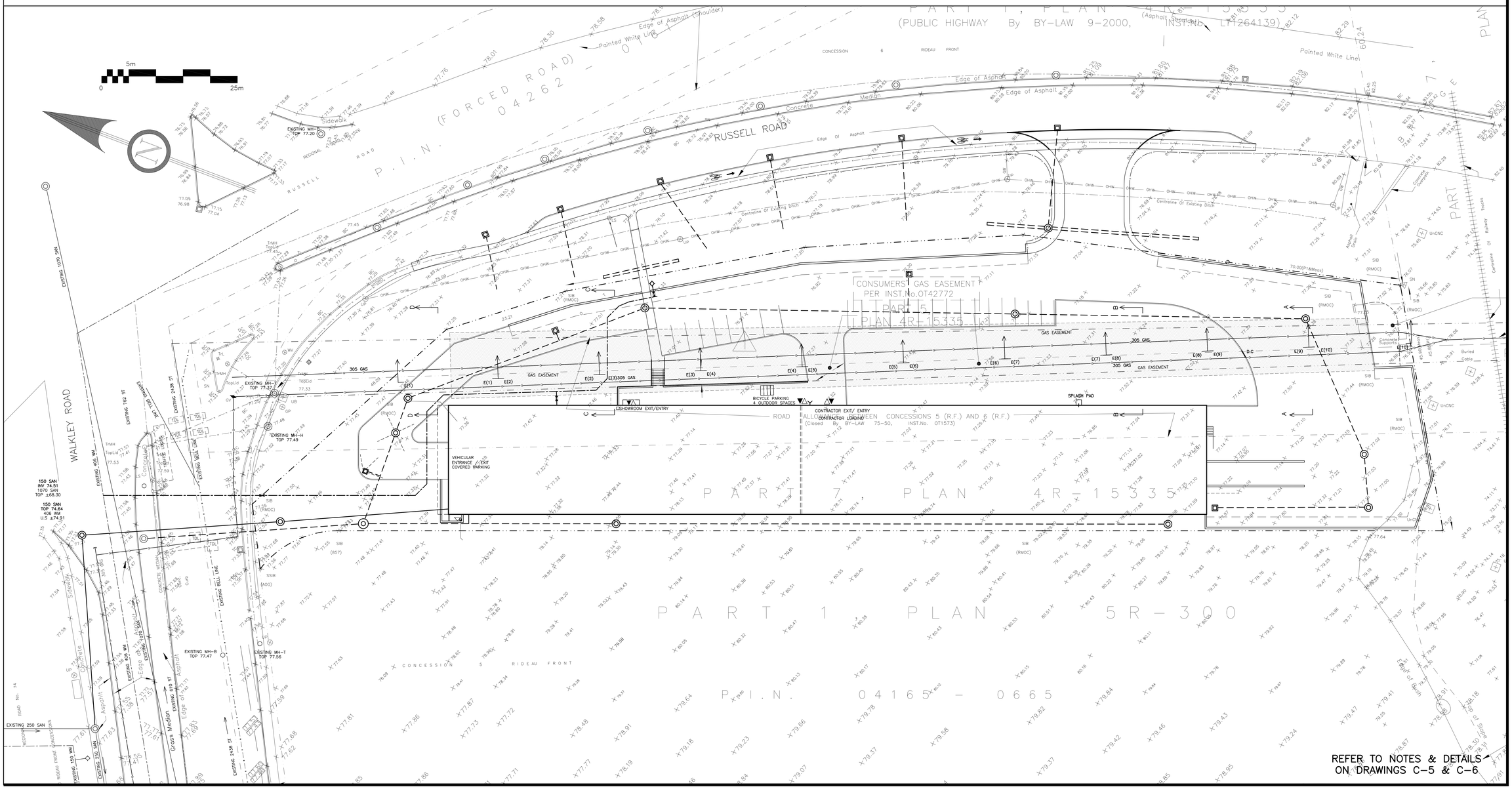
Drawing Title

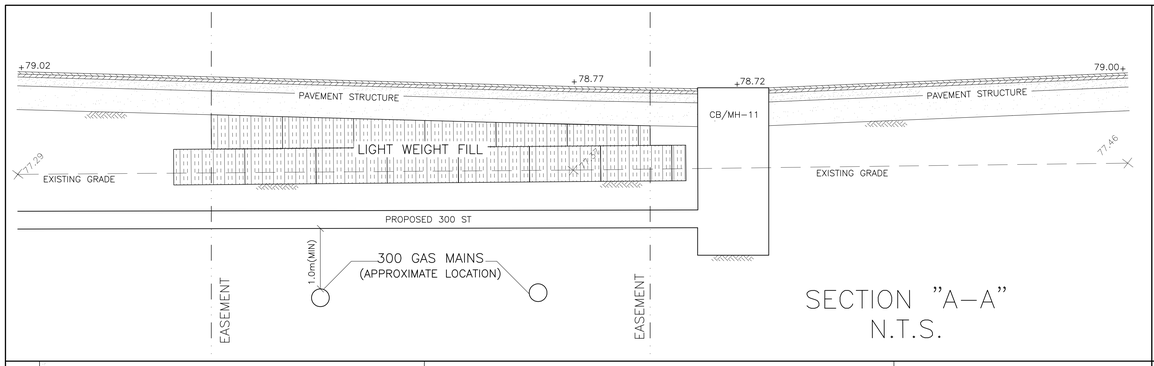
EROSION AND SEDIMENT CONTROL PLAN

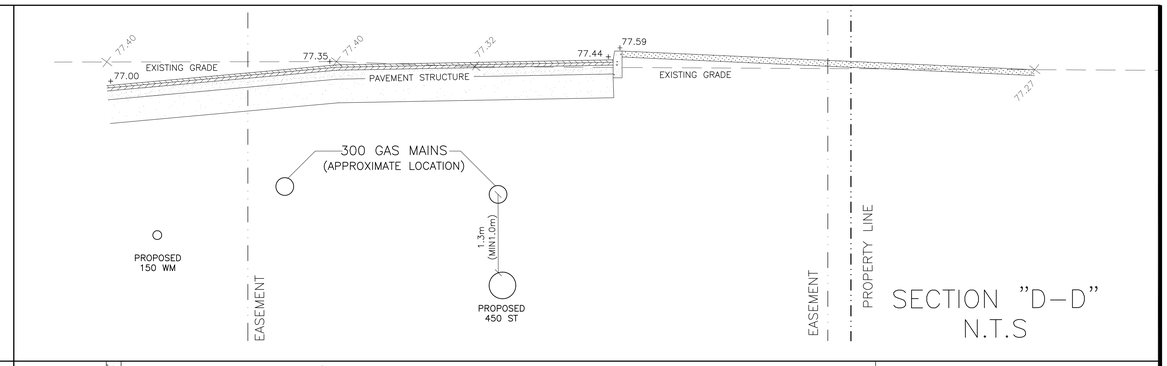
Engineer's Seal: LICENSED PROFESSIONAL ENGINEER D.B. GRAY 17016502 MAR 8-18 PROVINCE OF ONTARIO — NOT VALID UNLESS SIGNED & DATED

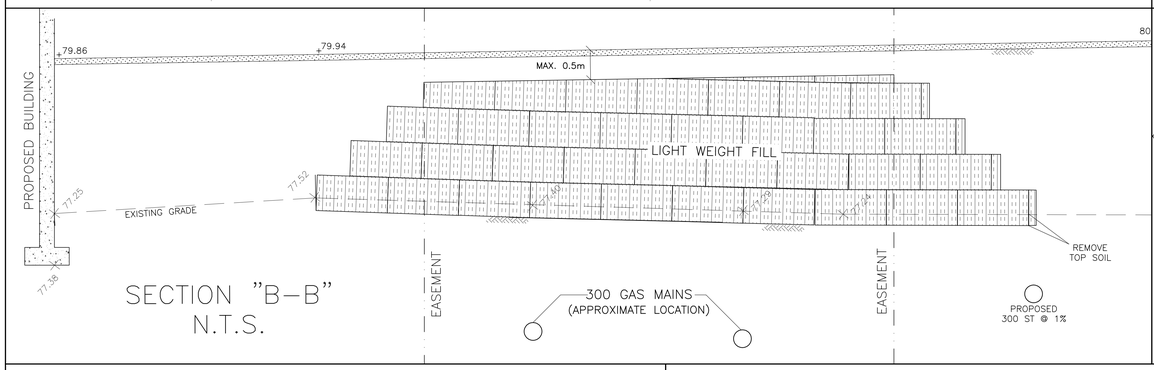
Drawn	D.B.G.
Hor. Scale	1:250
Vert. Scale	
Date	JAN 30–18
Job	12075

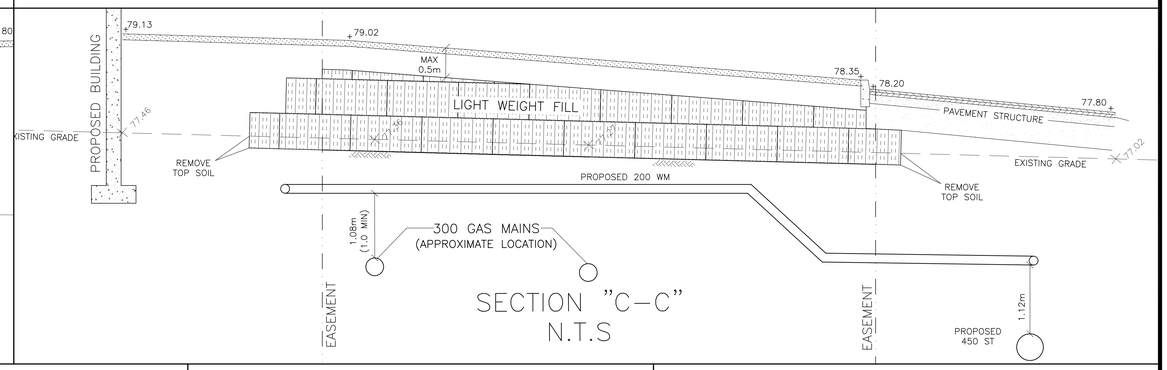
Drawing No. C–3 of 8


5m
0
25m
RUSSELL ROAD
WALKLEY ROAD
P.I.N. 04262-0165
(FORCED ROAD)
(PUBLIC HIGHWAY By BY-LAW 9-2000, INST.No. LT264139)
CONSUMERS GAS EASEMENT PER INST.No.OT42772
PART 5 PLAN 4R-15335
PART 7 PLAN 4R-15335
PART 1 PLAN 5R-300
P.I.N. 04165-0665
CONCESSION 5 RIDEAU FRONT
CONCESSION 6 RIDEAU FRONT
ALLOWANCE BETWEEN CONCESSIONS 5 (R.F.) AND 6 (R.F.)
(Closed By By-LAW 75-50, INST.No. OT1573)
SHOWROOM EXIT/ENTRY
CONTRACTOR EXIT/ ENTRY
CONTRACTOR LOADING
BICYCLE PARKING 4 OUTDOOR SPACES
SPLASH PAD
VEHICULAR ENTRANCE / EXIT COVERED PARKING
GAS EASEMENT
305 GAS
Edge of Asphalt
Painted White Line
Concrete Median
Centreline Of Existing Ditch
EXISTING MH-S TOP 77.20
EXISTING MH-H TOP 77.49
EXISTING MH-T TOP 77.56
EXISTING MH-B TOP 77.47
150 SAN INV 74.51 1070 SAN TOP ±68.30
150 SAN TOP 74.64 406 WM U.S ±74.91
EXISTING 250 SAN
EXISTING 150 WM
EXISTING 406 WM
EXISTING 1070 SAN
EXISTING 2438 ST
EXISTING 406 ST
EXISTING 406 WM
EXISTING 406 SAN
EXISTING BELL LINE
EXISTING BELL DUCT
EXISTING 406 WM
EXISTING 406 SAN
EXISTING 406 ST









DRAWING LEGEND

- CB — CATCH BASIN
- MH — MANHOLE
- CB/MH — CATCH BASIN/MANHOLE
- WS / WM — WATER SERVICE / WATERMAIN
- SAN — SANITARY SEWER
- ST — STORM SEWER
- SUBDRAINS AT CB/MH
- SUBDRAINS AT CB
- CS — CURB STOP & STAND POST
- VB — VALVE & VALVE BOX
- FH — FIRE HYDRANT
- FDC — FIRE DEPARTMENT CONNECTION
- W — WATER METER
- R — REMOTE WATER METER READOUT
- UP — UTILITY POLE
- 148.5 — EXISTING GRADE ELEVATION
- + 93.79 — PROPOSED GRADE ELEVATION
- LIGHT DUTY PAVEMENT
- HEAVY DUTY PAVEMENT
- LIGHT WEIGHT FILL
- 0.5% — SLOPE OF GRADE
- 0.5% — EXISTING SLOPE OF GRADE
- EMERGENCY OVERLAND FLOW
- SWALE/DITCH (CENTERLINE)
- T.O.S. — TOP OF SLOPE
- B.O.S. — BOTTOM OF SLOPE
- D.C. — 150mm CURB / DEPRESSED CURB
- SILT FENCE BARRIER
- PROPERTY LINE
- FFL — FIRST FLOOR ELEVATION
- TOF — TOP OF FOUNDATION ELEVATION
- BFL — BASEMENT FLOOR ELEVATION
- USF — UNDERSIDE OF FOOTING ELEVATION
- H — HYDRO
- SEC — HYDRO (SECONDARY)
- TEL — BELL TELEPHONE
- CAB — ROGERS CABLE
- G — GAS

1. GENERAL

1.1 USE BAR SCALE TO CONFIRM ACTUAL PLOT SCALE. EXISTING AND NEW ELEVATIONS AND INVERTS SHOWN ARE GEODETIC AND ARE IN METERS. ALL PIPE DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
1.2 EXISTING ELEVATIONS AND LOCATIONS, INVERTS AND SIZES OF EXISTING SERVICES & UTILITIES ARE NOT NECESSARILY SHOWN ON PLAN AND THOSE SHOWN ARE DERIVED FROM AVAILABLE INFORMATION AND MUST BE CONFIRMED ON SITE BEFORE COMMENCING CONSTRUCTION; REPORT ANY DIFFERENCES TO ENGINEER.
1.3 SITE BOUNDARIES AND EXISTING GRADES AND OTHER FEATURES DERIVED FROM TOPOGRAPHIC SURVEY PREPARED BY FARLEY, SMITH & DENIS SURVEYING LTD. JOB No. 479-17.
1.4 REFER TO ARCHITECTURAL AND LANDSCAPE SITE PLANS FOR EXACT LOCATIONS OF BUILDINGS, PAVED AREAS, SIDEWALKS, PLANTERS ETC.
1.5 REFERENCE THE LATEST REVISION AND ALL ADDENDUMS OF THE GEOTECHNICAL INVESTIGATION BY PATERSON GROUP INC. FILE: PG29.03-1. SITE PREPARATION INCLUDING BUILDING SUB-GRADE PREPARATION AND PAVEMENT SUB-GRADE PREPARATION; PAVEMENT STRUCTURE AND EXCAVATION AND BACKILLING SHALL CONFORM TO THE GEOTECHNICAL INVESTIGATION TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER.
1.6 DRAWINGS ARE TO BE READ IN CONJUNCTION WITH SERVICING BRIEF & STORM WATER MANAGEMENT REPORT No. 12075 PREPARED BY D. B. GRAY ENGINEERING INC.
1.7 REINSTATE ADJACENT PROPERTIES TO PRE-CONSTRUCTION CONDITIONS.
1.8 REINSTATE CITY PROPERTIES TO CITY STANDARDS AND TO CITY OF OTTAWA'S SATISFACTION.
1.9 ALL RELEVANT WORK SHALL BE DONE IN ACCORDANCE WITH CURRENT CITY STANDARDS AND SPECIFICATIONS.
1.10 ONTARIO PROVINCIAL STANDARDS & SPECIFICATIONS WILL APPLY WHERE NO CITY STANDARDS ARE AVAILABLE.
1.11 ALL PROPOSED RETAINING WALLS SHALL BE SETBACK A MINIMUM 0.15m FROM PROPERTY LINE. ALL PROPOSED RETAINING WALLS GREATER THAN 1.0m IN HEIGHT SHALL BE DESIGN BY A PROFESSIONAL ENGINEER REGISTERED IN ONTARIO.

2. EROSION AND SEDIMENT CONTROL PLAN

2.1 THE EROSION AND SEDIMENT CONTROL PLAN IS A "LIVING DOCUMENT" AND SHALL BE REVISED IN THE EVENT THE SPECIFIED CONTROL MEASURES ARE NOT SUFFICIENT. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES TO PROVIDE PROPERLY DRAINED SYSTEM AND THE RECEIVING WATER COURSE DURING CONSTRUCTION ACTIVITIES. THIS INCLUDES LIMITING THE AMOUNT OF EXPOSED SOIL, USING SEDIMENT CAPTURE FILTER SOCK INSERTS IN CATCH BASINS AND MANHOLES AND INSTALLING SILT FENCES AND OTHER EFFECTIVE SEDIMENT TRAPS. THE CONTRACTOR ACKNOWLEDGES THAT EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES AND/OR STOP WORK ORDERS IF INADEQUATE.
2.2 PRIOR TO COMMENCEMENT OF CONSTRUCTION AT ALL MUNICIPAL CATCH BASINS ADJACENT TO THE SITE AND AT ANY MANHOLES OR CATCH BASINS THAT WILL RECEIVE DISCHARGE FROM EXCAVATION OPERATIONS AND ALL NEW CATCH BASINS AS THEY ARE INSTALLED INSTALL SEDIMENT CAPTURE FILTER SOCK INSERTS (TERRATEK GEOSYNTHETICS INC SILTSACK OR APPROVED EQUAL). INSPECT AT THE END OF EACH DAY AND AFTER EACH RAINFALL. REMOVE SEDIMENT AS RECOMMENDED BY THE MANUFACTURER. IMMEDIATELY REPAIR OR REPLACE ANY DAMAGED FILTER SOCK INSERTS. DO NOT REMOVE UNTIL CONSTRUCTION IS COMPLETE.
2.3 INSTALL A SILT FENCE BARRIER AROUND STOCKPILED SEDIMENT OR SOIL. PRIOR TO COMMENCEMENT OF CONSTRUCTION INSTALL A SILT FENCE BARRIER AS SHOWN ON PLANS. INSPECT ALL SILT FENCES AT THE END OF EACH DAY AND AFTER EACH RAINFALL. REMOVE SEDIMENT DEPOSITS WHEN THE LEVEL OF DEPOSITS REACHES ONE THIRD THE HEIGHT OF THE FENCE. IMMEDIATELY REPAIR OR REPLACE ANY DAMAGED SECTIONS OF FENCE. DO NOT REMOVE ANY SILT FENCES IN ANY PHASE UNTIL CONSTRUCTION IS COMPLETE. AFTER THE REMOVAL OF A SILT FENCE IMMEDIATELY GRADE, PREPARE SURFACE AND SOD.
2.4 PRIOR TO COMMENCEMENT OF CONSTRUCTION INSTALL STONE BALE FLOW CHECK DAMS AS INDICATED ON DRAWINGS. INSPECT ALL STRAW BALE FLOW CHECK DAMS AT THE END OF EACH DAY AND AFTER EVERY RAINFALL. REMOVE SEDIMENT DEPOSITS WHEN THE LEVEL OF DEPOSITS REACHES ONE THIRD THE HEIGHT OF THE DAM. IMMEDIATELY REPAIR OR REPLACE ANY DAMAGED BALES. STRAW BALES SHALL BE EMBEDDED INTO SOIL A MINIMUM 150MM AND SHALL BE SECURELY ANCHORED BY TWO STAKES. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARDS THE PREVIOUS BALE TO FORCE THE BALES TOGETHER. DO NOT REMOVE ANY STRAW BALES CONSTRUCTION IS COMPLETE.
2.5 CONTROL AND LIMIT VEHICLE ACCESS TO AND AROUND THE CONSTRUCTION SITE TO MINIMIZE THE DISTURBANCE OF SOIL AND VEGETATION. PRIOR TO COMMENCEMENT OF CONSTRUCTION INSTALL AT ALL POINTS OF EGRESS TO PUBLIC ROADS GEOTEXTILE FABRIC MUD MATS (TERRATEK GEOSYNTHETICS INC. OR APPROVED EQUAL). MUD MATS SHALL BE THE FULL WIDTH OF THE EGRESS POINT AND AT LEAST 20m IN LENGTH. MATERIAL DEPOSITED ON PUBLIC ROAD SHALL BE REMOVED AT THE END OF EACH DAY BY SWEEPING AND SHOVELING OR VACUUMING AND DISPOSING SEDIMENT IN A CONTROLLED AREA. DO NOT SWEEP OR HOSE MATERIAL INTO ANY STORMWATER CONVEYANCE SYSTEM. MUD MATS SHALL BE WASHED AS REQUIRED TO PREVENT MATERIAL FROM BEING TRACKED ONTO THE PUBLIC ROAD. DO NOT REMOVE MUD MATS UNTIL CONSTRUCTION IS COMPLETE. IN ADDITION, IF REQUIRED TO PREVENT MATERIAL FROM BEING TRACKED ONTO THE PUBLIC ROAD, WASH VEHICLE TIRES AT THE EGRESS POINT.
2.6 CONSTRUCTION IS CONDITIONAL UPON WHETHER THE FOLLOWING CONDITIONS HAVE BEEN MET:
a. ALL STRUCTURES HAVE BEEN BUILT.
b. ALL HARD SURFACES HAVE BEEN CONSTRUCTED.
c. ALL PROPOSED GRASSED AREAS ARE EITHER SODDED OR HAVE A FULL COVERAGE OF WELL ESTABLISHED TURF AND HAVE HAD A MINIMUM OF ONE FULL GROWING SEASON (MAY 15TH TO SEPTEMBER 15TH).
d. THERE ARE NO AREAS OF EXPOSED EARTH.
e. ALL STOCKPILED MATERIALS HAVE BEEN REMOVED.
2.7 REMOVE EROSION AND SEDIMENT CONTROL MEASURES WHEN CONSTRUCTION IS COMPLETE.

3. GRADING & DRAINAGE

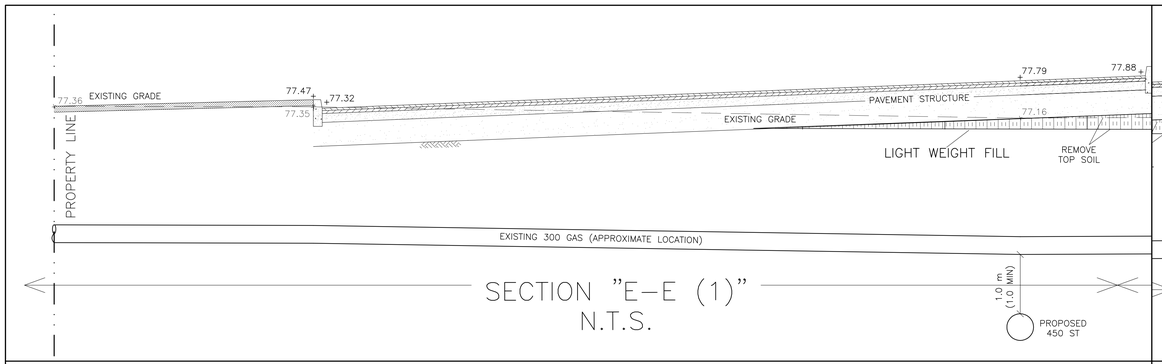
3.1 NEW GRADES TO MATCH EXISTING AT PROPERTY LINE. NO EXCESS DRAINAGE WILL BE DIRECTED TOWARDS THE ADJACENT PROPERTIES DURING AND AFTER CONSTRUCTION. THERE WILL BE NO ALTERATION TO EXISTING GRADE AND DRAINAGE PATTERNS ON PROPERTY LINE.
3.2 ALL AREAS SHALL BE GRADED TO ENSURE ADEQUATE DRAINAGE AWAY FROM BUILDINGS TO CATCH BASINS, SWALES, DITCHES AND OTHER APPROVED DISPOSAL AREAS. GRADING SHALL BE GRADUAL BETWEEN FINISHED SPOT ELEVATIONS SHOWN ON DRAWINGS TO PREVENT PONDING (OTHER THAN PONDING REQUIRED FOR STORMWATER MANAGEMENT).
3.3 CULVERTS SHALL BE HDPE TO CITY OF OTTAWA STANDARDS AND SPECIFICATIONS WITH A MINIMUM 300 kPa STIFFNESS AT 5% DEFLECTION.
JOINTS SHALL BE SOIL-TIGHT OR BETTER. BOSS 2000 OR APPROVED EQUAL.
3.4 RIP RAP: PLACE RIP-RAP 300mm THICK AS INDICATED. USE QUARRIED STONE 200mm TO 300mm IN DIAMETER. AREA TO BE RIP RAPPED SHALL BE EXCAVATED AND FINE GRADED TO A UNIFORM AND EVEN SURFACE TO PROVIDE ADEQUATE FOUNDATION. FILL AND THOROUGHLY COMPACT DEPRESSIONS. WHERE RIP RAP IS TO BE PLACED ON SLOPES, EXCAVATE TRENCH AT TOE OF SLOPE. PLACE GEOTEXTILE FABRIC ON PREPARED SURFACE. PLACE RIP RAP ON FABRIC. ENSURE THAT THE FACE OF RIP RAP ON FABRIC IS FREE OF LARGE AND STABLE MANNER. ROCK SHALL BE PLACED, STARTING AT THE LOWER END OF THE SLOPE. THE LARGEST ROCKS OBTAINABLE SHALL BE USED AND PLACED IN THE BOTTOM COURSES AND FOR USE AS HEADERS THROUGH SUBSEQUENT COURSES. THEY SHALL BE LAID CLOSELY AND SUCH THAT THEY WILL PROVIDE A REASONABLE SEMBLANCE OF COURSES. FILL VOIDS WITH ROCK SPALLS OR COBBLES. FINISH SURFACE EVEN, FREE OF LARGE OPENINGS AND NEAT IN APPEARANCE.
3.5 GEOTEXTILE FABRIC: TO OPSS 1860. WOVEN SYNTHETIC FIBRE FABRIC SHALL BE USED IN SILT FENCE BARRIER AND BETWEEN GRATES FRAMES OF CATCH BASINS. NON-WOVEN SYNTHETIC FIBRE FABRIC 1.75mm THICK, 200g/sq.m. SHALL BE USED FOR MATERIAL SEPARATION. GEOTEXTILE (FILTER) FABRIC SHALL BE FREE OF TEARS AND RESISTANT TO DETERIORATION BY ULTRA VIOLET AND HEAT EXPOSURE. PLACE GEOTEXTILE MATERIAL BY UNROLLING ONTO GRADED SURFACE, SMOOTH AND FREE OF TENSION STRESS, FOLDS, WRINKLES AND CREASES. PLACE GEOTEXTILE MATERIAL ON SLOPING SURFACES IN ONE CONTINUOUS LENGTH FROM TOE OF SLOPE TO UPPER EXTENT OF GEOTEXTILE. OVERLAP EACH SUCCESSIVE STRIP OF GEOTEXTILE 600mm OVER PREVIOUSLY LAID STRIP IN DIRECTION OF FLOW. APPEND A MINIMUM OF 300mm AND PINNED TOGETHER. PROTECT INSTALLED GEOTEXTILE MATERIAL FROM DISPLACEMENT, DAMAGE OR DETERIORATION BEFORE, DURING AND AFTER PLACEMENT OF MATERIAL LAYERS AFTER INSTALLATION, COVER WITH OVERLYING LAYER WITHIN 4 HOURS OF PLACEMENT. DURING DELIVERY AND STORAGE, PROTECT GEOTEXTILES FROM DIRECT SUNLIGHT, ULTRAVIOLET RAYS, EXCESSIVE HEAT, MUD, DIRT, DUST, DEBRIS AND RODENTS. VEHICULAR TRAFFIC NOT PERMITTED DIRECTLY ON GEOTEXTILE. AVOID PUNCTURING GEOTEXTILE. REPLACE DAMAGED OR DETERIORATED GEOTEXTILE.
3.6 REFER TO THE GEOTECHNICAL ENGINEER FOR THE SPECIFICATION AND PLACEMENT OF THE LIGHTWEIGHT FILL.

4. SITE SERVICES

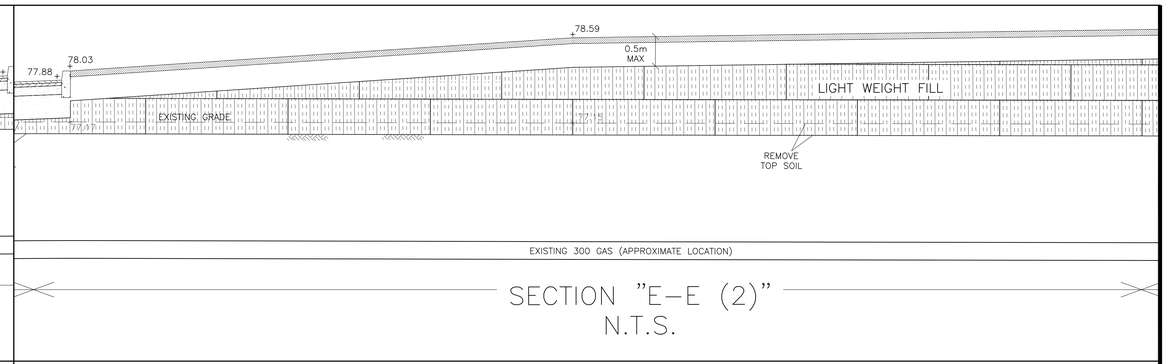
4.1 CONNECTION TO WATERMAIN BY CITY OF OTTAWA, CONTRACTOR SHALL PROVIDE EXCAVATION, BACKFILL AND REINSTATEMENT.
4.2 WATER METER SHALL BE INSTALLED AS PER CITY OF OTTAWA DWG. No. W31.
4.3 ALL WATERMAIN AND WATER SERVICE MATERIALS AND CONSTRUCTION METHODS TO CITY OF OTTAWA STANDARDS AND SPECIFICATIONS. WATERMAIN & WATER SERVICE MATERIALS SHALL BE PVC PRESSURE CLASS 150 DR18.
4.4 PROVIDE THRUST BLOCKS AS PER CITY OF OTTAWA DWG. No. W25.3 & W25.4 AT ALL VALVES, TEES, CAPS, BENDS, REDUCERS AND HYDRANTS OR OTHER FITTINGS WHERE CHANGES OCCUR IN PIPE DIAMETER OR DIRECTION. RESTRAINING AS PER AS PER CITY OF OTTAWA DWG. No 25.5 & 25.6. CATHODIC PROTECTION & ANODE INSTALLATION AS PER CITY OF OTTAWA DWG. No. 40, 42, 44 & 47.
4.5 PROVIDE A MINIMUM 2.4 m COVER OVER WATER SERVICE CONNECTION AND WATERMAIN. WHERE THE MINIMUM COVER IS NOT POSSIBLE INSULATE AS PER CITY OF OTTAWA DWG. No. W22. WHERE LESS THAN 2.4 m CLEARANCE FROM AN OPEN STRUCTURE (CG, MANHOLE & CATCH BASIN) PLACE INSULATION AROUND WATERMAIN AND WATER SERVICE CONNECTIONS AS PER CITY OF OTTAWA DWG. No. W23.
4.6 WATERMAIN INSTALLED PARALLEL TO A SEWER SHALL BE LAID WITH A MINIMUM 2.5m BARREL TO BARREL HORIZONTAL SEPARATION FROM SEWERS AND SEWER MANHOLES.
4.7 THE WATERMAIN SHALL CROSS ABOVE A SEWER AND PROVIDE A MINIMUM 250mm BARRELL TO BARRELL VERTICAL SEPARATION. IF IT IS NOT POSSIBLE FOR THE WATERMAIN TO CROSS ABOVE A SEWER THE WATERMAIN SHALL CROSS BELOW THE SEWER AND PROVIDE A MINIMUM 500mm BARRELL TO BARRELL VERTICAL SEPARATION AND ENSURE THAT THE WATER PIPE IS CENTERED IT THE POINT OF CROSSING SO JOINTS ARE AS FAR AS POSSIBLE FROM THE SEWER.
4.8 LOCATE FIRE HYDRANT AS PER CITY OF OTTAWA DWG. No. W18. INSTALL FIRE HYDRANT AS PER CITY OF OTTAWA DWG. No. W19. LOCATE FIRE HYDRANT 1.5m FROM FACE OF CURB. THERE SHALL BE NO VEGETATION OR OTHER OBSTRUCTIONS WITHIN 1.5m OF FIRE HYDRANT. THE FIRE HYDRANT SHALL BE RED WITH WHITE BONNETS AND CAPS TO CITY STANDARDS. AT THE END OF CONSTRUCTION PERFORM A FIRE FLOW TEST AND SUBMIT REPORT TO THE ENGINEER AND COLOUR CODE THE BONNETS AND CAPS AS PER CITY OF OTTAWA AND NFPA STANDARDS.
4.9 THE SANITARY BUILDING DRAIN SHALL BE INSTALLED WITH A FULL-PORT BACKWATER VALVE TO CITY OF OTTAWA STANDARDS AND TO CITY OF OTTAWA DWG. NO. S14.1 OR S14.2.
4.10 THE STORM BUILDING DRAIN SHALL BE INSTALLED WITH A BACKWATER VALVE TO CITY OF OTTAWA STANDARDS AND TO CITY OF OTTAWA DWG. NO. S14.
4.11 SEWER MATERIAL SHALL BE PVC OR REINFORCED CONCRETE. PVC SEWERS SHALL BE SDR-35 (SDR-28 FOR DIAMETERS 150mm OR LESS) AND SHALL CONFORM TO CSA B182.2 AND SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS. REINFORCED CONCRETE SEWERS SHALL CONFORM TO CSA 257.2 CL 100-10 WITH RUBBER GASKETS TO CSA A-257.3.
4.12 PROVIDE A MINIMUM 2.0m COVER OVER SEWERS. WHERE THE MINIMUM COVER IS NOT POSSIBLE INSULATE AS INDICATED AND AS PER DETAIL.
4.13 MANHOLES & CATCH BASINS:
A. PRECAST MANHOLE UNITS: TO OPSS 1351 AND OPSD 701.010 WITH BASE SLAB OR MONOLITHIC BASE. TOP SECTIONS ECCENTRIC CONE OR FLAT LAB TOP TYPE WITH OPENING OFFSET FOR VERTICAL LADDER INSTALLATION.
B. MANHOLE STEPS: TO OPSD 405.01
C. ADJUSTING RINGS: TO ASTM C 478M.
ALUMINUM SURFACES IN CONTACT WITH OR CAST INTO CONCRETE SHALL HAVE POLYETHYLENE ANCHOR INSULATING SLEEVES.
D. PRECAST CATCH BASIN SECTIONS: TO OPSS 1351.
E. JOINTS: SHALL BE MADE WATERTIGHT USING BUTYL BASED, FLEXIBLE WATERSTOP/JOINT SEALANT MATERIAL.
F. SANITARY SEWERS BENCH TO PROVIDE A SMOOTH U-SHAPED CHANNEL PER OPSD 701.021. PROVIDE SLOPE INVERT TO ESTABLISH SEWER GRADE.
G. STORM SEWERS: MANHOLES SHALL HAVE A 300mm SUMP AND CATCH BASINS AND DITCH INLETS SHALL HAVE A 600mm SUMP.
H. FRAMES, GRATES AND COVERS TO CITY OF OTTAWA DRAWINGS OR OPSD 401.010. GRATES AND COVERS TO BEAR EVENLY ON FRAMES. PAINTED WITH ONE SHOP COAT OF ASPHALT OR TAR BASE BLACK. ALL JOINTS AND CREVICES SHALL BE THOROUGHLY COATED.
I. GRANULAR BEDDING AND BACKFILL: OPSS GRANULAR A. RE-CYCLED GRANULAR MATERIALS ARE NOT PERMITTED.
4.14 PROVIDE MINIMUM 3m LONG, 150mm DIAMETER, PERFORATED SUB-DRAINS C/W FILTER FABRIC SOCK & END PLUG AT CATCH BASINS AND CATCH BASIN MANHOLES AS INDICATED ON PLANS.
4.15 ROOF DRAINS SHALL BE FLOW CONTROL TYPE EACH INSTALLED WITH A WEIR WITH A PARABOLIC SLOT, EACH SLOT SHALL RELEASE 5 USgpm/inch: WATTS ROOF DRAIN WITH WATTS ACCUTROL WEIR RD-100-A1 OR EQUAL.
4.16 THE INLET CONTROL DEVICES LOCATED IN THE OUTLET PIPE OF CATCH BASINS CB-2, CB-6 & CB-8 AND CATCH BASIN/MANHOLE CB/MH-11 SHALL BE A HYDROVEX VHV-1 VERTICAL VORTEX FLOW REGULATOR AND SIZED BY THE MANUFACTURER FOR A DISCHARGE RATE AS INDICATED ON PLAN. PRIOR TO INSTALLATION SUBMIT SHOP DRAWING TO ENGINEER FOR APPROVAL.

5. CONSTRUCTION:

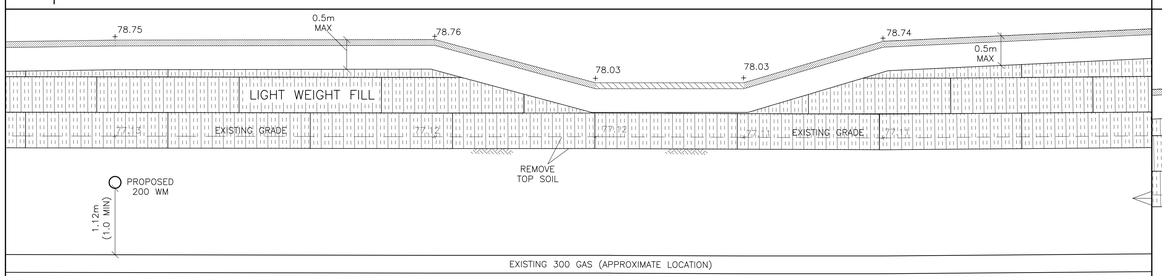
5.1 A VITAL GAS MAIN IS LOCATED ON THE PROPERTY. LOCATES ARE REQUIRED. HYDROVAC OR HAND EXCAVATION IS REQUIRED WITHIN 3.0m OF THE GAS MAIN. ENBRIDGE THIRD PARTY STANDBY IS REQUIRED FOR ALL CONSTRUCTION ACTIVITIES IN THE VICINITY OF THE GAS MAIN. REFER TO "ENBRIDGE THIRD PARTY REQUIREMENTS IN THE VICINITY OF NATURAL GAS FACILITIES" DOCUMENT FOR ACTIVITIES IN THE VICINITY OF GAS MAIN. COORDINATE CONSTRUCTION SCHEDULING WITH ENBRIDGE. ANY CONSTRUCTION METHODS OR EXTERNAL LOADING CAUSED BY HEAVY MACHINERY DURING CONSTRUCTION MUST BE APPROVED BY ENBRIDGE GAS DISTRIBUTION INC.
5.2 PRIOR TO COMMENCING WORK:
A. OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS FROM THE AUTHORITIES.
B. SIZE, DEPTH AND LOCATION OF EXISTING UTILITIES AND STRUCTURES AS INDICATED ARE FOR GUIDANCE ONLY. EXISTING UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON PLANS. COMPLETENESS AND ACCURACY ARE NOT GUARANTEED. NOTIFY ALL APPLICABLE OWNERS, UTILITY COMPANIES AND AUTHORITIES HAVING JURISDICTION OF PROPOSED WORK AND LOCATE AND CLEARLY IDENTIFY ALL EXISTING SERVICES, UTILITIES AND STRUCTURES ON AND ADJACENT TO SITE. CONFIRM LOCATIONS OF BURIED SERVICES AND UTILITIES BY CAREFUL TEST EXCAVATIONS AND REPORT ANY DIFFERENCES TO THE ENGINEER.
C. COORDINATE AND SCHEDULE WORK WITH THE AUTHORITIES AND OTHER TRADES.
D. SCHEDULE WORK TO PROVIDE THE MINIMUM DISRUPTION TO SERVICES.
5.3 MAINTAIN AND PROTECT FROM DAMAGE, SERVICES, UTILITIES AND STRUCTURES ENCOUNTERED. PROTECT EXISTING BUILDINGS, TREES AND OTHER PLANTS, LAWNS, FENCING, SERVICE POLES, WIRES, PAVEMENT, SURVEY BENCH MARKS AND MONUMENTS AND OTHER SURFACE FEATURES FROM DAMAGE WHILE WORK IS IN PROGRESS. DO NOT DISTURB SOIL WITHIN BRANCH SPREAD OF TREES OR SHRUBS THAT ARE TO REMAIN.
5.4 PROVIDE TRAFFIC CONTROL AND SAFETY MEASURES INCLUDING ANY NECESSARY PERSONNEL AND THE SUPPLY, INSTALLATION, REMOVAL AND REPLACEMENT OF ALL NECESSARY SIGNAGE AND BARRIERS, AS REQUIRED BY THE AUTHORITIES. PROVIDE TRAFFIC MANAGEMENT PLAN AS PER CITY OF OTTAWA REQUIREMENTS.
5.6 REMOVE OBSTRUCTIONS, ICE AND SNOW, FROM SURFACES TO BE EXCAVATED.
5.7 CUT PAVEMENT AND / OR SIDEWALK NEATLY ALONG LIMITS OF PROPOSED EXCAVATION IN ORDER THAT SURFACE MAY BREAK EVENLY AND CLEANLY.
5.8 COORDINATE AND PERFORM ARCHAEOLOGICAL INSPECTIONS OF THE SITE, SUB-GRADE, PIPE BEDDING AND SURROUND MATERIAL, BACKFILL, SUB-BASE, BASE AND ASPHALT TO THE SATISFACTION OF THE GEOTECHNICAL CONSULTANT. SUBMIT COMPLETION REPORTS TO ENGINEER.
5.9 PRIOR TO COMMENCEMENT OF TOPSOIL STRIPPING REMOVE FROM SITE ALL EXPOSED BOULDERS, DEBRIS AND LIVE AND DEAD PLANT MATERIAL (EXCEPT TREES AND OTHER VEGETATION TO REMAIN). STRIP TOPSOIL FROM THE ENTIRE SITE. STOCKPILE TOPSOIL ON SITE AS DIRECTED BY CONSULTANT. DO NOT MIX TOPSOIL WITH SUBSOIL. STOCKPILE GRANULAR AND FILL MATERIALS IN MANNER TO PREVENT SEGREGATION AND PROTECT FROM CONTAMINATION. CUT AND FILL AS NECESSARY TO ACHIEVE THE REQUIRED SUB-GRADE ELEVATION. DISPOSE OF SURPLUS AND UNSUITABLE EXCAVATED MATERIAL (INCLUDING LIGHTWEIGHT FILL MATERIAL) AND THE COMPACTION OF THE FILL MATERIAL SHALL CONFORM TO THE GEOTECHNICAL REPORT AND TO ENBRIDGE'S REQUIREMENTS TO THE SATISFACTION OF THE GEOTECHNICAL CONSULTANT AND ENBRIDGE.
5.10 EXCAVATION, TRENCHING & BACKFILL:
A. SHORE AND BRACE EXCAVATIONS, PROTECT SLOPES AND BANKS AND PERFORM ALL WORK IN ACCORDANCE WITH OCCUPATIONAL HEALTH AND SAFETY ACT AND OTHER AUTHORITIES HAVING JURISDICTION. HYDROVAC OR HAND EXCAVATION IS REQUIRED WITHIN 3.0m OF THE GAS MAIN.
B. KEEP EXCAVATIONS FREE OF WATER WHILE WORK IS IN PROGRESS. PROTECT OPEN EXCAVATIONS AGAINST FLOODING AND DAMAGE DUE TO SURFACE RUN-OFF.
C. EXCAVATIONS MUST NOT INTERFERE WITH BEARING CAPACITY OF ADJACENT FOUNDATIONS.
D. DO NOT OBSTRUCT FLOW OF SURFACE DRAINAGE OR NATURAL WATERCOURSES.
E. EXCAVATE TO LINES, GRADES, ELEVATIONS AND DIMENSIONS AS INDICATED.
F. EARTH BOTTOMS OF EXCAVATIONS TO BE UNDISTURBED SOIL, LEVEL, FREE FROM LOOSE, SOFT OR ORGANIC MATTER.
G. ALL STRUCTURES WITHIN PAVED AREAS SHALL HAVE 4:1 FROST TAPERS FROM FROST LINE TO SUB-GRADE.
H. CORRECT OVER-EXCAVATION WITH GRANULAR A COMPACTED TO NOT LESS THAN 95% OF CORRECTED MAXIMUM DRY DENSITY.
I. SUB-GRADE AND AREAS TO BE BACKFILLED TO BE FREE FROM DEBRIS, SNOW, ICE, WATER AND FROZEN GROUND.
J. DO NOT USE BACKFILL MATERIAL WHICH IS FROZEN OR CONTAINS ICE, SNOW OR DEBRIS.
K. BEDDING AND SURROUND MATERIAL FOR SEWERS SHALL BE OPSS GRANULAR A. SURROUND MATERIAL FOR CONCRETE PIPE MAY BE CLEAN WELL GRADED SAND. BEDDING AND SURROUND MATERIAL FOR WATERMAIN AND WATER SERVICE CONNECTIONS SHALL BE OPSS GRANULAR A OR OPSS GRANULAR M. RE-CYLCLED GRANULAR MATERIALS ARE NOT PERMITTED.
L. DO NOT USE BEDDING, SURROUND OR BACKFILL MATERIAL WHICH IS FROZEN OR CONTAINS ICE, SNOW OR DEBRIS.
M. PIPE BEDDING SHALL BE 150mm THICK. SHAPE BED TRUE TO GRADE AND TO PROVIDE CONTINUOUS, UNIFORM BEARING SURFACE FOR PIPE.
N. PLACE SURROUND MATERIAL AROUND PIPES TO FULL WIDTH OF TRENCH AND TO 300mm ABOVE PIPES.
O. PLACE BEDDING AND SURROUND MATERIAL IN UNIFORM LAYERS NOT EXCEEDING 150mm MAXIMUM THICKNESS. PLACE FILL AND BACKFILL MATERIAL IN UNIFORM LAYERS NOT EXCEEDING 300mm COMPACTED THICKNESS.
P. COMPACT EACH LAYER TO 95% OF CORRECTED DRY DENSITY BEFORE PLACING SUCCEEDING LAYER.
Q. DO NOT BACKFILL AROUND OR OVER CAST-IN-PLACE CONCRETE WITHIN 24 HOURS AFTER PLACING OF CONCRETE.
R. EXCEPT WHERE LIGHTWEIGHT FILL IS REQUIRED, BACKFILL MATERIALS WITHIN 1.8m OF PROPOSED GRADE SHALL MATCH THE MATERIALS EXPOSED ON THE TRENCH WALLS. BACKFILL BELOW 1.8m OF THE PROPOSED CAN CONSIST OF EITHER ACCEPTABLE NATIVE MATERIALS; ROCK; OR IMPORTED GRANULAR MATERIAL CONFORMING TO OPSS GRANULAR B TYPE I OR II. ANY ORGANIC SOILS OR TOPSOIL MATERIALS, IF ENCOUNTERED, SHALL BE REMOVED FROM THE EXCAVATION. IF ROCK IS USED AS BACKFILL IT SHALL BE WELL SHATTERED AND SHALL NOT BE SMALLER IN DIAMETER. TO PREVENT INGRESS OF FINE MATERIAL INTO VOIDS IN THE ROCK FILL, THE UPPER SURFACE OF THE ROCK FILL SHALL BE COVERED WITH 150mm LAYER OF COMPACTED, WELL GRADED CRUSHED STONE PLACED ON GEOTEXTILE FABRIC.
5.11 PIPES:
A. HANDLE PIPE USING METHODS APPROVED BY MANUFACTURER.
B. LAY, CUT AND JOIN PIPES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
C. USE ONLY FITTINGS AS RECOMMENDED BY PIPE MANUFACTURER.
D. LAY PIPES ON PREPARED BED, TRUE TO LINE AND GRADE AND ENSURE BARREL OF EACH PIPE IS IN CONTACT WITH SHAPED BED THROUGHOUT ITS FULL LENGTH, FREE OF SAGS OR HIGH POINTS.
E. DO NOT EXCEED MAXIMUM JOINT DEFLECTION RECOMMENDED BY PIPE MANUFACTURER.
F. AT RIGID STRUCTURES, INSTALL PIPE JOINTS NOT MORE THAN 1.2m FROM SIDE OF STRUCTURE.
G. WHENEVER WORK IS SUSPENDED, INSTALL REMOVABLE WATERTIGHT BULKHEAD AT OPEN END OF LAST PIPE LAID TO PREVENT ENTRY OF FOREIGN MATERIALS.
H. WHEN STOPPAGE OF WORK OCCURS, BLOCK PIPES TO PREVENT CREEP DURING DOWN TIME. MAKE WATERTIGHT CONNECTIONS TO MANHOLES.
I. USE NON-SHRINK GROUT WHEN SUITABLE GASKETS ARE NOT AVAILABLE.
J. JOINTS SHALL BE STRUCTURALLY SOUND AND WATERTIGHT.
K. MAINTAIN EXISTING SEWAGE FLOWS DURING CONSTRUCTION.
REPAIR OR REPLACE PIPE, PIPE JOINT OR BEDDING FOUND DEFECTIVE.
L. PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. SPECIFICALLY, THE LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 410.
M. REPAIR AND RETEST SEWER LINE AS REQUIRED.
N. REPAIR VISIBLE LEAKS REGARDLESS OF TEST RESULTS.
O. CONDUCT TWO CCTV INSPECTIONS OF SEWERS. FIRST INSPECTION AFTER COMPLETION OF CONSTRUCTION. SECOND INSPECTION IMMEDIATELY PRIOR TO END OF WARRANTY PERIOD. A PAN AND TILT CAMERA SHALL BE USED. REPAIR SEWER LINE AS REQUIRED. SUBMIT REPORTS AND DVDs TO ENGINEER.
P. CONDUCT DYE TEST OF SANITARY SEWERS AND COORDINATE WITH ENGINEER. DYE TEST SHALL BE WITNESSED BY ENGINEER .
5.12 MANHOLES & CATCH BASINS:
A. JOINTS: SHALL BE MADE WATERTIGHT.
B. SET PRECAST CONCRETE BASE ON 150mm MINIMUM OF GRANULAR BEDDING COMPACTED TO 100% CORRECTED MAXIMUM DRY DENSITY.
C. MAKE EACH JOINT WATERTIGHT WITH RUBBER RING GASKETS.
D. PLACE GRANULAR BACKFIL



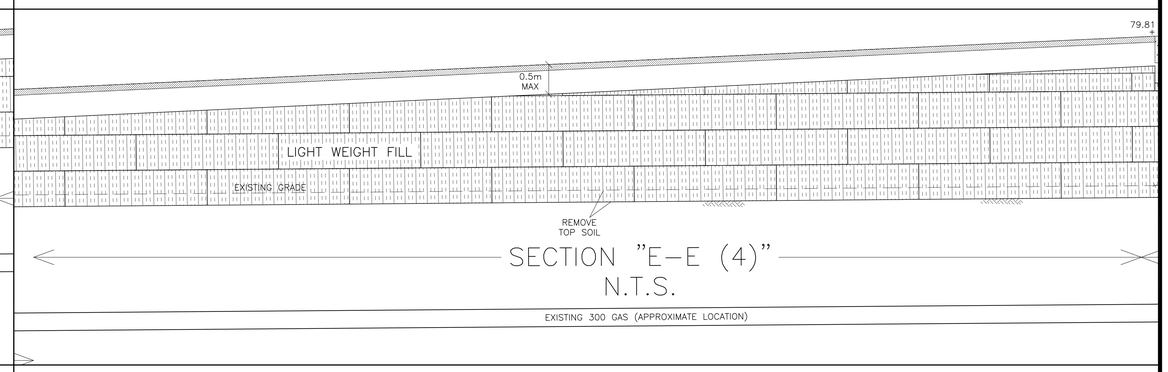
SECTION "E–E (1)"
N.T.S.



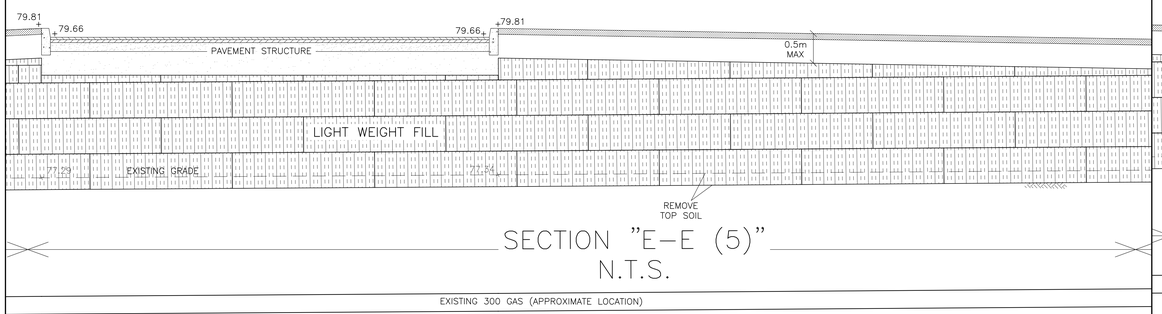
SECTION "E–E (2)"
N.T.S.



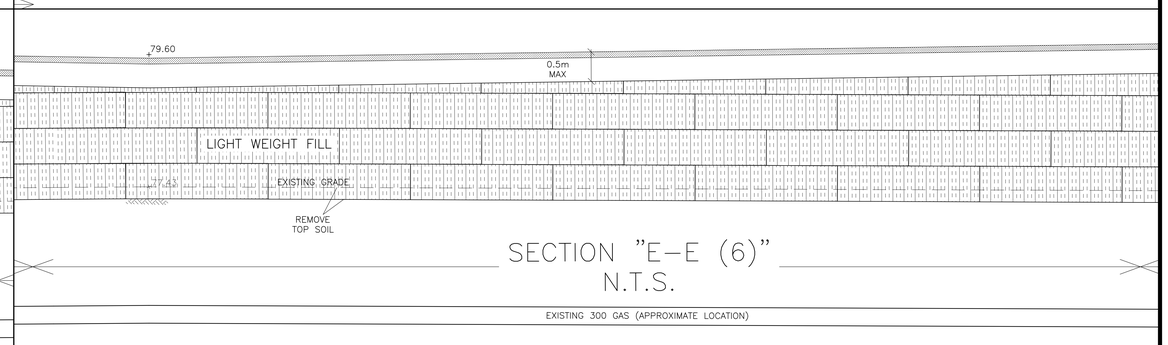
SECTION "E–E (3)"
N.T.S.



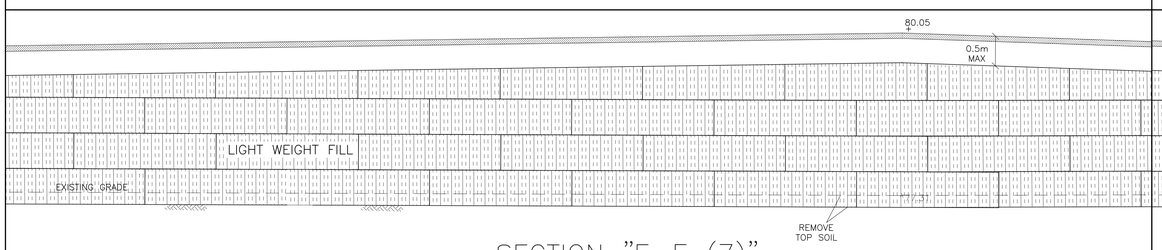
SECTION "E–E (4)"
N.T.S.



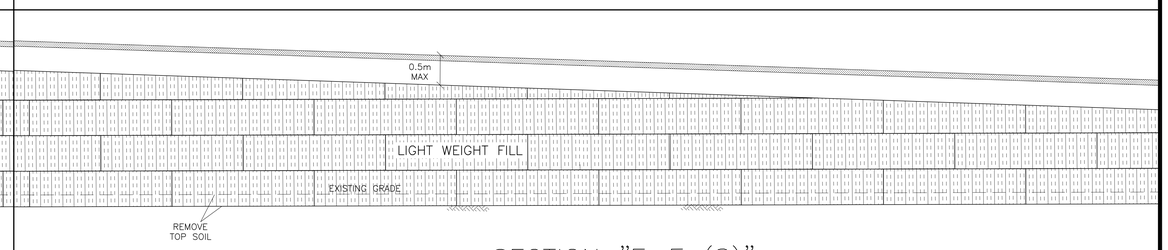
SECTION "E–E (5)"
N.T.S.



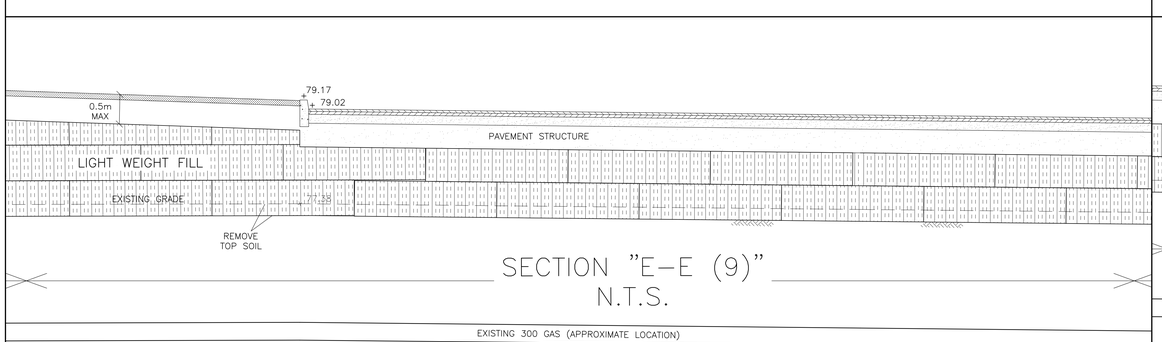
SECTION "E–E (6)"
N.T.S.



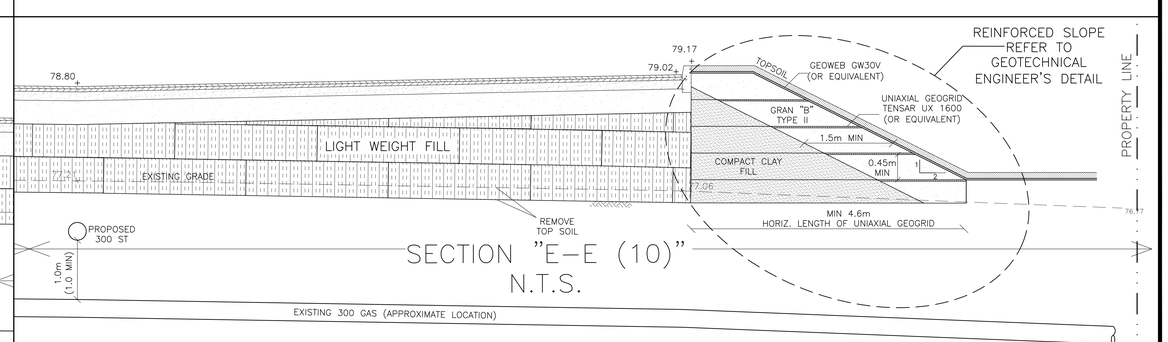
SECTION "E–E (7)"
N.T.S.



SECTION "E–E (8)"
N.T.S.



SECTION "E–E (9)"
N.T.S.



SECTION "E–E (10)"
N.T.S.

DRAWING LEGEND

- CB — CATCH BASIN
- MH — MANHOLE
- CB/MH — CATCH BASIN/MANHOLE
- WS / WM — WATER SERVICE / WATERMAIN
- SAN — SANITARY SEWER
- ST — STORM SEWER
- SUBDRAINS AT CB/MH
- SUBDRAINS AT CB
- CS — CURB STOP & STAND POST
- VB — VALVE & VALVE BOX
- FH — FIRE HYDRANT
- FDC — FIRE DEPARTMENT CONNECTION
- W — WATER METER
- R — REMOTE WATER METER READOUT
- UP — UTILITY POLE
- 93.85 — EXISTING GRADE ELEVATION
- + 93.79 — PROPOSED GRADE ELEVATION
- LIGHT DUTY PAVEMENT
- HEAVY DUTY PAVEMENT
- LIGHT WEIGHT FILL
- 0.5% — SLOPE OF GRADE
- 0.5% — EXISTING SLOPE OF GRADE
- EMERGENCY OVERLAND FLOW
- SWALE/DITCH (CENTERLINE)
- T.O.S. — TOP OF SLOPE
- B.O.S. — BOTTOM OF SLOPE
- D.C. — 150mm CURB / DEPRESSED CURB
- SILT FENCE BARRIER
- PROPERTY LINE
- FFL — FIRST FLOOR ELEVATION
- TOF — TOP OF FOUNDATION ELEVATION
- BFL — BASEMENT FLOOR ELEVATION
- USF — UNDERSIDE OF FOOTING ELEVATION
- H — HYDRO
- SEC — HYDRO (SECONDARY)
- TEL — BELL TELEPHONE
- CAB — ROGERS CABLE
- G — GAS

KEY PLAN

No.	Date	Revision
1	MAR 8–18	ISSUED FOR APPROVAL

D. B. GRAY ENGINEERING INC.
Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains
700 Long Point Circle
Ottawa, Ontario.
K1T 4E9
Tel: (613) 825-8044
email: d.gray@dbgrayengineering.com

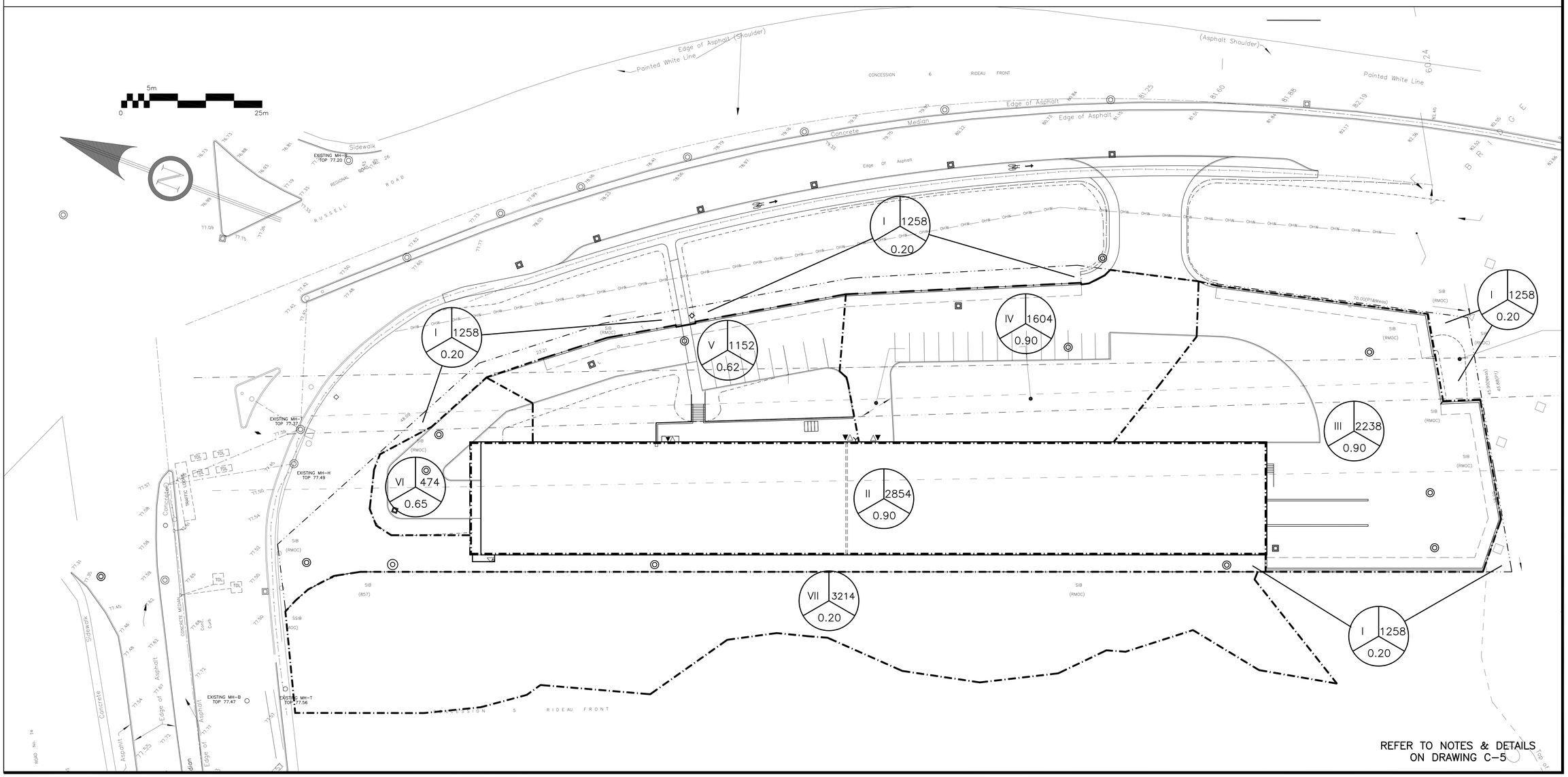
Project
PROPOSED
2 STOREY BUILDING
2510 WALKLEY ROAD
OTTAWA, ONTARIO

Drawing Title
SECTIONS "E–E (1)" TO "E–E (10)"

Engineer's Seal
LICENSED PROFESSIONAL ENGINEER
D.B. GRAY
17016502
MAR 8–18
PROVINCE OF ONTARIO
NOT VALID UNLESS SIGNED & DATED

Drawn	D.B.G.
Hor. Scale	
Vert. Scale	
Date	MAR 8–18
Job	12075

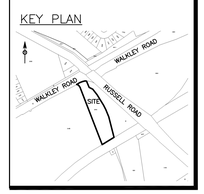
Drawing No.
C–6
of 8



LEGEND

DRAINAGE AREA | AREA SIZE (sq.m.) | 5-YEAR RUNOFF COEFFICIENT

KEY PLAN



No.	Date	Revision
2	MAR 8-18	ISSUED FOR APPROVAL
1	JAN 30-18	ISSUED FOR COORDINATION

D. B. GRAY ENGINEERING INC.
Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains
700 Long Point Circle
Ottawa, Ontario.
K1T 4E9
Tel: (613) 825-8044
email: d.gray@dbgrayengineering.com

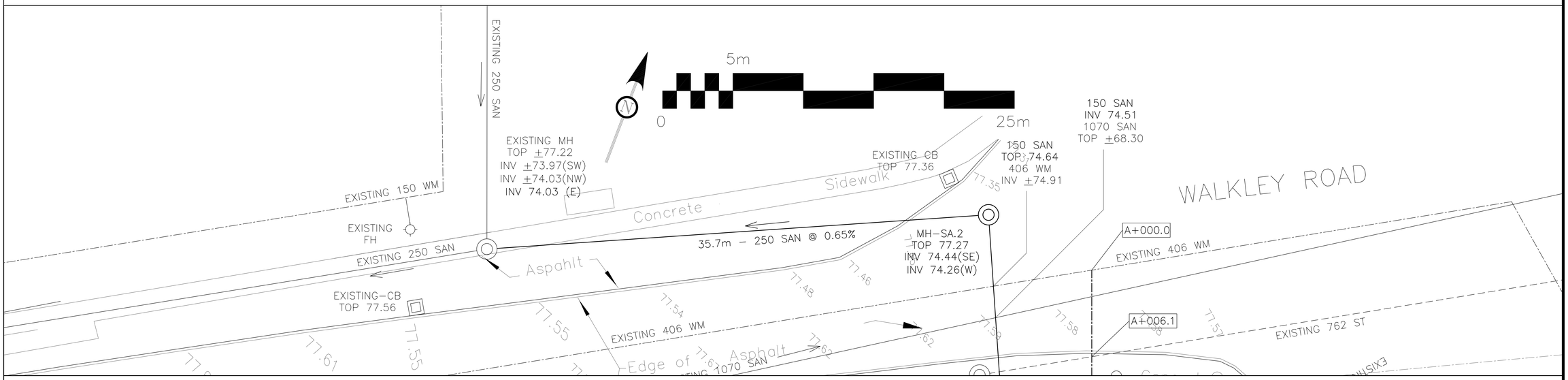
Project
PROPOSED
2 STOREY BUILDING
2510 WALKLEY ROAD
OTTAWA, ONTARIO

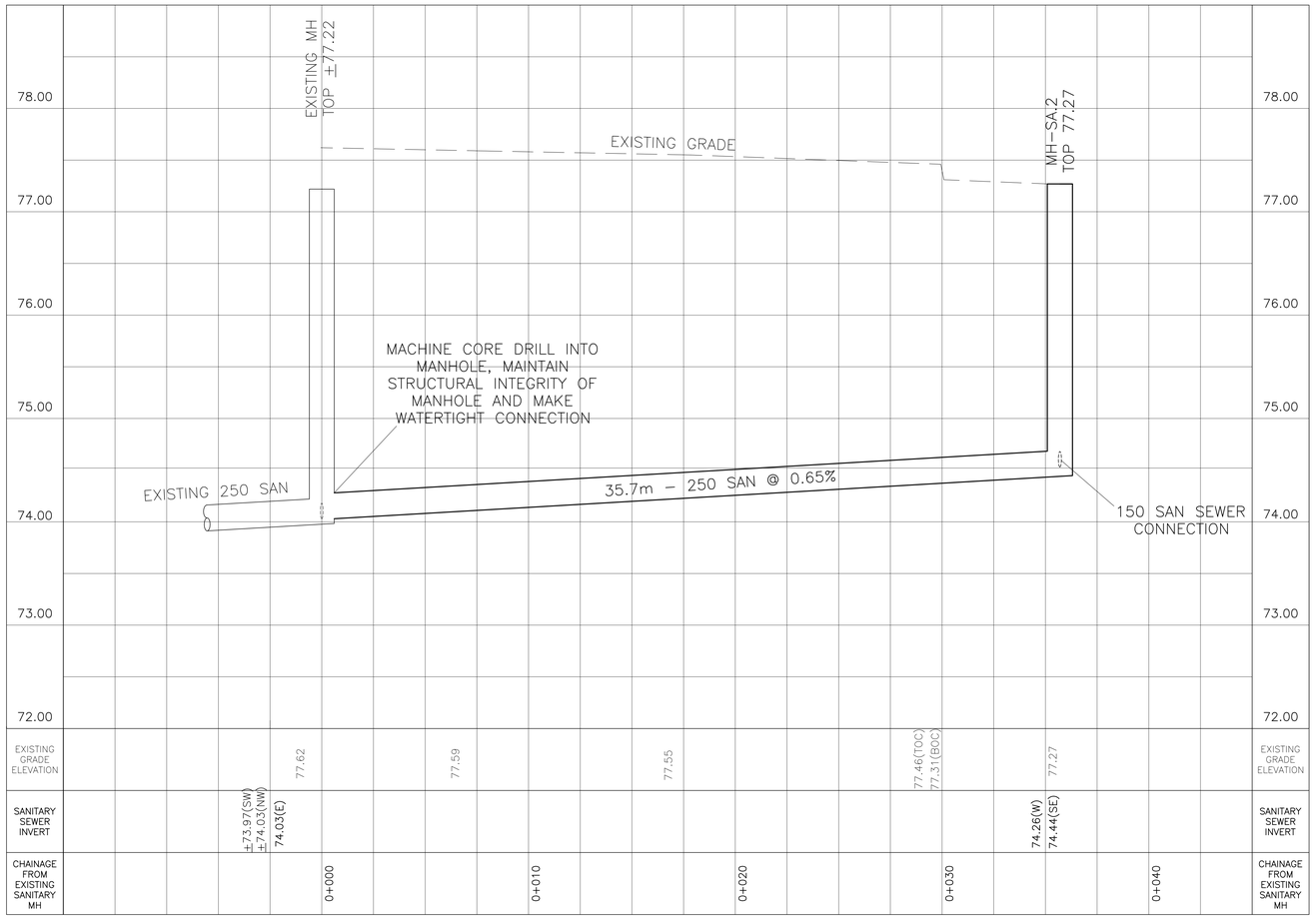
Drawing Title
DRAINAGE PLAN

Engineer's Seal
LICENSED PROFESSIONAL ENGINEER
D.B. GRAY
17016502
MAR 8-18
PROVINCE OF ONTARIO
NOT VALID UNLESS SIGNED & DATED

Drawn	D.B.G.
Hor. Scale	1:250
Vert. Scale	
Date	JAN 30-18
Job	12075

Drawing No.
C-7
of 8





REFER TO NOTES & DETAILS ON DRAWING C–5

DRAWING LEGEND

- CB — CATCH BASIN
- MH — MANHOLE
- CB/MH — CATCH BASIN/MANHOLE
- WS / WM — WATER SERVICE / WATERMAIN
- SAN — SANITARY SEWER
- ST — STORM SEWER
- SUBDRAINS AT CB/MH
- SUBDRAINS AT CB
- CS — CURB STOP & STAND POST
- VB — VALVE & VALVE BOX
- FH — FIRE HYDRANT
- FDC — FIRE DEPARTMENT CONNECTION
- W — WATER METER
- R — REMOTE WATER METER READOUT
- UP — UTILITY POLE
- 74.65 — EXISTING GRADE ELEVATION
- + 93.79 — PROPOSED GRADE ELEVATION
- LIGHT DUTY PAVEMENT
- HEAVY DUTY PAVEMENT
- LIGHT WEIGHT FILL
- 0.5% — SLOPE OF GRADE
- 0.5% — EXISTING SLOPE OF GRADE
- EMERGENCY OVERLAND FLOW
- SWALE/DITCH (CENTERLINE)
- T.O.S. — TOP OF SLOPE
- B.O.S. — BOTTOM OF SLOPE
- D.C. — 150mm CURB / DEPRESSED CURB
- SILT FENCE BARRIER
- PROPERTY LINE
- FFL — FIRST FLOOR ELEVATION
- TOF — TOP OF FOUNDATION ELEVATION
- BFL — BASEMENT FLOOR ELEVATION
- USF — UNDERSIDE OF FOOTING ELEVATION
- H — HYDRO
- SEC — HYDRO (SECONDARY)
- TEL — BELL TELEPHONE
- CAB — ROGERS CABLE
- GAS

KEY PLAN

No.	Date	Revision
2	MAR 8–18	ISSUED FOR APPROVAL
1	JAN 30–18	ISSUED FOR COORDINATION

D. B. GRAY ENGINEERING INC.
Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermain
700 Long Point Circle
Ottawa, Ontario.
K1T 4E9
Tel: (613) 825-8044
email: d.gray@dbgrayengineering.com

Project
EXTENSION OF MUNICIPAL SANITARY SEWER
WALKLEY ROAD
OTTAWA, ONTARIO

Drawing Title
PLAN & PROFILE

Engineer's Seal
LICENSED PROFESSIONAL ENGINEER
D.B. GRAY
17016502
MAR 8–18
PROVINCE OF ONTARIO
NOT VALID UNLESS SIGNED & DATED

Drawn	D.B.G.
Hor. Scale	1:100
Vert. Scale	1:20
Date	JAN 30–18
Job	12075

Drawing No.
C–8
of 8